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Table of Calculated Nuclear Properties

by

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MASTER

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TABLE OF CALCULATED NUCLEAR PROPERTIES

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P. A. Seeger and W. M. Howard

ABSTRACT

An atomic mass formula based on the liquid-drop model with shell and deformation energies determined from the Nilsson model and BCS pairing energy has been adjusted simultaneously to ground-state binding energies and to fission barrier heights. A table of calculated values for 8001 nuclei is given.

MASTER

INTRODUCTION

The technique of separating the atomic mass formula into a smooth (macroscopic) contribution with fluctuating correction terms (microscopic) has been used for many years. The macroscopic part ^{1,2} is based on the liquid-drop model, and various forms have been used for the microscopic part. For example, Green and Edwards³ used truncated parabolas to represent shell effects; Mozer⁴ estimated a shell correction based on a Fermi gas and deformation energy based on an expansion in powers of the quadrupole moment; and Seeger⁵ used a partial expansion in sine functions to represent those effects. The most successful formula has been the bunched Fermi gas model of Swiatecki,^{6,7} who also strongly emphasizes the necessity for making the macroscopic/microscopic separation.

To gain confidence in extrapolating a mass formula, and to predict as many nuclear properties as possible, a firmer theoretical basis for the correction terms is needed. Our work is based on the Nilsson model,^{8,9} which represents the nuclear potential as a modified harmonic oscillator. An early attempt¹⁰ to use the Nilsson model was made by normalizing the sum of single-particle energies to a Fermi gas. Further development is now possible by using the Strutinsky prescription¹¹ for normalizing the shell correction to the liquid-drop model.

This work is an expansion of earlier calculations.¹²⁻¹⁴ We use the macroscopic/microscopic approach to calculate ground-state binding energies, fission barrier heights, nuclear shapes, and ground-state spins and parities. Complete details of the model and of the fitting procedures are given in Ref. 15.

MACROSCOPIC ENERGY

The expression used for the liquid-drop energy includes volume and surface terms, a combined volume and surface charge asymmetry term in the denominator form,¹⁶ a curvature term, a Coulomb energy term including effect of surface diffuseness on the effective nuclear radius,¹⁷ a Wigner term, and a small correction for the binding energy of the atomic electrons. The microscopic energy $S(N, Z, \epsilon_1)$ is discussed in the next section. The complete expression for the binding energy is

$$B(Z, A, \epsilon_1) = \alpha A - \beta (N-Z)^2 / A + \frac{1}{1 + \zeta B_s(\epsilon_1) / A^{1/3}} \\ - \gamma A^{2/3} B_s(\epsilon_1) + \phi A^{1/3} B_k(\epsilon_1) - E_c(Z, A, \epsilon_1) \\ - 35 |N-Z| / A + 14.43 \times 10^{-6} Z^{2.39} + S(N, Z, \epsilon_1). \quad (1)$$

In Eq. (1), the coefficients α , β , ζ , γ , and ϕ are adjustable, as are the Coulomb energy parameter r_0 and the parameters of the shell correction.

Shape dependence is indicated explicitly as dependence on ϵ_i , which is used to represent any generalized parametrization of nuclear shapes. To find ground-state binding, we used the ϵ , ϵ_4 parametrization,⁹ whereas for fission barriers we considered the sequence of idealized liquid-drop saddle-point shapes¹⁶ and used the corresponding fissility parameter x to represent the "deformation." The surface, Coulomb, and curvature shape dependences (B_s , B_c , and B_k , respectively) of the liquid drop are calculated as integrals¹⁹ over the shapes and they are normalized to unity for spherical shapes.

We include a Coulomb energy given by Jänecke¹⁷ in which the direct, exchange, and spin-orbit interaction contributions to the energy have been expanded in powers of the ratio of surface diffuseness to radius, a/R , up to the fourth order. The equivalent radius R is defined as the radius of a uniform spherical charge distribution with the same root mean square radius as the Fermi distribution. To the fourth order in a , it is

$$R = r_0 A^{1/3} \left[1 + \frac{5}{6} \pi^2 \left(\frac{a}{r_0 A^{1/3}} \right)^2 - \frac{7}{24} \pi^4 \left(\frac{a}{r_0 A^{1/3}} \right)^4 \right], \quad (2)$$

where $r_0 A^{1/3}$ is the radius of a nucleus with uniform density distribution.

The expression for the total Coulomb energy is

$$E_c(Z, A, \epsilon_i) = E_{dir}(Z, R) B_c(\epsilon_i) + E_{exch}(Z, R) + E_{s-o}(Z, A, R), \quad (3)$$

where

$$E_{dir}(Z, R) = \frac{3}{5} \frac{Z(Z-1)e^2}{R} \cdot \left[1 + 18.0295 \left(\frac{a}{R} \right)^3 - 85.2330 \left(\frac{a}{R} \right)^4 \right] \quad (4)$$

$$E_{exch}(Z, R) = \frac{1}{2} \pi_{dir} - 3 \left(\frac{3}{16\pi} \right)^{2/3} \frac{e^2 Z^4 / 3}{R} \cdot \left[1 - 1.3356 \left(\frac{a}{R} \right) + 7.1270 \left(\frac{a}{R} \right)^2 - 18.2104 \left(\frac{a}{R} \right)^3 \right] \quad (5)$$

$$E_{s-o}(Z, A, R) = (0.0369 A - 0.0805 Z) \frac{2}{R^3} \cdot \left[1 + \pi^2 \left(\frac{a}{R} \right)^2 \right]. \quad (6)$$

This form differs from earlier work only in the value of a (0.513 fm), inclusion of terms above second

order, and in the separation of the shape-dependent part.

MICROSCOPIC ENERGY

Calculation of the shell and deformation term $S(N, Z, \epsilon_i)$ proceeds in three steps: determination of the Nilsson-model levels,⁹ normalization by the Strutinsky procedure,¹¹ and calculation of the Bardeen-Cooper-Schreiffer (BCS) ground states.²⁰ An important consideration in selecting a model to be used for the mass formula is that a single determination of the correction term must be applicable to a large number of nuclei over a wide range of A . The parametrization of this model allows the correction term to be a sum of a function of Z plus a function of N , and scales in a simple way with A . Complete details of the model are given in Ref. 15.

The model-derived shell correction at $N = 126$ is not large enough; and because this obvious error seriously affects the statistical procedures used to determine the liquid-drop coefficients, it is necessary to include an arbitrary increase of S at $N = 126$ for spherical nuclei. A triangular function $\Delta S_{126}(N)$, which is 0 for $N \leq 108$ or $N \geq 144$ and is 3 MeV at $N = 126$, was found to improve the fit markedly. The total microscopic contribution to the binding energy is

$$S(N, Z, \epsilon_i) = V_n / A^{1/3} [\delta U(N) + P(N)] + V_p / A^{1/3} [\delta U(Z) + P(Z)] + \Delta S_{126}(N), \quad (7)$$

where V_n and V_p are adjustable parameters.

CALCULATIONAL METHODS

To determine the ground state of nucleus (Z, A) , assuming that all parameters and coefficients are known, Eq. (1) is solved for every shape in the ϵ_i family. In this work, we include values of the Nilsson parameter ϵ between -0.35 and $+0.35$, and ϵ_4 principally between -0.08 and $+0.08$. Having found the stationary point, we also know the deformation (ϵ, ϵ_4) or (α_2, α_4) , the odd neutron and/or odd proton spin and parity (from the Nilsson level diagrams), the individual shape-dependent terms B_s , B_c , and B_k , and the neutron and proton shell and pairing energies.

For fission barrier (saddle point) calculations, Eq. (1) [omitting $S(N, Z, \epsilon_1)$] is solved for each possible shape; for fission barriers, we use the Cohen and Swiatecki shapes¹⁸ for x between 0.56 and 1.00. We do not have solutions for $S(N, Z, x)$; however, the shapes for $x > 0.85$ correspond closely to calculated Nilsson shapes. We find that shell effects are about 30% as strong at $x = 0.85$ as they are for spherical nuclei. Further, the effect of strong shells would be reduced by alternate fission paths, and by averaging over all available data any systematic errors will be minimized. We also note that strong even-odd effects persist, which (in the absence of BCS solutions) we approximate by the traditional $\delta_b/\sqrt{A}$. Because only the macroscopic portion of the barrier is included, this model cannot be used for barrier shape calculations.

After the stationary point for the peak of the barrier is found and all terms are interpolated to that value of x , the ground state is found as above. After the difference of each term in Eq. (1) is found, the formula for the barrier height is

$$E_b(Z, A) = E_{\text{dir}}(Z, R) [B_c(\hat{x}) - B_c(\hat{\epsilon})] + \gamma A^{2/3} [B_s(\hat{x}) - B_s(\hat{\epsilon})] - \phi A^{1/3} [B_k(\hat{x}) - B_k(\hat{\epsilon})] + \beta (N - Z)^2 / A \left[\frac{1}{1 + \zeta B_s(\hat{x})/A^{1/3}} - \frac{1}{1 + \zeta B_s(\hat{\epsilon})/A^{1/3}} \right] + S(N, Z, \hat{\epsilon}) - \delta_b [2 - (Z \bmod 2) - (N \bmod 2)] / \sqrt{A}, \quad (8)$$

where $\hat{\epsilon}$ and $\hat{x}$ represent ground-state and saddle-point equilibrium shapes, respectively, and δ_b is an adjustable parameter giving the pairing strength at the barrier.

The parameters were fitted by an iterative least-squares procedure (described fully in Ref. 15) to 1553 experimental ground-state binding energies²¹ and to 61 fission-barrier heights.²²⁻²⁴ The resulting values of the nine adjustable parameters are given in Table I.

The standard deviation of the errors of the calculated ground-state binding energies is 0.704 MeV. Figure 1 shows that some systematic errors remain; however, the frequency distribution of the residuals (summed over A) is "perfectly" normal by a χ^2 -test. None of the input data are inconsistent with the result. The standard deviation of the errors of the calculated barriers is 0.795 MeV, and all input data are consistent with the calculated values. In large

measure, the errors in the calculated barriers are correlated with ground-state errors.

TABLE I. MASS FORMULA COEFFICIENTS

α	15.2568	$\pm$ 0.0031	MeV
β	33.166	$\pm$ 0.016	MeV
γ	17.073	$\pm$ 0.028	MeV
ζ	3.28	$\pm$ 0.21	
r_0	1.2254	$\pm$ 0.0014	fm
ϕ	- 0.76	$\pm$ 0.11	MeV
V_n	35.37	$\pm$ 0.34	MeV
V_p	31.08	$\pm$ 0.40	MeV
δ_b	9.75	$\pm$ 0.77	MeV

Fig. 1. Residual errors of calculated ground-state binding energies vs neutron number N . Isotopes of each element are connected by lines. Standard deviation is 0.704 MeV; note residual systematic deviations vs both N (e.g., near $N = 80$) and Z (e.g., near $Z = 120$).

CALCULATED NUCLEAR PROPERTIES

The mass formula has been used to calculate properties of 8001 nuclei with $22 \leq Z \leq 120$ and $22 \leq N \leq 200$. Table II includes proton number Z , neutron number N , mass number A , total ground-state binding energy B.E. (MeV), binding energy of a spherical nucleus without shell correction B_0 (MeV), separation energies of the last proton (SP), last neutron (SN), and alpha particle (SA) in MeV, energy available for negative beta decay QB (MeV), fission barrier height BAR (MeV), fissility (saddle-point shape) parameter x , shell correction (including deformation and pairing energies) S (MeV), ground-state shape coefficients of Legendre polynomials P_2 and P_4 (columns headed A_2 and A_4), and, finally, the quantum numbers for the odd proton and/or odd neutron (columns headed P and N , respectively).

Values allowed for saddle-point shapes are in the $0.56 \leq x \leq 1.00$ range. If a smaller x is estimated, then it and the barrier height are omitted. Because of the different methods for calculating ground states and saddle points, some negative barriers occur in the table, particularly for x close to unity.

If the shape coefficient α_2 (A2) is less than 0.01, the shape is set to spherical: $\alpha_2 = 0$ and α_4 is blank. If no equilibrium ground-state shape is found, the word "UNSTABLE" is inserted, and the nuclear properties of a spherical nucleus (without shell correction) are given.

For spherical nuclei, the l and j quantum numbers of the odd nucleons are shown. For deformed nuclei, j^π of the odd nucleons are given. No attempt has been made to couple the last proton and last neutron in odd-odd nuclei.

The data in Table II are available on 12.7 mm magnetic computer tape, and a copy can be obtained by sending a blank tape to the authors. Unless otherwise requested, the tape will be copied as seven track, 556 bpi, even parity. The tape differs from the table in two respects.

1. Neutron number N is omitted, and
2. The flag for unstable nuclei is that A2 is blank.

Each line of the table is an 80-column card image that may be read with

FORMAT(2I3, 7F6.0, 4F5.0, 2A6).

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TABLE II. CALCULATED NUCLEAR PROPERTIES

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
22	22	44	376.7	375.6	8.38	16.07	7.00-14.13				1.05	C			
22	23	45	386.1	387.0	9.19	9.41	7.69 -6.67				-0.89	C			F 7/2
22	24	46	399.1	397.6	10.00	13.02	7.94 -7.65				1.47	C			
22	25	47	407.7	407.7	10.75	8.60	8.85 -2.62				.06	C			F 7/2
22	26	48	419.7	417.0	11.57	11.97	9.42 -5.07				2.65	C			
22	27	49	427.6	425.8	12.32	7.91	10.37 -3.38				1.51	.043	-.006		7/2-
22	28	50	438.3	434.1	13.10	10.74	10.68 -2.39				4.27	C			
22	29	51	444.3	441.8	13.76	5.91	10.30 3.13				2.51	.020	.002		1/2-
22	30	52	452.3	449.0	14.51	8.03	9.02 1.80				3.32	C			
22	31	53	457.0	455.7	15.19	4.67	9.35 5.85				1.28	C			P 3/2
22	32	54	464.2	461.9	15.89	7.20	9.89 4.08				2.22	C			
22	33	55	467.5	467.8	16.60	3.34	10.01 8.60				-0.09	.044	.009		1/2-
22	34	56	474.2	473.1	17.19	6.68	10.88 6.00				1.03	C			
22	35	57	476.8	478.1	17.80	2.61	11.57 10.72				-1.36	C			F 5/2
22	36	58	482.8	482.7	18.42	6.05	12.21 7.97				.08	C			
22	37	59	484.9	487.0	19.03	2.11	13.06 12.52				-1.97	-.026	-.007		3/2-
22	38	60	490.5	490.9	19.63	5.56	13.83 9.74				-.37	C			
22	39	61	492.2	494.4	20.19	1.66	14.67 14.24				-1.92	-.066	.003		5/2+
22	40	62	497.3	497.6	20.80	5.14	15.45 11.49				-.34	C			
22	41	63	498.7	500.6	21.39	1.40	16.42 15.72				-.74	-.113	-.023		7/2+
22	42	64	503.3	503.2	21.93	4.60	17.02 13.13				.14	C			
22	43	65	504.5	505.5	22.42	1.17	17.87 17.08				.71	-.132	-.041		5/2+
22	44	66	508.7	507.5	23.03	4.19	18.66 14.64				1.14	C			
22	45	67	509.5	509.3	23.56	.87	19.21 18.49				.23	C			G 5/2
22	46	68	513.4	510.8	24.09	3.87	20.23 16.03				2.58	C			
22	47	69	514.1	512.1	24.58	.71	21.14 19.71				2.05	.019	.003		7/2+
22	48	70	517.6	513.1	25.12	3.47	21.77 17.49				4.46	C			
22	49	71	518.2	513.9	25.59	.61	22.74 20.81				4.33	.026	-.000		5/2+
22	50	72	521.2	514.5	26.16	2.96	23.18 19.00				6.67	C			
22	51	73	519.8	514.8	26.52	-1.31	22.28 23.72				5.04	-.016	.006		5/2+
22	52	74	520.4	515.0	27.02	.51	20.76 22.41				5.39	C			
22	53	75	518.5	514.9	27.46	-1.84	21.21 25.23				3.61	C			D 5/2
22	54	76	518.7	514.6	27.91	.24	21.86 23.65				4.10	C			
22	55	77	516.5	514.2	28.28	-2.22	22.42 26.55				2.42	.011	.021		3/2+
22	56	78	516.4	513.6	28.67	-.13	22.95 24.96				2.84	C			
22	57	79	513.6	512.7	29.09	-2.81	23.38 28.13				1.15	.030	-.038		1/2+
22	58	80	513.3	511.7	29.45	-.32	23.95 26.22				3.19	.132	.061		
22	59	81	510.8	510.6	30.09	-2.43	25.27 28.93				2.33	.102	.092		5/2+
22	60	82	510.6	509.3	30.45	-.27	26.09 27.36				3.36	.142	.075		
22	61	83	507.7	507.8	30.76	-2.82	26.74 30.18				1.73	-.096	.087		1/2+
22	62	84	506.9	506.1	31.34	-.80	27.00 28.55				3.04	.171	.064		
22	63	85	503.8	504.3	31.95	-3.12	27.39 31.31				1.32	.170	.046		5/2+
22	64	86	502.9	502.4	32.20	-.91	28.12 29.45				2.19	.173	.032		
22	65	87	499.7	500.3	32.51	-3.18	28.80 32.07				1.28	.190	.073		5/2+

Z	N	A	R.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
22	66	88	498.6	498.1	32.70	-1.10	29.35	30.23			2.17	.183	.C11		
22	67	89	495.4	495.8	32.89	-3.22	30.04	32.79			1.42	.192	-.C04		1/2+
22	68	90	494.2	493.3	33.10	-1.22	30.46	30.98			2.67	.190	-.C15		
22	69	91	491.0	490.7	33.39	-3.17	31.09	33.30			2.22	.196	-.C27		7/2-
22	70	92	489.4	487.6	33.71	-1.60	31.28	37.02			3.45	-.187	-.C42		
22	71	93	485.8	485.1	34.05	-3.59	31.57	34.36			2.90	-.192	-.C48		5/2-
22	72	94	483.6	482.1	34.43	-2.19	31.58	33.35			3.16	-.174	-.C39		
22	73	95	479.7	479.0	35.13	-3.90	31.91	35.53			1.78	.146	-.C36		5/2-
22	74	96	477.8	475.8	35.38	-1.94	32.95	33.89			2.78	-.112	-.C42		
22	75	97	473.9	472.5	35.72	-3.87	33.89	36.09			2.14	-.102	-.C46		5/2-
22	76	98	472.0	469.0	36.05	-1.95	34.64	34.52			3.48	-.092	-.C42		
22	77	99	468.1	465.5	36.36	-3.68	35.33	36.78			3.07	-.087	-.C42		3/2-
23	22	45	378.6	379.3	1.95	16.87	7.07-12.11				-.71	C		F 7/2	
23	23	46	390.7	393.1	4.59	12.04	7.64	-6.48			-1.53	.091	.C35	3/2-	3/2-
23	24	47	404.3	404.5	5.20	13.63	7.72	-7.45			-.06	.048	.C05	3/2-	
23	25	48	413.9	415.3	6.11	9.52	8.64	-.92			-.59	.080	.C17	3/2-	5/2-
23	26	49	426.4	425.5	6.75	12.60	9.02	-3.21			.93	C		F 7/2	
23	27	50	435.2	435.1	7.57	8.74	9.91	1.40			.19	.034	.C01	3/2-	7/2-
23	28	51	446.6	444.0	8.27	11.43	10.19	-.59			2.56	C		F 7/2	
23	29	52	453.3	452.5	9.05	6.70	9.73	4.89			.88	.027	.C02	3/2-	1/2-
23	30	53	462.0	460.4	9.74	8.72	8.49	3.57			1.63	C		F 7/2	
23	31	54	467.5	467.8	10.50	5.43	8.67	7.58			-.33	.C18	.C02	3/2-	3/2-
23	32	55	475.3	474.7	11.16	7.86	9.24	5.81			.56	C		F 7/2	
23	33	56	479.4	481.2	11.90	4.09	9.33	10.28			-1.75	.C34	.C01	3/2-	1/2-
23	34	57	486.7	487.3	12.54	7.32	10.16	7.68			-.54	.C18	-.C06	3/2-	
23	35	58	490.0	492.5	13.24	3.30	10.83	12.35			-2.83	.C34	.C01	3/2-	3/2-
23	36	59	496.7	498.2	13.85	6.67	11.40	9.64			-1.43	.C27	-.C04	3/2-	
23	37	60	499.5	503.0	14.52	2.78	12.19	14.13			-3.25	-.C63	-.C07	5/2-	3/2-
23	38	61	505.6	507.5	15.17	6.16	12.92	11.36			-1.62	-.C60	-.C07	5/2-	
23	39	62	508.0	511.7	15.85	2.39	13.80	15.71			-2.99	-.091	-.C11	5/2-	3/2-
23	40	63	513.6	515.5	16.33	5.63	14.47	13.02			-1.19	-.C85	-.C13	5/2-	
23	41	64	515.7	519.0	16.95	2.01	15.38	17.24			-2.20	-.107	-.C22	5/2-	7/2+
23	42	65	520.8	522.2	17.47	5.12	15.97	14.69			-1.26	.C35	.C04	3/2-	
23	43	66	522.5	525.0	18.04	1.75	16.91	18.65			-1.10	-.122	-.C32	5/2-	5/2+
23	44	67	527.2	527.6	18.58	4.72	17.57	16.15			-.27	.C36	.C02	3/2-	
23	45	68	528.7	529.9	19.12	1.41	18.30	20.06			-1.17	.C36	.C04	3/2-	5/2+
23	46	69	533.0	532.0	19.63	4.38	19.10	17.61			1.10	.C21	.C01	3/2-	
23	47	70	534.3	533.8	20.17	1.24	20.01	21.26			.61	.C33	.C01	3/2-	7/2+
23	48	71	538.2	535.3	20.64	3.94	20.61	19.08			2.94	C		F 7/2	
23	49	72	539.4	536.6	21.18	1.15	21.54	22.37			2.86	.C31	-.C02	3/2-	5/2+
23	50	73	542.8	537.6	21.63	3.41	22.03	20.58			5.15	C		F 7/2	
23	51	74	542.0	538.5	22.14	-.80	21.08	25.29			3.55	-.C16	.C07	5/2-	5/2+
23	52	75	543.0	539.1	22.60	.98	19.67	23.98			3.88	C		F 7/2	
23	53	76	541.6	539.5	23.11	-1.34	19.99	26.77			2.17	.C16	.C05	3/2-	3/2+
23	54	77	542.3	539.7	23.54	.67	20.65	25.20			2.62	C		F 7/2	
23	55	78	540.6	539.7	24.04	-1.72	21.22	28.07			1.02	.C14	.C23	7/2-	3/2+

Z	N	A	B.E.	BC	SP	SN	SA	CP	BAR	X	S	A2	A4	P	N
23	56	79	540.9	539.5	24.53	.36	21.79	26.40			1.55	.C09	.C22	7/2-	
23	57	80	538.7	539.1	25.11	-2.23	22.16	29.37			1.86	.102	.C92	3/2-	3/2+
23	58	81	539.0	538.5	25.72	.28	22.96	27.19			2.44	.125	.C73	3/2-	
23	59	82	537.1	537.8	26.31	-1.84	24.35	29.69			1.70	.145	.C76	3/2-	3/2-
23	60	83	537.1	536.5	26.58	.00	25.04	28.13			2.48	.143	.C74	3/2-	
23	61	84	534.7	535.8	26.97	-2.43	25.68	30.99			1.11	.134	.C80	3/2-	3/2+
23	62	85	534.3	534.5	27.41	-.36	25.94	29.34			1.87	.154	.C64	3/2-	
23	63	86	531.6	533.1	27.76	-2.77	26.31	32.27			.30	.162	.C49	3/2-	5/2+
23	64	87	531.0	531.6	28.10	-.57	27.12	30.43			1.13	.161	.C43	3/2-	
23	65	88	528.1	529.9	28.35	-2.93	27.91	33.31			.01	.182	.C23	3/2-	5/2+
23	66	89	527.4	528.1	28.78	-.66	28.41	31.58			1.18	.197	.C07	3/2-	
23	67	90	524.4	526.1	28.98	-3.03	28.88	34.26			-.01	.181	.C04	3/2-	1/2+
23	68	91	523.5	524.0	29.35	-.85	29.32	32.53			1.20	.177	-.C12	3/2-	
23	69	92	520.6	521.7	29.63	-2.89	29.83	34.99			1.04	.198	-.C33	3/2-	7/2-
23	70	93	519.4	519.3	29.98	-1.25	30.01	33.77			1.76	.130	-.C27	3/2-	
23	71	94	516.2	516.8	30.37	-3.20	30.28	36.03			.94	.173	-.C30	3/2-	5/2+
23	72	95	514.5	514.2	30.84	-1.72	30.47	34.88			1.52	.154	-.C30	1/2-	
23	73	96	510.9	511.4	31.17	-3.57	30.83	37.04			.57	.142	-.C34	1/2-	9/2-
23	74	97	509.2	508.5	31.43	-1.68	31.73	35.47			1.44	-.107	-.C40	5/2-	
23	75	98	505.7	505.6	31.78	-3.52	32.81	37.45			.86	-.C98	-.C45	5/2-	5/2-
23	76	99	504.1	502.4	32.12	-1.62	33.38	35.88			2.21	-.C91	-.C41	5/2-	
23	77	100	500.5	499.2	32.45	-3.55	34.04	38.14			1.82	-.C36	-.C41	5/2-	3/2-
23	78	101	498.6	495.9	32.76	-1.96	34.34	36.89			2.92	-.C67	-.C29	7/2-	
24	22	46	383.4	382.1	4.79	17.67	6.76	-17.16			1.31	C			
24	23	47	396.1	396.7	5.40	12.65	7.16	-11.38			-.50	.C34	.C01		3/2-
24	24	48	412.1	410.4	7.82	16.06	7.15	-13.82			1.75	.C20	.C01		
24	25	49	422.4	422.0	8.61	10.31	8.05	-7.35			.99	.C84	.C13		5/2-
24	26	50	435.8	432.9	9.36	13.35	8.39	-8.10			2.88	C			
24	27	51	445.2	443.2	10.07	9.45	9.23	-3.62			2.11	.C34	.C01		7/2-
24	28	52	457.4	452.9	10.81	12.17	9.43	-5.50			4.48	C			
24	29	53	464.8	462.1	11.51	7.40	8.92	-.09			2.77	.024	.C02		1/2-
24	30	54	474.2	470.7	12.22	9.44	7.61	-1.39			2.54	C			
24	31	55	480.3	478.8	12.99	6.09	7.79	2.65			1.52	C		P 3/2	
24	32	56	488.9	486.4	13.58	8.55	8.31	.90			2.45	C			
24	33	57	493.6	493.6	14.23	4.73	8.37	5.40			.11	.C34	.C01		1/2-
24	34	58	501.6	500.3	14.87	7.96	9.14	2.93			1.27	C			
24	35	59	505.5	506.6	15.52	3.96	9.75	7.52			-.58	.C28	-.C08		3/2-
24	36	60	512.8	512.5	16.13	7.27	10.34	4.86			.37	.C16	-.C04		
24	37	61	516.2	518.0	16.74	3.38	11.12	9.38			-1.47	-.C58	-.C08		3/2-
24	38	62	522.9	523.1	17.31	6.74	11.81	6.67			-.12	C			
24	39	63	525.9	527.8	17.87	2.95	12.64	11.06			-1.00	-.104	-.C13		9/2+
24	40	64	532.1	532.2	18.47	6.23	13.31	8.46			-.03	-.C26	-.C01		
24	41	65	534.7	536.3	19.03	2.57	14.22	12.67			-.62	-.101	-.C23		7/2+
24	42	66	540.4	540.0	19.61	5.71	14.78	10.12			.42	.C15	-.C00		
24	43	67	542.6	543.4	20.09	2.23	15.61	14.14			.90	-.130	-.C37		5/2+
24	44	68	547.9	546.6	20.68	5.32	16.33	11.60			1.41	.C22	.C01		

Z	N	A	R.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
24	45	69	549.9	549.4	21.21	1.93	17.09	15.51			.47	0			G 9/2
24	46	70	554.8	552.0	21.72	4.90	17.80	13.11			2.80	0			
24	47	71	556.5	554.3	22.23	1.75	18.68	16.74			2.30	.026	.003		7/2+
24	48	72	561.0	556.3	22.74	4.45	19.26	14.57			4.66	0			
24	49	73	562.6	558.1	23.21	1.62	20.17	17.88			4.55	.025	-.001		9/2+
24	50	74	566.5	559.6	23.70	3.90	20.61	16.11			6.85	0			
24	51	75	566.2	560.9	24.18	-.33	19.67	20.82			5.24	-.016	.007		5/2+
24	52	76	567.6	562.0	24.65	1.45	18.16	15.55			5.57	0			
24	53	77	566.7	562.9	25.09	-.90	18.56	22.36			3.81	0			D 9/2
24	54	78	567.8	563.5	25.56	1.14	19.20	20.79			4.30	0			
24	55	79	566.5	564.0	25.98	-1.30	19.74	23.70			2.65	.013	.021		3/2+
24	56	80	567.3	564.2	26.36	.74	20.24	22.13			3.04	0			
24	57	81	565.4	564.3	26.69	-1.91	20.56	25.28			1.44	.034	.036		1/2+
24	58	82	566.0	564.2	27.07	.67	21.36	23.11			2.52	.119	.060		
24	59	83	564.5	563.8	27.35	-1.56	22.61	25.80			2.95	.150	.066		3/2-
24	60	84	564.9	563.3	27.78	.43	23.36	24.01			2.80	.154	.063		
24	61	85	562.9	562.7	28.20	-2.00	23.79	26.96			2.78	.171	.064		3/2+
24	62	86	563.1	561.8	28.72	.16	24.22	25.37			2.23	.163	.047		
24	63	87	560.7	560.8	29.08	-2.41	24.62	28.28			1.79	.165	.041		5/2-
24	64	88	560.6	559.7	29.59	-.05	25.37	26.46			2.75	.173	.026		
24	65	89	558.2	558.4	30.13	-2.40	26.10	29.27			2.05	.202	.002		5/2+
24	66	90	557.9	556.9	30.45	-.34	26.66	27.55			2.71	.176	.008		
24	67	91	555.3	555.3	30.90	-2.58	27.26	30.28			1.92	.187	-.004		1/2+
24	68	92	554.9	553.5	31.32	-.43	27.94	28.53			3.22	.183	-.015		
24	69	93	552.4	551.6	31.73	-2.48	28.68	30.95			2.80	.191	-.026		7/2-
24	70	94	551.4	549.6	32.04	-.94	28.95	29.76			3.70	.183	-.027		
24	71	95	548.6	547.4	32.38	-2.87	29.26	32.06			2.84	.175	-.031		5/2+
24	72	96	547.2	545.2	32.69	-1.42	29.45	30.96			3.37	.157	-.030		
24	73	97	543.9	542.7	33.01	-3.25	29.79	33.14			2.38	.145	-.035		9/2-
24	74	98	542.4	540.2	33.15	-1.54	30.44	31.75			2.98	-.106	-.040		
24	75	99	539.2	537.6	33.48	-3.19	31.16	33.64			2.38	-.098	-.043		5/2-
24	76	100	537.9	534.8	33.80	-1.29	31.80	31.97			3.72	-.090	-.040		
24	77	101	534.7	531.9	34.13	-3.23	32.44	34.25			3.33	-.085	-.040		3/2-
24	78	102	533.0	528.9	34.46	-1.65	32.75	33.00			4.38	-.062	-.026		
24	79	103	529.7	525.8	34.78	-3.27	33.36	34.94			4.13	-.050	-.021		1/2-
25	22	47	383.9	384.0	.49	18.43	7.02	-15.32			-.04	0		F 7/2	
25	23	48	397.5	399.3	1.45	13.61	7.47	-9.68			-1.14	.087	.023	5/2-	3/2-
25	24	49	414.3	413.8	2.18	16.78	7.38	-12.23			.95	.083	.013	5/2-	
25	25	50	426.9	427.6	4.48	12.60	7.94	-7.25			.17	.110	.007	5/2-	5/2-
25	26	51	440.8	439.3	5.05	13.93	8.24	-8.02			1.55	0		F 7/2	
25	27	52	451.1	450.3	5.89	10.30	9.01	-2.01			1.01	.052	-.006	5/2-	7/2-
25	28	53	463.9	460.8	6.52	12.80	9.21	-3.88			2.16	0		F 7/2	
25	29	54	472.1	470.7	7.27	8.14	8.61	1.56			1.45	.025	.002	5/2-	1/2-
25	30	55	482.2	480.0	7.96	10.13	7.31	.25			2.24	0		F 7/2	
25	31	56	489.0	488.8	8.67	6.80	7.41	4.28			.24	0		F 7/2	P 3/2
25	32	57	498.2	497.1	9.34	9.23	7.92	2.53			1.17	0		F 7/2	

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAK	X	S	A2	A4	P	N
25	33	58	503.7	504.9	10.11	5.49	7.98	6.92			-.90	.056	-.005	5/2-	1/2-
25	34	59	512.3	512.2	10.69	8.55	8.67	4.42			.05	.014	-.005	5/2-	
25	35	60	516.9	519.2	11.35	4.62	9.20	9.06			-2.12	.042	-.008	5/2-	3/2-
25	36	61	524.8	525.7	11.98	7.90	9.78	6.38			-.82	-.026	-.001	3/2-	
25	37	62	528.8	531.6	12.63	4.04	10.51	10.87			-2.68	-.056	-.005	3/2-	7/2-
25	38	63	536.2	537.5	13.22	7.34	11.18	8.15			-1.22	-.033	.001	3/2-	
25	39	64	539.8	542.8	13.90	3.62	12.03	12.48			-1.37	.144	.016	5/2-	3/2+
25	40	65	546.6	547.6	14.46	6.79	12.65	9.74			-.08	.119	.013	5/2-	
25	41	66	549.7	552.4	15.05	3.16	13.42	14.04			-1.37	.128	.014	5/2-	5/2+
25	42	67	556.0	556.7	15.58	6.24	14.03	11.41			-.17	.085	.011	5/2-	
25	43	68	558.7	560.7	16.13	2.78	14.80	15.54			-1.20	.097	.010	5/2-	1/2-
25	44	69	564.6	564.4	16.67	5.85	15.53	12.98			.45	.053	.007	5/2-	
25	45	70	567.1	567.8	17.22	2.49	16.27	16.91			-.45	.051	.008	5/2-	5/2+
25	46	71	572.5	570.8	17.70	5.37	16.92	14.55			1.64	.017	.001	5/2-	
25	47	72	574.7	573.7	18.23	2.28	17.79	18.19			1.22	.041	.001	5/2-	7/2+
25	48	73	579.7	576.2	18.72	4.94	18.34	16.02			3.47	C		F 7/2	
25	49	74	581.8	578.5	19.23	2.13	19.23	19.34			3.40	.031	-.002	5/2-	5/2+
25	50	75	586.2	580.5	19.71	4.38	19.67	17.55			5.66	C		F 7/2	
25	51	76	586.4	582.3	20.22	.18	18.71	22.25			4.09	-.017	.007	3/2-	5/2+
25	52	77	588.3	583.9	20.68	1.91	17.21	20.98			4.41	C		F 7/2	
25	53	78	587.9	585.2	21.16	-.42	17.58	23.80			2.65	C		F 7/2 D	5/2
25	54	79	589.5	586.3	21.62	1.61	18.21	22.24			3.15	C		F 7/2	
25	55	80	588.6	587.2	22.09	-.83	18.72	25.12			1.54	.013	.023	3/2-	3/2+
25	56	81	589.9	587.9	22.59	1.24	19.29	23.38			2.06	.008	.021	3/2-	
25	57	82	588.4	588.4	23.00	-1.50	19.51	26.61			.36	.035	.038	7/2-	1/2+
25	58	83	589.5	588.7	23.45	1.12	20.28	24.40			1.94	.117	.032	5/2-	
25	59	84	588.1	588.8	23.66	-1.36	21.15	27.20			1.21	.136	.056	5/2-	3/2-
25	60	85	589.1	588.7	24.17	.95	21.82	25.04			2.28	.151	.047	5/2-	
25	61	86	587.6	588.4	24.74	-1.43	22.22	27.81			1.25	.166	.045	5/2-	7/2+
25	62	87	588.1	588.0	25.09	.50	22.72	26.23			2.03	.161	.037	5/2-	
25	63	88	586.3	587.4	25.63	-1.87	23.28	28.89			.91	.176	.026	5/2-	5/2-
25	64	89	586.7	586.6	26.09	.42	24.05	27.02			2.07	.181	.014	5/2-	
25	65	90	584.6	585.7	26.43	-2.06	24.76	29.91			.93	.182	.015	5/2-	5/2+
25	66	91	584.8	584.6	26.92	.15	25.48	28.11			1.92	.173	.003	5/2-	
25	67	92	582.6	583.4	27.32	-2.18	26.23	30.86			1.21	.185	-.007	5/2-	1/2+
25	68	93	582.6	582.0	27.69	-.05	26.84	29.19			2.49	.181	-.018	5/2-	
25	69	94	580.4	580.5	28.03	-2.14	27.73	31.70			2.31	.198	-.032	5/2-	7/2-
25	70	95	579.8	578.8	28.41	-.57	28.01	30.43			2.97	.181	-.026	5/2-	
25	71	96	577.3	577.0	28.77	-2.51	28.39	32.82			2.12	.175	-.029	5/2-	5/2+
25	72	97	576.3	575.1	29.11	-1.07	28.57	31.75			2.70	.160	-.029	5/2-	
25	73	98	573.3	573.0	29.43	-2.93	28.85	33.97			1.65	.148	-.033	5/2-	5/2-
25	74	99	572.0	570.8	29.67	-1.30	29.27	32.72			2.31	.134	-.032	5/2-	
25	75	100	569.1	568.5	29.90	-2.96	29.88	34.74			1.40	-.097	-.043	3/2-	5/2-
25	76	101	568.1	566.0	30.23	-.95	30.60	33.05			2.73	-.085	-.035	3/2-	
25	77	102	565.2	563.5	30.57	-2.90	31.23	35.35			2.34	-.085	-.035	3/2-	3/2-
25	78	103	563.9	560.8	30.89	-1.32	31.52	34.09			3.35	-.062	-.026	3/2-	
25	79	104	560.9	558.0	31.21	-2.95	32.12	36.18			3.13	-.051	-.022	3/2-	1/2-

Z	N	A	B.E.	BC	SP	SN	SA	CP	BAR	X	S	A2	A4	P	N
25	80	105	560.2	555.1	31.49	- .78	33.32	34.24			5.06	C		F 7/2	
25	81	106	557.2	552.1	31.80	-2.94	33.97	36.89			5.14	.C17	-.CC5	5/2-	11/2-
26	22	48	387.1	384.9	3.15	19.25	7.02	-20.04			2.13	C			
26	23	49	401.3	401.1	3.77	14.23	7.26	-14.29			.27	.C18	.CC3		3/2-
26	24	50	418.9	416.4	4.57	17.58	7.16	-16.81			2.52	C			
26	25	51	432.0	430.9	5.12	13.16	7.67	-11.62			1.19	.C24	.CC2		5/2-
26	26	52	448.3	444.7	7.50	16.31	7.92	-13.96			3.66	C			
26	27	53	459.3	456.5	8.14	10.93	8.54	-7.97			3.05	.C56	-.C14		7/2-
26	28	54	472.9	467.6	8.92	13.58	8.77	-8.55			5.23	C			
26	29	55	481.7	478.2	9.59	8.82	8.13	-3.18			3.51	.C20	.CC1		1/2-
26	30	56	492.5	488.2	10.29	10.83	6.79	-4.38			4.25	C			
26	31	57	500.0	497.7	10.97	7.48	6.87	-.41			2.25	C			P 3/2
26	32	58	509.9	506.7	11.63	9.88	7.32	-2.08			3.21	C			
26	33	59	515.9	515.1	12.19	6.05	7.28	2.38			.95	.C45	.CC6		1/2-
26	34	60	525.2	523.1	12.90	9.26	7.99	-.05			2.04	C			
26	35	61	530.4	530.7	13.49	5.22	8.47	4.55			-.30	C			F 5/2
26	36	62	538.9	537.8	14.12	8.53	9.03	1.95			1.10	C			
26	37	63	543.5	544.5	14.70	4.61	9.69	6.44			-1.00	C			F 5/2
26	38	64	551.5	550.8	15.32	7.95	10.37	3.69			.65	C			
26	39	65	555.5	556.8	15.75	4.06	11.04	8.20			-1.22	C			P 1/2
26	40	66	563.0	562.3	16.41	7.45	11.75	5.43			.67	C			
26	41	67	566.6	567.5	16.86	3.61	12.42	9.82			-.77	-.C41	-.CC7		5/2+
26	42	68	573.5	572.4	17.54	6.91	13.10	7.08			1.13	C			
26	43	69	576.8	576.9	18.05	3.29	13.82	11.28			-.05	.C17	.CCC		3/2+
26	44	70	583.2	581.1	18.62	6.42	14.54	8.71			2.05	C			
26	45	71	586.2	585.0	19.14	3.01	15.33	12.65			1.20	C			G 5/2
26	46	72	592.2	588.6	19.69	5.92	15.92	10.27			3.50	C			
26	47	73	594.9	592.0	20.17	2.77	16.75	13.92			2.97	.C17	.CC3		7/2+
26	48	74	600.4	595.0	20.69	5.45	17.31	11.79			5.34	C			
26	49	75	603.0	597.8	21.15	2.59	18.15	15.05			5.21	.C26	-.CCC		5/2+
26	50	76	607.8	600.3	21.65	4.88	18.58	13.35			7.51	C			
26	51	77	608.5	602.6	22.10	.64	17.60	17.90			5.90	-.C14	.CC7		5/2+
26	52	78	610.9	604.6	22.60	2.40	16.10	16.76			6.24	C			
26	53	79	610.9	606.4	23.06	.04	16.47	19.56			4.45	C			D 5/2
26	54	80	613.0	608.0	23.51	2.05	17.08	18.06			4.97	C			
26	55	81	612.5	609.3	23.83	-.51	17.47	21.07			3.11	C			D 5/2
26	56	82	614.2	610.5	24.33	1.74	18.06	19.43			3.72	C			
26	57	83	613.1	611.4	24.74	-1.09	18.27	22.64			2.00	.C26	.C34		1/2+
26	58	84	614.6	612.1	25.06	1.45	18.98	20.50			2.55	-.CCC	.C25		
26	59	85	613.3	612.7	25.21	-1.21	19.67	23.62			2.50	-.C91	.C77		7/2+
26	60	86	614.7	613.0	25.59	1.33	20.34	21.38			3.46	-.C87	.C77		
26	61	87	613.6	613.2	25.95	-1.08	20.82	24.20			2.63	-.C96	.C87		1/2+
26	62	88	614.4	613.1	26.24	.79	21.19	22.78			3.06	.156	.C31		
26	63	89	612.9	612.6	26.65	-1.46	21.73	25.35			2.14	.180	.C17		5/2-
26	64	90	613.8	612.5	27.07	.83	22.40	23.18			3.05	.165	.C10		
26	65	91	612.1	612.0	27.48	-1.65	23.16	25.99			2.15	.180	.CC6		5/2+

L	N	A	R.E.	BC	SP	SN	SA	CE	EA	X	S	A2	A4	P	N
26	66	92	612.7	611.3	27.90	.57	23.78	24.27			3.30	.175	-.006		
26	67	93	611.0	610.4	28.35	-1.72	24.46	26.80			2.65	.184	-.016		1/2+
26	68	94	611.3	609.4	28.78	.38	25.17	25.18			4.12	.185	-.026		
26	69	95	609.5	608.3	29.08	-1.84	25.92	27.60			3.42	.187	-.025		7/2-
26	70	96	609.4	607.0	29.53	-.12	26.22	26.42			4.46	.177	-.033		
26	71	97	607.2	605.5	29.90	-2.14	26.56	28.73			3.65	.172	-.034		5/2+
26	72	98	606.5	603.9	30.25	-.72	26.79	27.55			4.19	.156	-.034		
26	73	99	604.0	602.2	30.64	-2.55	27.11	25.96			3.19	.146	-.037		5/2-
26	74	100	603.0	600.4	31.00	-.94	27.59	28.77			3.82	.129	-.036		
26	75	101	600.4	598.4	31.32	-2.64	28.19	31.01			2.81	-.094	-.040		5/2-
26	76	102	599.8	596.3	31.67	-.60	29.13	29.45			4.14	-.084	-.035		
26	77	103	597.2	594.0	31.98	-2.59	29.73	31.78			3.74	-.080	-.036		3/2-
26	78	104	596.3	591.7	32.44	-.87	30.16	30.44			4.67	C			
26	79	105	593.6	589.2	32.68	-2.71	30.67	32.61			4.43	C			D 3/2
26	80	106	593.3	586.6	33.16	-.30	32.02	30.54			6.72	C			
26	81	107	590.5	583.9	33.31	-2.79	32.50	33.18			6.62	C			D 3/2
26	82	108	590.1	581.1	33.76	-.43	33.13	31.37			5.00	C			
27	22	49	386.2	385.1	-8.84	19.98	7.33	-18.60			1.26	.035	-.002	7/2-	
27	23	50	401.3	401.9	-.01	15.06	7.51	-12.86			-.59	.034	.001	7/2-	3/2-
27	24	51	419.6	418.0	.76	16.35	7.43	-15.47			2.01	.067	-.016	7/2-	
27	25	52	433.6	433.3	1.57	13.96	7.78	-10.38			.54	.056	-.004	7/2-	5/2-
27	26	53	450.5	447.6	2.18	16.92	7.92	-12.66			2.88	.047	-.008	7/2-	
27	27	54	463.5	461.6	4.24	13.00	8.31	-7.94			1.97	.034	.001	7/2-	7/2-
27	28	55	477.7	473.5	4.85	14.19	8.57	-8.54			4.24	.019	.004	7/2-	
27	29	56	487.3	484.8	5.66	9.63	7.41	-1.85			2.68	.038	-.003	7/2-	1/2-
27	30	57	498.8	495.5	6.29	11.46	6.56	-3.14			3.40	.032	-.001	7/2-	
27	31	58	507.0	505.6	7.01	8.20	6.62	.88			1.50	.037	-.008	7/2-	3/2-
27	32	59	517.5	515.2	7.65	10.51	7.00	-.79			2.41	.035	-.010	7/2-	
27	33	60	524.3	524.4	8.43	6.63	7.04	3.56			.18	.050	-.006	7/2-	1/2-
27	34	61	534.2	533.0	8.98	9.81	7.62	1.04			1.23	.034	.001	7/2-	
27	35	62	540.1	541.2	9.69	5.93	8.06	5.69			.92	.045	-.012	7/2-	3/2-
27	36	63	549.2	548.9	10.27	9.10	8.61	3.08			.40	.043	-.006	7/2-	
27	37	64	554.4	556.3	10.86	5.20	9.20	7.61			-1.74	.038	-.005	7/2-	5/2-
27	38	65	562.9	563.2	11.47	8.56	9.86	4.88			-.06	.042	-.004	7/2-	
27	39	66	567.6	569.7	12.10	4.68	10.51	9.32			-1.81	.051	-.005	7/2-	1/2-
27	40	67	575.6	575.8	12.65	8.00	11.17	6.56			.04	.050	-.008	7/2-	
27	41	68	579.8	581.6	13.21	4.17	11.72	10.96			-1.66	.034	.001	7/2-	1/2+
27	42	69	587.3	587.0	13.79	7.49	12.43	8.16			.51	.045	-.006	7/2-	
27	43	70	591.1	592.1	14.35	3.85	13.12	12.37			-.77	.044	-.003	7/2-	3/2+
27	44	71	598.1	596.8	14.88	6.95	13.33	9.79			1.47	.045	-.006	7/2-	
27	45	72	601.6	601.3	15.40	3.54	14.60	13.74			.53	.044	-.002	7/2-	5/2+
27	46	73	608.1	605.4	15.90	6.41	15.16	11.40			2.78	.035	-.003	7/2-	
27	47	74	611.4	609.2	16.46	3.32	15.99	15.01			2.34	.045	-.007	7/2-	7/2+
27	48	75	617.2	612.8	16.86	5.85	16.47	12.93			4.47	.022	.001	7/2-	
27	49	76	620.4	616.1	17.45	3.18	17.37	16.20			4.45	.037	-.006	7/2-	9/2+
27	50	77	625.6	619.1	17.75	5.18	17.62	14.57			6.50	C		F 7/2	

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
27	51	78	626.8	621.8	18.37	1.26	16.74	19.18			5.07	.024	.008	7/2-	1/2+
27	52	79	629.7	624.3	18.82	2.84	15.21	17.85			5.35	.020	.006	7/2-	
27	53	80	630.3	626.6	19.33	.56	15.59	20.72			2.71	.028	.002	7/2-	3/2+
27	54	81	632.7	628.6	19.78	2.50	16.17	19.21			4.17	.026	.005	7/2-	
27	55	82	632.9	630.4	20.39	.10	16.70	22.07			2.55	.017	.022	5/2-	3/2+
27	56	83	635.0	632.0	20.77	2.12	17.21	20.36			2.08	.015	.022	5/2-	
27	57	84	634.3	633.4	21.16	-.70	17.34	23.68			1.65	-.022	.057	5/2-	1/2+
27	58	85	636.2	634.5	21.63	1.91	18.02	21.42			1.86	.015	.030	5/2-	
27	59	86	635.3	635.5	21.93	-.92	18.60	24.71			1.60	-.064	.083	5/2-	7/2+
27	60	87	637.0	636.2	22.34	1.74	19.22	22.29			2.57	-.064	.083	5/2-	
27	61	88	635.9	636.8	22.30	-1.12	19.46	25.50			.75	-.125	.050	5/2-	1/2+
27	62	89	637.5	637.2	23.11	1.61	20.12	23.59			2.07	-.064	.083	5/2-	
27	63	90	636.2	637.4	23.23	-1.34	20.21	26.46			.51	-.064	.083	5/2-	3/2+
27	64	91	637.3	637.4	23.57	1.17	20.88	24.36			1.32	.144	.005	7/2-	
27	65	92	636.2	637.3	24.06	-1.15	21.60	26.93			1.24	.185	.006	1/2-	5/2+
27	66	93	637.0	636.9	24.30	.81	21.99	25.04			1.52	.150	-.005	7/2-	
27	67	94	635.7	636.5	24.78	-1.24	22.81	27.57			1.64	.192	-.010	1/2-	1/2+
27	68	95	636.3	635.8	24.98	.58	23.24	25.94			2.47	.210	-.033	7/2-	
27	69	96	635.0	635.0	25.52	-1.30	24.12	28.34			2.45	.194	-.027	1/2-	7/2-
27	70	97	635.2	634.1	25.81	.17	24.34	27.02			2.53	.191	-.031	1/2-	
27	71	98	633.3	633.0	26.05	-1.90	24.58	29.51			2.15	.166	-.031	7/2-	5/2+
27	72	99	633.2	631.8	26.63	-.14	25.01	28.27			2.72	.135	-.030	7/2-	
27	73	100	631.0	630.4	27.05	-2.13	25.39	30.49			1.88	.133	-.032	7/2-	5/2-
27	74	101	630.6	628.9	27.58	-.40	26.06	29.11			2.52	-.092	-.037	1/2-	
27	75	102	628.5	627.2	28.07	-2.16	26.83	31.63			2.00	-.085	-.035	1/2-	5/2-
27	76	103	628.2	625.5	28.41	-.26	27.87	30.06			2.33	-.075	-.035	1/2-	
27	77	104	626.0	623.5	28.79	-2.21	28.62	32.42			2.11	-.081	-.040	1/2-	3/2-
27	78	105	625.5	621.5	29.11	-.54	29.04	31.08			4.15	-.051	-.021	1/2-	
27	79	106	623.1	619.4	29.46	-2.37	29.57	33.60			3.75	.026	-.003	7/2-	3/2+
27	80	107	622.9	617.1	29.60	-.16	30.73	31.69			5.83	C		F 7/2	
27	81	108	620.7	614.7	30.16	-2.24	31.45	34.25			6.00	.021	.000	7/2-	11/2-
27	82	109	620.3	612.2	30.22	-.37	31.86	32.45			8.11	C		F 7/2	
27	83	110	616.0	609.6	30.54	-4.30	30.51	36.92			6.42	C		F 7/2	F 7/2
28	22	50	387.6	384.4	1.41	20.79	7.15-24.36				3.24	C			
28	23	51	403.4	402.0	2.10	15.75	7.28-18.74				1.36	C			F 7/2
28	24	52	422.4	418.8	2.80	19.05	7.07-21.12				3.61	C			
28	25	53	437.1	434.8	3.47	14.64	7.49-16.10				2.25	C			F 7/2
28	26	54	454.8	450.1	4.28	17.72	7.63-18.38				4.72	C			
28	27	55	468.4	464.6	4.87	13.59	8.06-12.75				3.83	.022	.003		7/2-
28	28	56	484.7	478.4	7.00	16.32	8.07-15.66				6.26	C			
28	29	57	494.9	490.4	7.54	10.17	7.30 -8.98				4.47	C			P 3/2
28	30	58	507.1	501.8	8.31	12.22	5.95 -8.97				5.32	C			
28	31	59	515.9	512.6	8.94	8.84	5.97 -5.01				2.34	C			P 3/2
28	32	60	527.1	522.9	9.60	11.18	6.32 -6.50				4.24	C			
28	33	61	534.4	532.6	10.08	7.30	6.14 -2.01				1.82	.015	-.007		1/2-
28	34	62	545.0	541.9	10.84	10.58	6.84 -4.50				2.08	C			

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
28	35	63	551.5	550.7	11.39	6.49	7.27	-.01			.76	C			F 5/2
28	36	64	561.2	559.1	12.03	9.73	7.74	-2.59			2.14	C			
28	37	65	567.0	567.0	12.66	5.83	8.36	1.92			.06	C			F 5/2
28	38	66	576.2	574.5	13.22	9.12	8.96	-.71			1.68	C			
28	39	67	581.4	581.6	13.78	5.24	9.59	2.74			-.18	C			P 1/2
28	40	68	590.0	588.3	14.35	8.57	10.21	1.04			1.65	C			
28	41	69	594.7	594.6	14.87	4.70	10.85	5.43			.05	-.021	-.003		9/2+
28	42	70	602.7	600.6	15.44	8.06	11.45	2.72			2.13	C			
28	43	71	607.1	606.2	15.96	4.37	12.22	6.89			.88	C			G 5/2
28	44	72	614.6	611.5	16.49	7.49	12.79	4.35			3.08	C			
28	45	73	618.7	616.5	17.03	4.08	13.58	8.28			2.15	C			G 5/2
28	46	74	625.6	621.1	17.55	6.93	14.09	5.96			4.47	C			
28	47	75	629.4	625.5	18.00	3.77	14.84	5.61			3.85	C			G 5/2
28	48	76	635.8	629.5	18.60	6.46	15.38	7.50			6.25	C			
28	49	77	639.4	633.3	18.97	3.55	16.16	10.80			6.05	.015	.002		9/2+
28	50	78	645.2	636.8	19.65	5.87	16.58	9.09			8.42	C			
28	51	79	646.8	640.1	19.91	1.52	15.51	12.75			6.71	C			D 5/2
28	52	80	650.2	643.0	20.50	3.43	14.06	12.56			7.16	C			
28	53	81	651.2	645.8	20.93	.99	14.41	15.35			5.42	C			D 5/2
28	54	82	654.1	648.2	21.39	2.96	14.97	13.90			5.90	C			
28	55	83	654.5	650.5	21.69	.40	15.33	17.07			4.05	C			D 5/2
28	56	84	657.2	652.5	22.20	2.62	15.90	15.40			4.65	C			
28	57	85	656.8	654.3	22.55	-.35	16.06	18.75			2.65	-.013	.025		1/2+
28	58	86	659.2	655.9	23.02	2.38	16.70	16.67			3.29	C			
28	59	87	658.5	657.3	23.25	-.68	17.12	20.05			2.11	-.053	.054		11/2-
28	60	88	660.6	658.5	23.59	2.08	17.76	17.87			3.15	-.066	.056		
28	61	89	660.3	659.4	24.41	-.30	18.67	20.77			3.21	-.096	.087		1/2+
28	62	90	661.8	660.2	24.34	1.53	18.87	19.08			3.44	-.064	.083		
28	63	91	660.9	660.8	24.74	-.94	19.01	22.25			1.88	-.064	.083		3/2+
28	64	92	662.3	661.3	25.00	1.42	19.64	20.33			2.26	-.093	.052		
28	65	93	661.2	661.5	25.07	-1.08	20.01	23.24			1.78	.172	.010		5/2+
28	66	94	662.5	661.6	25.55	1.29	20.47	21.31			2.65	.160	.001		
28	67	95	661.5	661.5	25.74	-1.05	21.07	24.07			2.20	.175	-.013		1/2+
28	68	96	662.6	661.2	26.25	1.09	21.59	22.24			3.54	.178	-.020		
28	69	97	661.4	660.8	26.41	-1.14	22.18	24.82			2.70	.173	-.020		7/2-
28	70	98	662.0	660.2	26.83	.59	22.39	23.52			3.84	.173	-.020		
28	71	99	660.6	659.5	27.35	-1.38	22.85	25.81			3.17	.165	-.030		5/2+
28	72	100	660.7	658.6	27.58	.09	23.06	24.65			3.57	.141	-.025		
28	73	101	658.9	657.6	27.92	-1.79	23.41	26.93			2.65	.132	-.030		9/2-
28	74	102	659.3	656.4	28.69	.36	24.49	25.12			3.54	-.083	-.030		
28	75	103	657.5	655.1	29.02	-1.82	25.22	27.57			3.03	-.082	-.033		5/2-
28	76	104	657.6	653.6	29.43	.15	26.30	25.93			4.38	-.065	-.028		
28	77	105	655.7	652.1	29.75	-1.89	27.06	28.23			4.08	-.064	-.025		3/2-
28	78	106	655.9	650.4	30.45	.16	27.82	26.51			5.53	C			
28	79	107	652.8	648.6	30.75	-2.07	28.34	28.77			5.25	C			D 3/2
28	80	108	654.2	646.6	31.23	.32	29.52	26.80			7.56	C			
28	81	109	652.0	644.5	31.30	-2.16	30.07	29.46			7.46	C			D 3/2

Z	N	A	B.E.	BC	SP	SN	SA	CE	BAR	X	S	A2	A4	P	N
28	82	110	652.2	642.3	31.84	.17	30.54	27.67			9.82	0			
28	83	111	648.2	640.0	32.15	-3.99	29.34	31.93			6.13	0			F 7/2
28	84	112	645.8	637.6	32.45	-2.36	27.42	30.80			6.19	0			
28	85	113	641.6	635.1	32.62	-4.20	27.84	32.77			6.52	0			F 7/2
29	22	51	383.9	382.9	-3.77	21.37	5.84	-22.86			1.12	.036	.024	1/2-	
29	23	52	400.5	401.3	-2.85	16.67	5.99	-17.34			-.43	.055	.027	1/2-	3/2-
29	24	53	420.2	418.8	-2.24	19.66	5.68	-19.75			1.63	.046	.024	1/2-	
29	25	54	435.6	435.6	-1.44	15.44	6.06	-14.74			.35	.054	.023	1/2-	7/2-
29	26	55	453.9	451.5	-.94	18.22	5.92	-16.82			2.51	.036	.017	1/2-	
29	27	56	468.3	466.7	-.13	14.40	6.36	-12.17			1.61	.034	.001	1/2-	7/2-
29	28	57	485.1	481.3	.41	16.85	6.30	-13.93			3.85	-.014	.005	5/2-	
29	29	58	497.3	495.1	2.47	12.23	5.53	-8.59			2.34	.033	.013	1/2-	1/2-
29	30	59	510.1	507.2	3.05	12.80	4.14	-8.56			2.04	-.016	.012	5/2-	
29	31	60	519.8	518.6	3.90	9.69	4.20	-3.57			1.36	.025	.023	1/2-	3/2-
29	32	61	531.6	529.6	4.51	11.79	4.54	-5.19			2.21	.022	.023	1/2-	
29	33	62	539.7	540.0	5.30	8.09	4.42	-.82			-.03	.041	.020	1/2-	1/2-
29	34	63	550.7	549.9	5.70	10.98	4.89	-3.11			.96	.030	.017	1/2-	
29	35	64	557.8	559.3	6.36	7.15	5.20	1.48			-1.37	.034	.001	1/2-	3/2-
29	36	65	568.2	568.3	6.97	10.35	5.73	-1.11			.19	-.054	-.007	5/2-	
29	37	66	574.7	576.8	7.62	6.49	6.29	3.33			-1.87	-.052	.004	5/2-	3/2-
29	38	67	584.4	584.9	8.19	9.69	6.88	.70			-.28	-.050	.002	5/2-	
29	39	68	590.2	592.5	8.63	5.88	7.56	5.09			-1.97	-.062	.002	5/2-	9/2+
29	40	69	599.3	599.8	9.34	9.08	8.08	2.44			-.39	-.033	.001	5/2-	
29	41	70	604.7	606.7	9.99	5.35	8.74	6.78			-1.94	-.033	.001	5/2-	9/2+
29	42	71	613.2	613.2	10.48	8.55	9.29	4.13			.28	-.055	-.008	5/2-	
29	43	72	618.2	619.4	11.05	4.95	10.06	8.26			-1.01	-.049	-.006	5/2-	7/2+
29	44	73	626.2	625.2	11.57	8.01	10.58	5.75			1.12	.041	.011	1/2-	
29	45	74	630.8	630.7	12.11	4.62	11.34	9.65			.27	.042	.014	1/2-	5/2+
29	46	75	638.2	635.9	12.60	7.42	11.81	7.37			2.43	.033	.007	1/2-	
29	47	76	642.5	640.7	13.17	4.34	12.61	10.99			1.92	.036	.007	1/2-	7/2+
29	48	77	649.4	645.3	13.57	6.85	13.05	8.96			4.13	.019	.005	1/2-	
29	49	78	653.6	649.6	14.18	4.16	13.88	12.22			4.07	.031	.002	1/2-	9/2+
29	50	79	659.7	653.6	14.49	6.18	14.21	10.62			6.17	0		F 5/2	
29	51	80	662.0	657.3	15.21	2.24	13.26	15.17			4.75	-.019	.009	5/2-	5/2+
29	52	81	665.7	660.7	15.55	3.78	11.86	13.98			5.10	.021	.013	1/2-	
29	53	82	667.3	663.9	16.08	1.51	12.11	16.75			3.52	.024	.023	1/2-	3/2+
29	54	83	670.8	666.9	16.69	3.57	12.84	15.11			4.14	.023	.023	1/2-	
29	55	84	671.8	669.6	17.24	.96	13.24	18.04			2.42	.022	.026	1/2-	3/2+
29	56	85	674.8	672.0	17.62	3.00	13.74	16.37			2.96	.022	.027	1/2-	
29	57	86	675.1	674.3	18.27	.30	13.94	19.58			1.22	.034	.036	1/2-	1/2+
29	58	87	677.8	676.3	18.59	2.70	14.53	17.59			1.85	.034	.034	1/2-	
29	59	88	677.7	678.1	19.18	-.09	15.13	20.82			.40	.083	.034	1/2-	1/2-
29	60	89	680.3	679.7	19.68	2.59	15.81	18.77			2.04	-.089	.060	5/2-	
29	61	90	680.1	681.1	19.83	-.15	16.57	21.93			.87	-.136	.042	1/2-	1/2+
29	62	91	682.4	682.3	20.53	2.23	17.06	20.01			1.65	-.096	.062	5/2-	
29	63	92	681.9	683.3	20.96	-.50	17.68	23.11			.14	-.134	.029	5/2-	1/2+

Z	N	A	R.E.	BC	SP	SN	SA	QB	EA	X	S	A2	A4	P	N
29	64	93	693.7	684.1	21.37	1.83	17.90	21.21			.86	-.111	.C4C	5/2-	
29	65	94	683.1	684.7	21.82	-.64	16.60	24.18			-.12	.143	.C23	7/2-	5/2+
29	66	95	684.8	685.2	22.24	1.71	19.15	22.33			1.15	.145	.C07	1/2-	
29	67	96	684.0	685.5	22.55	-.74	19.56	25.11			.47	.166	-.C02	1/2-	1/2+
29	68	97	685.5	685.6	22.90	1.44	20.20	23.31			1.76	.164	-.C11	1/2-	
29	69	98	684.8	685.5	23.33	-.71	20.73	25.84			2.31	.204	-.C38	1/2-	7/2-
29	70	99	685.7	685.3	23.65	.91	21.06	24.60			3.00	.190	-.C34	1/2-	
29	71	100	684.6	684.9	23.96	-1.07	21.29	26.94			1.77	.172	-.C27	1/2-	5/2+
29	72	101	685.1	684.4	24.36	.45	21.60	25.74			2.07	.135	-.C24	1/2-	
29	73	102	683.6	683.7	24.70	-1.44	22.06	27.99			1.16	.132	-.C26	1/2-	5/2-
29	74	103	684.3	682.9	24.97	.63	22.83	26.26			2.08	-.C93	-.C27	5/2-	
29	75	104	682.8	682.0	25.30	-1.49	23.47	28.53			1.54	-.C90	-.C30	5/2-	5/2-
29	76	105	683.2	680.9	25.56	.41	24.28	26.97			2.91	-.C75	-.C30	5/2-	
29	77	106	681.6	679.6	25.89	-1.56	24.88	29.27			2.56	-.C75	-.C31	5/2-	3/2-
29	78	107	681.8	678.3	25.92	.19	25.33	27.85			3.59	-.C18	.C02	5/2-	
29	79	108	680.2	676.8	26.34	-1.65	25.88	30.08			3.48	-.C30	-.C05	5/2-	1/2-
29	80	109	680.7	675.1	26.52	.50	26.93	28.18			5.54	C		F 5/2	
29	81	110	679.0	673.4	27.06	-1.62	27.67	30.75			5.65	.C20	.C02	1/2-	11/2-
29	82	111	679.3	671.5	27.15	.27	28.09	28.96			7.81	C		F 5/2	
29	83	112	675.8	669.5	27.66	-3.48	26.85	33.24			6.34	-.C14	.C07	5/2-	7/2-
29	84	113	673.6	667.4	27.79	-2.23	24.98	32.12			6.20	C		F 5/2	
29	85	114	670.0	665.2	28.38	-3.60	25.68	33.98			4.91	.C23	.C21	1/2-	3/2-
29	86	115	667.8	662.8	28.64	-2.25	26.09	32.65			5.01	.C23	.C23	1/2-	
30	22	52	382.4	380.7	-1.46	22.18	4.42-27.41				1.67	C			
30	23	53	399.7	399.8	-.57	17.76	4.53-21.84				-.05	.C38	.C08		3/2-
30	24	54	420.1	418.1	-.08	20.45	4.18-24.14				2.05	C			
30	25	55	436.3	435.5	.62	16.13	4.57-19.14				1.00	.C55	.C12		5/2-
30	26	56	455.3	452.1	1.45	19.06	4.58-21.21				3.17	C			
30	27	57	470.4	468.1	2.14	15.09	5.03-16.82				2.57	.C51	-.C10		7/2-
30	28	58	488.0	483.3	2.86	17.56	4.87-18.48				4.71	C			
30	29	59	500.8	497.8	3.46	12.83	4.12-13.26				3.05	.C22	.C02		1/2-
30	30	60	515.5	511.7	5.33	14.68	2.48-14.37				3.80	C			
30	31	61	525.7	523.8	5.82	10.17	2.48 -9.27				1.85	C			P 3/2
30	32	62	538.1	535.4	6.49	12.46	2.72 -9.68				2.75	C			
30	33	63	546.8	546.4	7.09	8.69	2.57 -5.33				.65	.C54	.C17		1/2-
30	34	64	558.5	556.9	7.85	11.74	3.13 -7.56				1.61	C			
30	35	65	566.3	567.0	8.46	7.76	3.58 -3.08				-.63	.C15	-.C01		3/2-
30	36	66	577.2	576.5	9.03	10.92	3.93 -5.58				.70	C			
30	37	67	584.3	585.6	9.60	7.06	4.50 -1.11				-1.31	-.C16	-.C05		3/2-
30	38	68	594.5	594.3	10.19	10.27	5.04 -3.58				.26	C			
30	39	69	601.0	602.5	10.74	6.43	5.64 .80				-1.23	-.C62	-.C01		5/2+
30	40	70	610.7	610.4	11.34	9.68	6.20 -1.72				.28	0			
30	41	71	616.6	617.8	11.89	5.90	6.86 2.51				-1.10	-.C43	-.C04		5/2+
30	42	72	625.6	624.9	12.42	9.08	7.36 .01				.74	C			
30	43	73	631.1	631.6	12.97	5.50	8.16 3.88				-.44	.C15	.C01		3/2+
30	44	74	639.7	638.0	13.49	8.52	8.62 1.53				1.69	C			

Z	N	A	B.E.	BO	SP	SN	SA	CE	BAR	X	S	A2	A4	P	N
3C	45	75	644.8	644.C	14.01	5.14	9.39	5.33			.81	C			G 9/2
3C	46	76	652.7	649.7	14.54	7.95	9.85	3.05			3.08	C			
3C	47	77	657.6	655.C	15.03	4.82	10.60	6.64			2.57	.C1E	.CC4		7/2+
3C	48	78	665.0	660.1	15.59	7.42	11.08	4.58			4.89	C			
3C	49	79	669.6	664.9	16.01	4.58	11.90	7.87			4.76	.C2E	.CC0		9/2+
3C	50	80	676.4	669.3	16.62	6.79	12.23	6.22			7.12	C			
3C	51	81	678.9	673.5	16.98	2.59	11.27	10.84			5.45	-.C14	.CC7		5/2+
3C	52	82	683.2	677.4	17.48	4.28	9.69	9.65			5.78	C			
3C	53	83	685.2	681.1	17.90	1.94	10.11	12.47			4.06	C			D 5/2
3C	54	84	689.0	684.5	18.21	3.88	10.56	11.02			4.54	C			
3C	55	85	690.4	687.7	18.59	1.33	10.90	14.02			2.71	C			D 5/2
3C	56	86	693.9	690.6	19.10	3.51	11.45	12.42			3.31	C			
3C	57	87	694.6	693.3	19.51	.71	11.75	15.60			1.65	.C31	.C31		1/2+
3C	58	88	697.7	695.7	19.95	3.14	12.28	13.58			2.15	-.C00	.C22		
3C	59	89	698.3	697.9	20.57	.53	13.16	16.70			1.95	-.C01	.C63		11/2-
3C	60	90	701.3	700.C	20.99	3.01	13.79	14.89			3.19	-.103	.C65		
3C	61	91	701.6	701.8	21.46	.31	14.78	18.03			1.87	-.131	.C54		1/2+
3C	62	92	704.2	703.4	21.83	2.60	15.29	16.44			2.74	-.104	.C67		
3C	63	93	704.1	704.8	22.26	-.07	15.52	19.25			1.20	-.093	.C71		1/2+
3C	64	94	706.4	706.C	22.76	2.33	16.32	17.36			2.25	.146	.C27		
3C	65	95	706.3	707.C	23.26	-.14	17.12	20.21			1.93	.192	.CC3		5/2+
3C	66	96	708.4	707.8	23.59	2.04	17.74	18.41			2.43	.163	.C04		
3C	67	97	708.0	708.5	23.97	-.36	18.47	21.26			1.64	.173	-.C06		1/2+
3C	68	98	709.8	709.C	24.34	1.81	18.99	19.54			2.94	.171	-.C14		
3C	69	99	709.5	709.3	24.73	-.33	19.71	22.08			3.20	.200	-.C34		7/2-
3C	70	100	710.8	709.5	25.09	1.27	19.90	20.86			3.97	.186	-.C32		
3C	71	101	710.0	709.5	25.45	-.71	20.32	23.23			2.84	.174	-.C29		5/2+
3C	72	102	710.8	709.3	25.76	.80	20.53	22.09			3.13	.144	-.C27		
3C	73	103	709.8	709.C	26.11	-1.10	20.82	24.32			2.20	.135	-.C30		9/2-
3C	74	104	710.5	708.5	26.25	.77	21.50	22.80			2.84	-.C95	-.C29		
3C	75	105	709.4	707.9	26.60	-1.15	22.14	24.83			2.29	-.C91	-.C32		5/2-
3C	76	106	710.1	707.1	26.93	.74	22.52	23.27			3.69	-.C82	-.C33		
3C	77	107	708.9	706.2	27.27	-1.22	23.12	25.58			3.32	-.C77	-.C34		7/2-
3C	78	108	709.5	705.2	27.65	.58	23.55	24.11			4.29	C			
3C	79	109	708.1	704.C	27.89	-1.41	24.03	26.22			4.05	C			D 7/2
3C	80	110	709.0	702.7	28.35	.96	24.82	24.28			6.31	C			
3C	81	111	707.5	701.3	28.45	-1.52	25.37	27.00			6.22	C			D 7/2
3C	82	112	708.3	699.7	28.97	.79	25.84	25.18			8.57	C			
3C	83	113	704.9	698.C	29.10	-3.36	24.65	29.47			6.90	C			F 7/2
3C	84	114	703.2	696.2	29.59	-1.74	22.73	28.18			6.96	C			
3C	85	115	699.6	694.3	29.62	-3.58	23.15	30.33			5.30	C			F 7/2
3C	86	116	697.7	692.3	29.96	-1.90	23.60	28.98			5.43	C			
3C	87	117	693.9	690.1	30.20	-3.84	23.96	31.22			3.74	C			F 7/2
3C	88	118	692.0	687.9	30.46	-1.88	24.59	29.57			4.52	.C54	.C39		
31	22	53	377.0	377.8	-5.36	22.83	4.51-25.32				-.66	.C40	-.C0E	3/2-	
31	23	54	395.2	397.6	-4.47	18.15	4.41-19.95				-1.82	.C95	.C16	3/2-	3/2-

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
31	24	55	416.3	416.5	-3.79	21.13	4.16-22.08				.24	.085	.001	3/2-	
31	25	56	433.3	434.7	-2.93	16.99	4.49-17.37				-.67	.101	.004	3/2-	5/2-
31	26	57	452.8	452.0	-2.51	19.49	4.31-19.16				1.02	.053	-.005	3/2-	
31	27	58	468.7	468.6	-1.70	15.90	4.77-15.02				.37	.056	-.012	3/2-	7/2-
31	28	59	486.8	484.5	-1.22	18.05	4.60-16.52				2.30	0		F 5/2	
31	29	60	500.3	499.6	-.48	13.57	3.77-11.38				.83	.043	-.005	3/2-	1/2-
31	30	61	515.6	514.2	.12	15.28	2.20-12.45				1.42	C		F 5/2	
31	31	62	527.7	528.1	2.01	12.05	2.02 -8.57				.45	.072	-.044	3/2-	3/2-
31	32	63	540.7	540.3	2.58	13.03	2.25 -8.96				.40	C		F 5/2	
31	33	64	550.2	551.9	3.39	9.50	2.07 -3.66				-1.45	.058	-.013	3/2-	1/2-
31	34	65	562.4	563.1	3.90	12.24	2.51 -5.80				-.48	.040	-.013	3/2-	
31	35	66	570.8	573.7	4.55	8.42	2.84 -1.39				-2.52	-.064	.007	3/2-	1/2-
31	36	67	582.4	583.5	5.17	11.53	3.40 -3.88				-.99	-.077	.005	3/2-	
31	37	68	590.2	593.6	5.91	7.81	4.06 .44				-2.51	-.100	.011	3/2-	5/2+
31	38	69	601.0	602.8	6.45	10.81	4.52 -1.94				-1.08	-.093	.005	3/2-	
31	39	70	608.2	611.6	7.17	7.15	5.19 2.24				-2.51	-.107	.003	3/2-	3/2-
31	40	71	618.3	620.0	7.63	10.13	5.63 -.11				-.93	-.098	-.002	3/2-	
31	41	72	624.9	628.0	8.31	6.58	6.23 3.92				-2.10	-.111	-.007	3/2-	7/2+
31	42	73	634.2	635.7	8.60	9.37	6.62 1.73				-1.04	-.066	.003	3/2-	
31	43	74	640.4	642.5	9.27	6.17	7.44 5.43				-1.24	-.115	-.017	3/2-	5/2+
31	44	75	649.3	649.8	9.68	8.94	7.83 3.22				-.23	.050	-.005	3/2-	
31	45	76	655.0	656.3	10.22	5.67	8.55 6.94				-1.05	.050	-.004	3/2-	5/2+
31	46	77	663.4	662.5	10.68	8.42	8.96 4.71				.99	.030	-.005	3/2-	
31	47	78	668.8	668.4	11.21	5.35	9.70 8.26				.49	.034	.001	3/2-	7/2+
31	48	79	676.7	673.9	11.67	7.87	10.16 6.26				2.70	C		F 5/2	
31	49	80	681.8	679.2	12.22	5.14	10.95 9.48				2.71	.036	-.007	3/2-	5/2+
31	50	81	689.0	684.2	12.65	7.21	11.31 7.87				4.85	C		F 5/2	
31	51	82	692.1	688.8	13.15	3.09	10.25 12.48				3.31	-.017	.007	3/2-	5/2+
31	52	83	696.8	693.2	13.62	4.75	8.82 11.31				3.63	0		F 5/2	
31	53	84	699.3	697.3	14.12	2.44	9.02 14.08				1.97	.018	-.001	3/2-	3/2+
31	54	85	703.6	701.2	14.56	4.32	9.57 12.63				2.41	C		F 5/2	
31	55	86	705.5	704.8	15.15	1.91	9.97 15.52				.88	.022	-.022	1/2-	5/2+
31	56	87	709.4	708.2	15.53	3.89	10.29 13.92				1.38	.018	-.020	1/2-	
31	57	88	710.5	711.3	15.94	1.12	10.46 17.15				-.31	-.021	.035	1/2-	7/2+
31	58	89	714.2	714.2	16.45	3.65	11.11 15.16				.50	-.033	.035	1/2-	
31	59	90	715.4	716.8	17.11	1.20	12.00 17.99				.61	-.102	.065	5/2-	7/2+
31	60	91	718.8	719.3	17.57	3.46	12.76 16.25				1.93	-.115	.072	5/2-	
31	61	92	719.9	721.5	18.26	1.00	13.86 19.13				.96	-.096	.067	5/2-	1/2+
31	62	93	722.6	723.5	18.39	2.74	14.00 17.70				1.08	-.135	.047	5/2-	
31	63	94	723.0	725.3	18.91	.44	14.60 20.52				-.09	.155	.040	3/2-	5/2-
31	64	95	725.7	726.9	19.29	2.71	15.08 18.68				.78	.155	.026	3/2-	
31	65	96	726.0	728.3	19.67	.24	15.82 21.57				-.22	.168	.013	3/2+	5/2+
31	66	97	728.5	729.6	20.12	2.49	16.49 19.77				.84	.161	.000	3/2-	
31	67	98	728.6	730.6	20.57	.10	17.22 22.49				.25	.175	-.011	3/2-	1/2+
31	68	99	730.8	731.5	20.97	2.21	17.72 20.79				1.58	.173	-.018	3/2-	
31	69	100	730.8	732.2	21.35	.06	18.52 23.31				1.71	.196	-.034	3/2-	7/2-
31	70	101	732.5	732.7	21.73	1.65	18.72 22.11				2.53	.186	-.033	3/2-	

Z	N	A	B.E.	BC	SP	SN	SA	CP	PAR	X	S	A2	A4	P	N
31	71	102	732.2	733.0	22.11	-.33	19.10	24.42			1.34	.165	-.025	3/2-	5/2+
31	72	103	733.3	733.2	22.44	1.14	19.32	23.32			1.77	.147	-.028	3/2-	
31	73	104	732.5	733.3	22.79	-.74	19.65	25.52			.85	.136	-.032	3/2-	5/2-
31	74	105	733.4	733.1	22.90	.88	20.05	24.22			1.23	-.103	-.027	3/2-	
31	75	106	732.6	732.9	23.23	-.82	20.67	26.21			.63	-.096	-.030	3/2-	5/2-
31	76	107	733.7	732.4	23.58	1.09	21.13	24.59			1.94	-.086	-.027	3/2-	
31	77	108	732.8	731.9	23.90	-.90	21.72	26.90			1.57	-.082	-.029	3/2-	3/2-
31	78	109	733.5	731.2	24.03	.71	22.02	25.64			2.33	0		F 5/2	
31	79	110	732.5	730.3	24.46	-.98	22.59	27.65			2.22	.019	-.007	3/2-	3/2+
31	80	111	733.7	729.4	24.69	1.19	23.59	25.78			4.36	0		F 5/2	
31	81	112	732.7	728.2	25.19	-1.03	24.22	28.34			4.47	.016	-.006	3/2-	11/2-
31	82	113	733.6	727.0	25.33	.94	24.66	26.67			6.63	0		F 5/2	
31	83	114	730.6	725.6	25.66	-3.03	23.25	30.97			4.96	0		F 5/2	F 7/2
31	84	115	729.2	724.1	25.97	-1.43	21.55	29.68			5.03	0		F 5/2	
31	85	116	725.9	722.5	26.29	-3.26	21.78	31.83			3.38	0		F 5/2	F 7/2
31	86	117	724.3	720.8	26.60	-1.60	22.41	30.47			3.52	0		F 5/2	
31	87	118	720.8	718.9	26.91	-3.53	22.49	32.70			1.84	0		F 5/2	F 7/2
31	88	119	719.2	717.0	27.17	-1.62	23.12	31.10			2.63	.056	.040	3/2-	
31	89	120	716.4	714.9	27.76	-2.74	24.45	32.61			3.82	.113	.096	1/2+	3/2-
32	22	54	374.5	374.2	-2.58	23.52	4.69	-29.81			.66	.075	.016		
32	23	55	393.5	354.7	-1.73	19.00	4.94	-24.55			-.40	.102	.032		3/2-
32	24	56	415.2	414.3	-1.16	21.69	4.46	-26.55			1.50	.095	.013		
32	25	57	432.9	433.1	-.45	17.70	4.90	-21.78			.66	.117	.010		5/2-
32	26	58	452.9	451.1	.10	20.04	4.49	-23.35			2.17	.075	-.001		
32	27	59	469.5	468.4	.75	16.55	4.91	-19.24			1.38	.062	-.006		7/2-
32	28	60	488.2	484.9	1.41	18.71	4.56	-20.93			3.28	0			
32	29	61	502.4	500.7	2.04	14.20	3.67	-15.94			1.74	.036	.001		1/2-
32	30	62	518.3	515.9	2.70	15.93	2.04	-16.94			2.40	0			
32	31	63	530.9	530.4	3.29	12.65	1.85	-13.03			.54	.023	-.002		3/2-
32	32	64	545.7	544.4	5.06	14.80	1.98	-14.54			1.37	0			
32	33	65	555.8	556.6	5.66	10.10	1.90	-9.19			-.42	.066	-.006		1/2-
32	34	66	568.7	568.4	6.25	12.83	2.27	-10.08			.46	.046	-.004		
32	35	67	577.7	579.6	6.87	9.04	2.63	-5.70			-1.45	-.073	.005		1/2-
32	36	68	589.8	590.4	7.47	12.13	3.02	-8.10			.10	-.084	.012		
32	37	69	598.3	600.6	8.09	8.43	3.69	-3.82			-1.19	-.114	.015		1/2-
32	38	70	609.6	610.5	8.61	11.33	4.10	-6.04			.07	-.103	.005		
32	39	71	617.4	619.8	9.24	7.78	4.82	-2.02			-1.30	-.116	.002		3/2-
32	40	72	628.0	628.8	9.72	10.62	5.17	-4.30			.16	-.105	-.002		
32	41	73	635.2	637.4	10.32	7.18	5.91	-.33			-.95	-.117	-.006		7/2+
32	42	74	645.0	645.5	10.81	9.86	6.09	-2.48			.17	.085	.005		
32	43	75	651.8	653.3	11.37	6.72	6.92	1.24			-.11	-.121	-.020		5/2+
32	44	76	661.2	660.7	11.83	9.35	7.23	-1.01			.77	.060	.004		
32	45	77	667.4	667.8	12.34	6.19	7.92	2.78			-.10	.055	.006		5/2+
32	46	78	676.3	674.5	12.84	8.91	8.31	.51			1.85	.024	-.000		
32	47	79	682.1	680.8	13.35	5.87	9.04	4.05			1.53	.052	-.002		7/2+
32	48	80	690.5	686.9	13.84	8.36	9.45	2.08			3.60	0			

L	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
32	49	81	696.1	692.6	14.30	5.60	10.22	5.23			3.55	.032	-.003		9/2+
32	50	82	703.8	698.1	14.79	7.71	10.52	3.62			5.73	C			
32	51	83	707.4	703.2	15.27	3.57	9.51	8.23			4.19	-.018	.006		5/2+
32	52	84	712.6	708.1	15.73	5.21	7.93	7.07			4.50	C			
32	53	85	715.5	712.7	16.18	2.88	8.22	9.88			2.80	C			D 5/2
32	54	86	720.3	717.0	16.65	4.80	8.74	8.44			3.28	C			
32	55	87	722.6	721.0	17.03	2.30	9.10	11.40			1.58	.017	.010		5/2+
32	56	88	726.9	724.8	17.49	4.35	9.56	9.80			2.07	C			
32	57	89	728.6	728.4	18.03	1.66	9.90	12.95			.54	.044	.028		1/2+
32	58	90	732.6	731.7	18.41	4.03	10.42	11.04			1.80	-.079	.038		
32	59	91	734.3	734.8	18.93	1.72	11.42	13.98			1.58	-.110	.064		3/2+
32	60	92	738.2	737.6	19.36	3.89	12.17	12.36			2.75	-.118	.064		
32	61	93	739.5	740.3	19.65	1.30	12.94	15.38			1.88	-.096	.087		1/2+
32	62	94	742.8	742.7	20.18	3.26	13.19	13.79			2.12	-.123	.057		
32	63	95	743.6	744.9	20.61	.88	13.75	16.65			1.06	.165	.031		5/2-
32	64	96	746.8	746.9	21.04	3.13	14.28	14.79			2.08	.167	.015		
32	65	97	747.5	748.7	21.48	.69	15.04	17.67			1.07	.174	.012		5/2+
32	66	98	750.3	750.3	21.81	2.82	15.54	15.96			2.03	.166	-.000		
32	67	99	750.8	751.8	22.21	.50	16.18	18.71			1.46	.178	-.012		1/2+
32	68	100	753.4	753.0	22.58	2.58	16.71	17.09			2.80	.177	-.020		
32	69	101	753.8	754.1	22.97	.45	17.52	19.60			2.88	.197	-.034		7/2-
32	70	102	755.8	755.0	23.30	1.98	17.68	18.39			3.29	.175	-.029		
32	71	103	755.8	755.7	23.68	.04	18.05	20.77			2.50	.170	-.030		5/2+
32	72	104	757.3	756.2	23.99	1.45	18.22	19.73			2.92	.151	-.029		
32	73	105	756.9	756.6	24.33	-.41	18.53	21.92			1.95	.142	-.033		5/2-
32	74	106	758.0	756.9	24.61	1.17	18.89	20.69			2.49	.124	-.030		
32	75	107	757.5	756.9	24.89	-.53	19.46	22.69			1.53	-.097	-.032		5/2-
32	76	108	758.9	756.8	25.22	1.42	20.10	20.81			2.81	-.086	-.029		
32	77	109	758.4	756.6	25.56	-.56	20.69	23.12			2.43	-.082	-.030		3/2-
32	78	110	759.4	756.2	25.88	1.03	20.97	21.88			2.14	C			
32	79	111	758.7	755.7	26.19	-.67	21.52	23.90			3.00	.018	-.005		3/2+
32	80	112	760.2	755.1	26.53	1.52	22.47	22.05			5.16	C			
32	81	113	759.5	754.3	26.83	-.72	23.15	24.54			5.25	.017	-.004		11/2-
32	82	114	760.8	753.4	27.16	1.26	23.46	22.88			7.41	C			
32	83	115	758.1	752.3	27.47	-2.71	22.27	27.18			5.75	C			F 7/2
32	84	116	756.9	751.1	27.78	-1.12	20.36	25.91			5.81	C			
32	85	117	754.0	749.8	28.09	-2.95	20.77	28.06			4.17	C			F 7/2
32	86	118	752.7	748.4	28.39	-1.29	21.21	26.72			4.30	C			
32	87	119	749.5	746.9	28.70	-3.22	21.57	28.96			2.63	C			F 7/2
32	88	120	748.3	745.2	29.09	-1.22	22.25	27.27			3.63	.063	.043		
32	89	121	745.6	743.4	29.18	-2.65	23.43	28.96			3.70	.098	.073		3/2-
32	90	122	744.5	741.5	29.43	-1.06	24.25	27.65			4.71	.102	.075		
32	91	123	742.3	739.5	29.99	-2.20	25.38	29.09			5.64	.136	.103		3/2+
33	22	55	368.1	369.9	-6.33	24.26	5.24-27.77				-1.03	.113	.012	1/2-	
33	23	56	387.8	391.1	-5.63	19.70	5.32-22.60				-2.24	.124	.025	1/2-	3/2-
33	24	57	410.3	411.4	-4.86	22.46	4.96-24.69				-.16	.122	.004	1/2-	

Z	N	A	B.E.	B0	SP	SN	SA	CB	RA	X	S	A2	A4	P	N
33	25	58	428.8	430.8	-4.10	18.47	5.28-20.06				-1.00	.130	.000	1/2-	5/2-
33	26	59	449.4	449.5	-3.48	20.65	4.80-21.57				.87	.117	-.013	1/2-	
33	27	60	466.5	467.4	-2.99	17.03	4.85-17.33				-.43	.084	-.012	1/2-	7/2-
33	28	61	485.6	484.6	-2.53	19.18	4.54-18.86				1.07	C		F 5/2	
33	29	62	500.6	501.0	-1.79	14.94	3.58-13.96				-.23	.057	-.005	1/2-	1/2-
33	30	63	517.1	516.9	-1.17	16.55	2.09-14.98				.56	.060	-.009	1/2-	
33	31	64	530.4	532.0	-.52	13.30	1.81-11.12				-1.25	.060	-.016	1/2-	3/2-
33	32	65	545.9	546.6	.13	15.45	1.98-12.64				-.25	.071	-.015	1/2-	
33	33	66	557.8	560.5	1.97	11.94	1.87 -8.58				-1.86	.096	-.023	1/2-	1/2-
33	34	67	571.2	572.9	2.56	13.42	2.25 -9.39				-.83	.095	-.016	1/2-	
33	35	68	581.0	584.7	3.25	9.73	2.48 -4.08				-2.93	.093	-.020	1/2-	3/2-
33	36	69	593.7	596.0	3.83	12.71	2.95 -6.33				-.54	-.135	.031	5/2+	
33	37	70	602.8	606.9	4.51	9.11	3.64 -2.23				-2.18	-.143	.030	5/2+	1/2-
33	38	71	614.6	617.3	4.98	11.80	3.91 -4.35				-.96	-.136	.021	1/2-	
33	39	72	622.9	627.2	5.54	8.34	4.45 -.32				-2.57	-.135	.017	1/2-	3/2-
33	40	73	634.1	636.7	6.06	11.14	4.78 -2.55				-1.32	-.124	.004	1/2-	
33	41	74	641.8	645.8	6.60	7.71	5.34 1.42				-2.66	-.125	-.002	1/2-	7/2+
33	42	75	652.2	654.5	7.18	10.44	5.65 -.75				-1.10	.118	.002	1/2-	
33	43	76	659.4	662.8	7.59	7.14	6.20 3.08				-1.88	-.128	-.018	1/2-	5/2+
33	44	77	669.4	670.7	8.19	9.99	6.82 .85				-.70	.085	-.002	1/2-	
33	45	78	676.0	678.3	8.64	6.64	7.30 4.42				-1.78	.075	.000	1/2-	5/2+
33	46	79	685.4	685.5	9.13	9.40	7.76 2.19				.24	.064	-.005	1/2-	
33	47	80	691.8	692.4	9.66	6.39	8.48 5.71				-.28	.061	-.003	1/2-	7/2+
33	48	81	700.5	698.9	10.05	8.75	8.81 3.84				1.55	C		F 5/2	
33	49	82	706.6	705.2	10.55	6.10	9.56 6.99				1.60	.038	-.005	1/2-	5/2+
33	50	83	714.8	711.1	11.02	8.18	9.87 5.41				2.73	C		F 5/2	
33	51	84	718.9	716.7	11.50	4.05	8.78 9.99				2.15	-.015	-.004	1/2-	5/2+
33	52	85	724.6	722.0	11.98	5.70	7.26 8.83				2.53	C		F 5/2	
33	53	86	727.9	727.1	12.46	3.36	7.53 11.62				.84	C		F 5/2 D 5/2	
33	54	87	733.2	731.8	12.92	5.26	8.03 10.20				1.33	C		F 5/2	
33	55	88	735.9	736.3	13.37	2.75	8.34 13.13				-.38	.015	.006	1/2-	5/2+
33	56	89	740.7	740.6	13.83	4.81	8.83 11.54				.14	C		F 5/2	
33	57	90	742.8	744.6	14.29	2.12	9.03 14.64				-.83	-.071	.042	3/2-	7/2+
33	58	91	747.5	748.3	14.91	4.66	9.80 12.51				.75	-.105	.051	1/2-	
33	59	92	749.8	751.8	15.46	2.27	10.95 15.36				.34	-.127	.063	1/2-	3/2+
33	60	93	754.1	755.1	15.90	4.33	11.62 13.71				1.47	-.130	.064	1/2-	
33	61	94	755.8	758.2	16.27	1.67	12.09 16.78				.33	-.096	.087	5/2+	1/2+
33	62	95	759.5	761.0	16.74	3.73	12.36 15.09				.84	-.140	.052	1/2-	
33	63	96	760.8	763.6	17.14	1.28	12.64 18.01				-.31	.174	.023	1/2-	5/2-
33	64	97	764.4	766.0	17.58	3.57	13.47 16.14				.60	.165	.012	1/2-	
33	65	98	765.5	768.2	18.00	1.11	14.14 18.97				-.28	.178	.007	1/2-	5/2+
33	66	99	768.7	770.2	18.44	3.26	14.69 17.23				.75	.165	-.007	1/2-	
33	67	100	769.7	772.0	18.88	.95	15.39 19.91				.25	.182	-.015	1/2-	1/2+
33	68	101	772.6	773.6	19.27	2.96	15.86 18.30				1.62	.180	-.024	1/2-	
33	69	102	773.4	775.1	19.59	.77	16.53 20.86				1.04	.184	-.024	1/2-	7/2-
33	70	103	775.8	776.3	20.03	2.42	16.74 19.59				2.06	.176	-.031	1/2-	
33	71	104	776.2	777.4	20.40	.41	17.09 21.95				1.27	.171	-.032	1/2-	5/2+

L	N	A	R.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
33	72	105	778.0	778.3	20.73	1.78	17.22	20.93			1.73	.155	-.032	1/2-	
33	73	106	777.9	779.1	21.07	-.06	17.49	23.10			.74	.146	-.035	1/2-	5/2-
33	74	107	779.4	779.7	21.37	1.47	17.83	21.91			1.30	.132	-.032	1/2-	
33	75	108	778.9	780.1	21.44	-.47	18.10	24.17			-.15	-.097	-.033	3/2-	5/2-
33	76	109	780.7	780.3	21.78	1.75	18.97	22.41			1.14	-.087	-.030	3/2-	
33	77	110	780.5	780.5	22.12	-.22	19.58	24.69			.77	-.083	-.031	3/2-	3/2-
33	78	111	781.8	780.4	22.45	1.35	19.84	23.45			1.75	-.057	-.021	3/2-	
33	79	112	781.5	780.2	22.79	-.33	20.41	25.43			1.52	-.045	-.015	3/2-	1/2-
33	80	113	783.3	779.9	23.03	1.77	21.47	23.66			2.36	C		F 5/2	
33	81	114	782.9	779.4	23.36	-.40	22.05	26.14			2.45	.017	-.005	1/2-	11/2-
33	82	115	784.5	778.8	23.68	1.59	22.45	24.49			5.62	C		F 5/2	
33	83	116	782.1	778.1	24.01	-2.35	21.09	28.76			2.97	C		F 5/2	F 7/2
33	84	117	781.3	777.2	24.32	-.80	19.35	27.49			4.04	C		F 5/2	
33	85	118	778.6	776.2	24.64	-2.63	19.75	29.64			2.40	C		F 5/2	F 7/2
33	86	119	777.7	775.1	24.95	-.99	20.19	28.30			2.54	C		F 5/2	
33	87	120	774.7	773.9	25.26	-2.91	20.54	30.53			.87	C		F 5/2	F 7/2
33	88	121	773.8	772.5	25.52	-.97	21.17	28.89			1.75	.062	.035	1/2-	
33	89	122	771.4	771.0	25.81	-2.37	22.33	30.56			1.90	.100	.070	1/2-	3/2-
33	90	123	770.6	769.4	26.11	-.76	23.19	29.21			2.98	.110	.075	1/2-	
33	91	124	768.6	767.7	26.31	-2.01	23.92	30.73			2.08	.124	.083	1/2-	3/2-
33	92	125	767.7	765.9	26.77	-.95	24.29	29.70			4.17	.135	.087	1/2-	
34	22	56	364.5	364.5	-3.69	24.87	5.54	-31.29			.37	.125	.015		
34	23	57	384.8	386.8	-3.00	20.38	5.59	-26.93			-.78	.134	.031		3/2-
34	24	58	407.9	407.7	-2.37	23.09	5.16	-29.00			1.16	.130	.005		
34	25	59	427.1	427.8	-1.70	19.14	5.30	-24.40			.34	.137	-.001		5/2-
34	26	60	448.4	447.2	-1.08	21.28	4.89	-25.86			2.18	.122	-.016		
34	27	61	466.0	465.7	-.46	17.65	4.83	-21.73			.75	.084	-.012		7/2-
34	28	62	485.8	483.5	.20	19.84	4.64	-23.42			2.31	0			
34	29	63	501.4	500.6	.79	15.53	3.62	-18.51			.91	.045	-.001		1/2-
34	30	64	518.5	517.1	1.40	17.16	2.07	-19.46			1.60	.043	-.004		
34	31	65	532.5	532.8	2.02	13.92	1.79	-15.61			-.21	.046	-.011		3/2-
34	32	66	548.5	548.0	2.58	16.01	1.86	-17.07			.54	.034	.001		
34	33	67	561.1	562.6	3.24	12.60	1.82	-13.06			-.59	.095	-.024		1/2-
34	34	68	576.1	576.5	4.87	15.04	2.06	-14.87			.43	.095	-.020		
34	35	69	586.6	589.0	5.60	10.46	2.42	-9.55			-.52	-.143	.031		5/2+
34	36	70	599.8	600.9	6.10	13.21	2.80	-10.45			.82	-.145	.025		
34	37	71	609.5	612.3	6.67	9.69	3.44	-6.28			-.84	-.146	.028		1/2-
34	38	72	621.8	623.2	7.24	12.37	3.69	-8.50			.53	-.147	.023		
34	39	73	630.7	633.7	7.81	8.91	4.17	-4.46			-1.29	-.141	.008		3/2-
34	40	74	642.4	643.8	8.35	11.69	4.52	-6.72			.12	-.131	-.000		
34	41	75	650.7	653.4	8.91	8.27	5.02	-2.82			-1.15	-.133	-.008		7/2+
34	42	76	661.7	662.6	9.44	10.97	5.36	-5.00			.50	-.127	-.013		
34	43	77	669.4	671.5	10.06	7.76	5.94	-1.32			-.25	-.135	-.023		5/2+
34	44	78	679.6	679.9	10.28	10.21	6.29	-3.22			.37	.088	-.002		
34	45	79	686.8	688.0	10.81	7.17	6.73	.13			-.75	.072	.001		5/2+
34	46	80	696.7	695.7	11.31	9.91	7.25	-2.09			1.26	.055	-.005		

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
34	47	81	703.6	703.1	11.81	6.89	7.95	1.43			.76	.054	-.004		7/2+
34	48	82	712.8	710.1	12.31	9.25	8.29	-.43			2.72	0			
34	49	83	719.4	716.8	12.81	6.60	9.02	2.69			2.73	.036	-.005		5/2+
34	50	84	728.1	723.2	13.26	8.63	9.29	1.16			4.84	C			
34	51	85	732.6	729.3	13.75	4.54	8.23	5.71			3.33	-.021	.005		5/2+
34	52	86	738.8	735.1	14.19	6.14	6.66	4.59			3.64	C			
34	53	87	742.6	740.6	14.67	3.84	6.92	7.36			2.00	.015	.000		3/2+
34	54	88	748.3	745.8	15.10	5.68	7.40	5.99			2.43	0			
34	55	89	751.5	750.8	15.56	3.21	7.73	8.92			.74	.023	-.001		5/2+
34	56	90	756.7	755.5	15.98	5.23	8.16	7.37			1.24	C			
34	57	91	759.2	759.9	16.39	2.53	8.39	10.50			.14	-.072	.036		7/2+
34	58	92	764.4	764.1	16.85	5.12	9.16	8.50			2.11	-.110	.054		
34	59	93	767.0	768.0	17.26	2.68	10.17	11.44			1.55	-.134	.061		3/2+
34	60	94	771.8	771.7	17.67	4.74	10.88	9.99			2.64	-.136	.061		
34	61	95	773.8	775.2	18.04	2.04	11.20	13.09			1.42	-.096	.087		1/2+
34	62	96	778.0	778.4	18.51	4.20	11.51	11.37			2.10	-.153	.044		
34	63	97	779.7	781.4	18.93	1.70	11.91	14.20			1.04	.182	.015		5/2-
34	64	98	783.7	784.2	19.30	3.94	12.59	12.39			1.89	.175	.013		
34	65	99	785.2	786.8	19.70	1.51	13.23	15.20			.97	.181	.005		5/2+
34	66	100	788.8	789.2	20.08	3.63	13.73	13.60			2.10	.178	-.007		
34	67	101	790.1	791.4	20.48	1.35	14.39	16.17			1.53	.186	-.015		1/2+
34	68	102	793.5	793.4	20.85	3.33	14.90	14.67			2.98	.186	-.027		
34	69	103	794.6	795.2	21.23	1.15	15.55	17.15			2.32	.188	-.024		7/2-
34	70	104	797.4	796.8	21.57	2.76	15.73	16.03			3.31	.179	-.031		
34	71	105	798.2	798.3	21.93	.76	16.05	18.29			2.47	.174	-.033		5/2+
34	72	106	800.3	799.6	22.25	2.10	16.17	17.29			2.91	.159	-.033		
34	73	107	800.5	800.7	22.59	.28	16.41	19.42			1.87	.148	-.036		5/2-
34	74	108	802.3	801.6	22.93	1.80	16.76	18.18			2.35	.133	-.035		
34	75	109	802.3	802.4	23.38	-.01	17.16	20.28			1.06	-.101	-.033		5/2-
34	76	110	804.4	803.0	23.69	2.07	18.06	18.56			2.28	-.090	-.030		
34	77	111	804.5	803.4	24.02	.11	18.70	20.84			1.88	-.085	-.031		3/2-
34	78	112	806.2	803.7	24.32	1.66	18.94	19.64			2.82	-.059	-.021		
34	79	113	806.2	803.9	24.65	-.00	19.50	21.61			2.56	-.050	-.015		1/2-
34	80	114	808.2	803.9	24.96	2.08	20.55	19.86			4.37	C			
34	81	115	808.2	803.7	25.29	-.07	21.16	22.28			4.47	.017	-.005		11/2-
34	82	116	810.1	803.4	25.59	1.89	21.52	20.67			6.61	C			
34	83	117	803.0	803.0	25.91	-2.07	20.17	24.94			4.96	C			F 7/2
34	84	118	807.5	802.5	26.22	-.49	18.42	23.68			5.03	C			
34	85	119	805.2	801.8	26.53	-2.32	18.81	25.83			3.40	C			F 7/2
34	86	120	804.5	801.0	26.84	-.68	19.25	24.51			3.53	C			
34	87	121	801.9	800.0	27.14	-2.61	19.59	26.75			1.87	C			F 7/2
34	88	122	801.2	798.9	27.41	-.69	20.19	25.15			2.66	.055	.034		
34	89	123	799.1	797.8	27.67	-2.11	21.30	26.84			2.94	.101	.071		3/2-
34	90	124	798.6	796.4	27.94	-.48	22.04	25.50			3.93	.105	.076		
34	91	125	796.6	795.0	27.98	-1.97	22.72	27.29			3.86	.102	.092		3/2+
34	92	126	796.2	793.5	28.46	-.46	23.32	26.30			5.03	.133	.084		
34	93	127	793.7	791.8	28.76	-2.49	23.04	28.41			4.05	.142	.077		5/2+

L	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
35	22	57	357.1	359.3	-7.33	24.74	6.12-25.33				-.75	.166	.027	1/2+	
35	23	58	378.1	381.8	-6.69	21.02	5.97-24.90				-2.14	.162	.034	1/2+	3/2+
35	24	59	401.9	403.4	-6.04	23.75	5.46-26.95				-.20	.156	.012	1/2+	
35	25	60	421.7	424.2	-5.36	19.82	5.58-22.46				-1.08	.157	.002	1/2+	5/2-
35	26	61	443.5	444.2	-4.86	21.78	4.89-23.78				.75	.150	-.016	3/2+	
35	27	62	461.6	463.3	-4.36	18.15	4.57-19.53				-1.27	.079	-.012	5/2-	7/2-
35	28	63	482.1	481.8	-3.76	20.43	4.35-21.17				.30	C		P 3/2	
35	29	64	498.3	499.5	-3.08	16.21	3.53-16.39				-.98	-.059	.001	3/2-	3/2-
35	30	65	516.1	516.6	-2.47	17.77	2.12-17.35				-.28	-.054	-.000	3/2-	
35	31	66	530.6	532.9	-1.85	14.54	1.73-13.53				-2.05	.057	-.014	5/2-	3/2-
35	32	67	547.2	548.7	-1.24	16.62	1.79-15.02				-1.21	-.059	.001	3/2-	
35	33	68	560.5	563.8	-.61	13.24	1.73-10.99				-1.97	.127	-.025	3/2+	1/2-
35	34	69	576.2	578.4	.12	15.76	2.06-12.94				-.29	-.147	.030	1/2-	
35	35	70	588.5	592.4	1.97	12.31	2.42 -9.03				-1.34	-.170	.034	1/2-	5/2+
35	36	71	602.4	604.9	2.62	13.65	2.86-10.02				.32	-.177	.037	1/2-	
35	37	72	612.5	616.9	3.09	10.16	3.29 -4.80				-1.10	-.192	.031	1/2-	7/2+
35	38	73	625.5	628.4	3.67	12.95	3.53 -6.98				-.28	-.172	.026	1/2-	
35	39	74	634.9	639.4	4.19	9.43	3.85 -2.94				-2.10	-.168	.016	1/2-	3/2-
35	40	75	647.1	650.0	4.67	12.17	4.21 -4.97				-.98	-.151	.006	1/2-	
35	41	76	655.9	660.2	5.18	8.79	4.66 -1.18				-2.42	-.146	-.002	1/2-	3/2-
35	42	77	667.3	670.0	5.66	11.44	4.95 -3.29				-.81	-.143	-.005	3/2-	
35	43	78	675.6	679.3	6.22	8.32	5.56 .38				-1.67	-.146	-.017	1/2-	5/2+
35	44	79	686.1	688.3	6.51	10.51	5.62 -1.29				-.69	-.123	-.015	3/2-	
35	45	80	693.8	696.9	7.04	7.69	6.18 2.03				-2.61	.068	-.000	5/2-	5/2+
35	46	81	704.2	705.1	7.54	10.41	6.60 -.24				-.55	.056	-.006	5/2-	
35	47	82	711.6	712.9	8.04	7.39	7.35 3.25				-1.04	.055	-.004	5/2-	7/2+
35	48	83	721.3	720.5	8.50	9.71	7.66 1.42				.86	C		P 3/2	
35	49	84	728.5	727.7	9.01	7.10	8.37 4.53				.93	.035	-.007	5/2-	5/2+
35	50	85	737.5	734.5	9.46	9.08	8.71 3.01				3.00	C		P 3/2	
35	51	86	742.6	741.1	9.95	5.03	7.63 7.54				1.52	-.023	-.003	3/2-	5/2+
35	52	87	749.2	747.3	10.41	6.60	6.05 6.43				1.82	C		P 3/2	
35	53	88	753.5	753.3	10.89	4.31	6.32 9.18				.23	.024	-.002	5/2-	3/2+
35	54	89	759.6	759.0	11.35	6.14	6.77 7.79				.67	.016	-.001	5/2-	
35	55	90	763.3	764.4	11.81	3.67	7.08 10.71				-.99	.025	-.008	5/2-	5/2+
35	56	91	769.0	769.5	12.24	5.66	7.48 9.17				-.54	C		P 3/2	
35	57	92	772.1	774.4	12.83	3.12	7.85 12.15				-.68	-.104	.049	5/2+	7/2+
35	58	93	777.7	779.0	13.34	5.62	8.67 9.97				.86	-.123	.055	5/2+	
35	59	94	781.0	783.3	13.95	3.29	9.84 12.72				.58	-.144	.064	1/2-	3/2+
35	60	95	786.1	787.4	14.35	5.14	10.32 11.24				1.60	-.143	.065	1/2-	
35	61	96	788.6	791.3	14.79	2.48	10.53 14.30				.18	-.122	.077	1/2-	3/2+
35	62	97	793.1	794.9	15.12	4.53	10.73 12.65				.96	-.150	.056	1/2-	
35	63	98	795.3	798.4	15.55	2.13	11.19 15.48				-.13	.189	.021	1/2+	5/2-
35	64	99	799.6	801.6	15.93	4.32	11.78 13.87				.71	.181	.014	1/2+	
35	65	100	801.6	804.6	16.45	2.03	12.53 16.55				-.08	.190	.006	1/2-	5/2+
35	66	101	805.5	807.3	16.74	3.92	12.89 15.01				.95	.185	-.006	1/2+	
35	67	102	807.4	809.9	17.22	1.83	13.61 17.43				.43	.191	-.012	3/2+	1/2+

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
35	68	103	811.0	812.3	17.52	3.63	13.98	16.02			1.75	.189	-.024	1/2+	
35	69	104	812.6	814.5	18.01	1.64	14.68	18.40			1.34	.192	-.029	3/2+	7/2-
35	70	105	815.7	816.5	18.27	3.02	14.74	17.35			2.24	.186	-.031	1/2+	
35	71	106	816.8	818.3	18.61	1.11	15.07	19.68			1.32	.179	-.032	1/2+	5/2+
35	72	107	819.2	819.9	18.92	2.41	15.06	18.66			1.79	.169	-.034	1/2+	
35	73	108	819.7	821.4	19.19	.56	15.21	20.86			.59	.155	-.037	3/2+	9/2-
35	74	109	821.8	822.7	19.48	2.09	15.52	19.71			1.07	.142	-.037	3/2+	
35	75	110	822.2	823.8	19.84	.34	15.92	21.82			-.47	-.101	-.034	1/2-	5/2-
35	76	111	824.6	824.7	20.17	2.40	16.86	20.18			.77	-.092	-.031	1/2-	
35	77	112	825.0	825.5	20.52	.46	17.78	22.45			.37	-.086	-.032	1/2-	3/2-
35	78	113	827.0	826.1	20.83	1.97	17.99	21.27			1.31	-.064	-.024	1/2-	
35	79	114	827.3	826.6	21.15	.32	18.53	23.23			1.02	-.055	-.021	1/2-	1/2-
35	80	115	829.7	827.0	21.43	2.36	19.54	21.52			2.71	0		P 3/2	
35	81	116	829.9	827.1	21.77	.27	20.13	23.95			2.83	.016	-.005	5/2-	11/2-
35	82	117	832.1	827.2	22.08	2.20	20.57	22.34			4.96	0		P 3/2	
35	83	118	830.4	827.1	22.41	-1.74	19.23	26.60			3.32	0		P 3/2	F 7/2
35	84	119	830.2	826.8	22.73	-.17	1.47	25.35			3.39	0		P 3/2	
35	85	120	828.2	826.5	23.05	-2.00	17.85	27.49			1.77	0		P 3/2	F 7/2
35	86	121	827.9	825.9	23.36	-.37	18.28	26.17			1.91	0		P 3/2	
35	87	122	825.6	825.3	23.67	-2.30	18.62	28.40			.25	0		P 3/2	F 7/2
35	88	123	825.1	824.5	23.95	-.42	19.19	26.83			.94	.050	.029	5/2-	
35	89	124	823.3	823.6	24.24	-1.82	20.27	28.50			1.31	.103	.066	1/2-	3/2-
35	90	125	823.1	822.6	24.53	-.19	21.05	27.05			2.27	.110	.071	5/2-	
35	91	126	821.7	821.5	25.06	-1.44	21.98	28.57			2.38	.125	.079	3/2+	3/2-
35	92	127	821.3	820.2	25.14	-.38	22.36	27.76			3.43	.136	.080	3/2+	
35	93	128	819.3	818.9	25.60	-2.03	22.33	29.67			2.69	.145	.075	3/2-	5/2+
35	94	129	818.3	817.4	25.89	-.93	22.35	28.73			3.14	.151	.070	3/2-	
35	95	130	816.0	815.8	26.13	-2.36	22.77	30.49			2.38	.159	.066	3/2-	3/2-
36	22	58	352.5	353.1	-4.66	25.45	6.41	-32.84			.98	.185	.024		
36	23	59	374.2	376.3	-3.99	21.70	6.28	-28.91			-.24	.189	.030		3/2+
36	24	60	398.5	398.5	-3.42	24.31	5.72	-30.92			1.37	.164	.009		
36	25	61	418.9	419.9	-2.79	20.46	5.80	-26.53			.47	.162	.002		5/2-
36	26	62	441.3	440.5	-2.17	22.40	5.10	-27.93			2.16	.146	-.018		
36	27	63	460.1	460.3	-1.52	18.79	4.75	-23.78			.42	.094	-.014		7/2-
36	28	64	481.1	479.4	-.96	21.00	4.47	-25.67			1.76	0			
36	29	65	497.9	497.7	-.36	16.81	3.63	-20.90			.48	-.060	.001		3/2-
36	30	66	516.3	515.3	.23	18.36	2.15	-21.74			1.16	-.054	-.000		
36	31	67	531.4	532.3	.81	15.13	1.75	-17.89			-.77	-.044	.000		1/2-
36	32	68	548.7	548.7	1.47	17.27	1.86	-19.45			.68	.090	-.017		
36	33	69	562.5	564.4	2.05	13.62	1.76	-15.38			-.71	.118	-.026		1/2-
36	34	70	578.7	579.6	2.49	16.22	1.97	-17.19			.45	.124	-.023		
36	35	71	591.6	594.1	3.05	12.87	2.23	-13.12			-.17	-.166	.031		9/2+
36	36	72	607.0	608.2	4.58	15.38	2.57	-15.00			1.47	-.174	.034		
36	37	73	617.7	620.7	5.19	10.77	2.88	-9.83			-.47	-.169	.029		1/2-
36	38	74	631.2	632.8	5.70	13.46	3.13	-10.90			.83	-.167	.022		
36	39	75	641.3	644.3	6.42	10.15	3.60	-6.94			.54	.215	.003		5/2+

Z	N	A	B.E.	BC	SP	SN	SA	GB	EAR	X	S	A2	A4	P	N
36	40	76	653.9	655.5	6.82	12.57	3.79	-8.56			.29	-.148	.000		
36	41	77	663.2	666.2	7.36	9.33	4.21	-4.99			-1.09	-.145	-.005		7/2+
36	42	78	675.2	676.5	7.92	11.99	4.52	-7.10			.58	-.140	-.016		
36	43	79	684.1	686.3	8.44	8.84	5.08	-3.70			-.23	-.144	-.023		5/2+
36	44	80	695.1	695.8	8.94	11.01	5.13	-5.35			.77	-.124	-.015		
36	45	81	703.2	704.9	9.39	8.14	5.51	-2.03			-1.15	.078	-.001		5/2+
36	46	82	714.1	713.6	9.86	10.88	6.18	-4.33			.80	.055	-.005		
36	47	83	722.0	722.0	10.34	7.87	6.88	-.95			.32	.060	-.001		7/2+
36	48	84	732.2	730.0	10.85	10.22	7.20	-2.80			2.22	0			
36	49	85	739.8	737.7	11.31	7.56	7.87	.29			2.23	.036	-.005		5/2+
36	50	86	749.3	745.0	11.79	9.56	8.18	-1.17			4.32	0			
36	51	87	754.8	752.0	12.25	5.49	7.07	3.31			2.84	-.023	-.003		5/2+
36	52	88	761.9	758.7	12.71	7.06	5.50	2.25			3.13	0			
36	53	89	766.6	765.2	13.16	4.76	5.73	4.97			1.51	.015	-.000		3/2+
36	54	90	773.2	771.3	13.59	6.58	5.17	3.66			1.94	0			
36	55	91	777.3	777.1	14.04	4.12	6.45	6.58			.27	.024	-.002		5/2+
36	56	92	783.4	782.7	14.48	6.10	6.87	5.05			.76	0			
36	57	93	786.9	788.0	14.82	3.45	7.11	8.13			-.08	-.085	.036		7/2+
36	58	94	792.9	793.0	15.22	6.03	7.91	6.09			1.83	-.121	.047		
36	59	95	796.6	797.8	15.59	3.66	9.05	8.91			1.63	-.143	.062		3/2+
36	60	96	802.1	802.3	16.00	5.54	9.47	7.39			2.63	-.142	.062		
36	61	97	805.0	806.6	16.40	2.88	9.67	10.47			1.14	-.127	.070		3/2+
36	62	98	810.0	810.6	16.83	4.96	9.89	8.85			2.01	-.145	.053		
36	63	99	812.7	814.5	17.40	2.71	10.56	11.72			1.25	.192	.018		5/2-
36	64	100	817.4	818.1	17.80	4.71	11.08	10.20			2.20	.187	.010		
36	65	101	819.8	821.4	18.15	2.38	11.76	12.91			1.35	.193	.006		5/2+
36	66	102	824.0	824.6	18.48	4.25	12.07	11.46			2.25	.188	-.004		
36	67	103	826.2	827.6	18.87	2.22	12.78	13.94			1.75	.194	-.011		1/2+
36	68	104	830.3	830.3	19.25	4.02	13.16	12.43			3.04	.191	-.023		
36	69	105	832.2	832.9	19.59	1.98	13.79	14.83			2.61	.194	-.028		7/2-
36	70	106	835.7	835.2	20.01	3.44	13.89	13.75			3.63	.191	-.032		
36	71	107	837.1	837.4	20.29	1.38	14.13	16.16			2.50	.180	-.032		5/2+
36	72	108	839.8	839.4	20.64	2.76	14.13	15.10			2.94	.168	-.032		
36	73	109	840.7	841.2	21.02	.93	14.30	17.24			1.72	.153	-.035		5/2-
36	74	110	843.2	842.9	21.38	2.45	14.64	16.01			2.17	.138	-.034		
36	75	111	844.0	844.3	21.80	.76	15.13	18.00			.82	-.102	-.034		5/2-
36	76	112	846.7	845.6	22.13	2.73	16.06	16.44			2.04	-.093	-.032		
36	77	113	847.5	846.8	22.46	.79	16.86	18.71			1.63	-.087	-.033		3/2-
36	78	114	849.8	847.7	22.77	2.28	17.08	17.56			2.53	-.066	-.024		
36	79	115	850.4	848.5	23.10	.65	17.61	19.49			2.22	-.055	-.021		1/2-
36	80	116	853.1	849.2	23.44	2.70	18.65	17.77			3.91	0			
36	81	117	853.7	849.7	23.75	.58	19.24	20.12			4.01	.017	-.005		11/2-
36	82	118	856.2	850.1	24.07	2.52	19.68	18.55			6.15	0			
36	83	119	854.8	850.3	24.39	-1.42	18.32	22.78			4.51	0			F 7/2
36	84	120	854.9	850.4	24.70	.14	16.58	21.54			4.57	0			
36	85	121	853.2	850.3	25.02	-1.69	16.96	23.69			2.55	0			F 7/2
36	86	122	853.2	850.1	25.32	-.07	17.38	22.39			3.05	0			

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
36	87	123	851.2	849.8	25.63	-1.99	17.71	24.63			1.43	C			F 7/2
36	88	124	851.0	849.3	25.89	-.16	18.24	23.11			2.00	.C44	.C25		
36	89	125	849.4	848.7	26.08	-1.63	19.21	24.91			2.25	.C95	.C65		3/2-
36	90	126	849.5	848.0	26.35	.08	19.99	23.48			3.21	.105	.C68		
36	91	127	848.3	847.1	26.60	-1.19	20.91	25.16			3.31	.123	.C76		3/2+
36	92	128	848.2	846.2	26.85	-.13	21.27	24.28			4.30	.134	.C77		
36	93	129	846.3	845.1	27.02	-1.86	21.38	26.32			3.47	.144	.C71		3/2-
36	94	130	845.7	843.9	27.35	-.60	21.24	25.38			3.91	.150	.C63		
36	95	131	843.7	842.6	27.69	-2.02	21.70	27.16			3.31	.158	.C64		3/2-
36	96	132	842.8	841.1	27.97	-.84	22.08	26.23			3.75	.163	.C58		
37	22	59	344.5	346.3	-8.00	26.63	6.19-30.10				.14	.214	.C21	3/2+	
37	23	60	366.8	370.1	-7.39	22.30	6.09-27.21				-1.30	.207	.C22	3/2+	3/2+
37	24	61	391.6	393.0	-6.86	24.84	6.19-29.20				.44	.191	.C10	3/2+	
37	25	62	412.6	415.0	-6.31	21.00	6.17-24.82				-.73	.177	.C04	3/2+	5/2-
37	26	63	435.6	436.2	-5.77	22.94	5.37-26.12				1.09	.173	-.C14	3/2+	
37	27	64	454.7	456.6	-5.45	19.11	4.66-21.76				.52	.197	-.C30	3/2+	1/2-
37	28	65	476.2	476.3	-4.87	21.58	4.46-22.52				.02	-.C23	-.C02	1/2-	
37	29	66	493.8	495.2	-4.16	17.52	3.83-18.80				-1.03	-.C78	.C03	1/2-	3/2-
37	30	67	512.7	513.4	-3.55	18.97	2.37-19.71				-.20	-.C85	.C02	5/2+	
37	31	68	528.4	531.0	-2.97	15.71	1.87-15.88				-2.20	-.C73	-.C00	1/2-	1/2-
37	32	69	546.3	548.0	-2.34	17.89	1.99-17.46				-.61	-.116	.C05	3/2-	
37	33	70	560.7	564.3	-1.76	14.41	1.85-13.46				-1.81	.144	-.C25	1/2+	1/2-
37	34	71	577.7	580.0	-1.03	16.94	2.18-15.46				-.35	-.155	.C23	3/2-	
37	35	72	591.2	595.1	-.41	13.45	2.44-11.50				-1.25	-.181	.C25	7/2+	5/2+
37	36	73	607.1	609.7	.16	15.94	2.60-13.45				.44	-.190	.C30	7/2+	
37	37	74	619.5	623.8	1.78	12.39	2.69 -9.41				-1.09	.207	.C05	3/2+	3/2+
37	38	75	633.6	636.4	2.42	14.10	2.93-10.45				.55	.212	.C07	3/2+	
37	39	76	644.6	648.5	3.23	10.96	3.73 -5.75				.04	.230	.C02	3/2+	5/2+
37	40	77	657.5	660.2	3.56	12.90	3.68 -7.15				.78	.213	.C01	3/2+	
37	41	78	667.4	671.4	4.11	9.88	4.14 -3.70				-.66	.208	-.C03	1/2+	3/2-
37	42	79	679.6	682.2	4.35	12.23	4.20 -5.53				-.59	-.145	-.C14	3/2-	
37	43	80	689.0	692.6	4.88	9.37	4.78 -2.06				-1.40	-.150	-.C25	3/2-	5/2+
37	44	81	700.4	702.6	5.33	11.46	4.80 -3.61				-.30	-.137	-.C22	5/2+	
37	45	82	709.0	712.1	5.77	8.58	5.07 -.25				-1.24	-.136	-.C26	5/2+	3/2+
37	46	83	720.2	721.4	6.14	11.24	5.80 -2.41				-.82	.058	-.C04	3/2-	
37	47	84	728.6	730.2	6.64	8.38	6.49 .85				-1.32	.054	-.C04	3/2-	7/2+
37	48	85	739.3	738.7	7.06	10.64	6.72 -.92				.57	C		P 3/2	
37	49	86	747.4	746.8	7.60	8.10	7.43 2.16				.67	.C40	-.C07	3/2-	5/2+
37	50	87	757.3	754.7	8.01	9.97	7.69 .69				2.68	C		P 3/2	
37	51	88	763.3	762.1	8.53	6.00	6.59 5.17				1.26	-.C27	-.C02	1/2-	5/2+
37	52	89	770.8	769.3	8.95	7.49	5.00 4.12				1.51	C		P 3/2	
37	53	90	776.1	776.2	9.46	5.27	5.24 6.82				-.01	.C30	-.C02	3/2-	3/2+
37	54	91	783.1	782.8	9.91	7.04	5.67 5.46				.43	.C24	-.C04	3/2-	
37	55	92	787.7	789.0	10.37	4.57	5.93 8.36				-1.24	.C31	-.C06	3/2-	5/2+
37	56	93	794.2	795.0	10.80	6.53	6.32 6.84				-.72	.C25	-.C08	3/2-	
37	57	94	798.2	800.8	11.33	3.98	6.63 9.82				-1.25	-.C95	.C37	3/2-	7/2+

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
27	58	95	804.7	806.2	11.79	6.48	7.46	7.64			.32	-.121	.C44	3/2-	
37	59	96	808.7	811.4	12.15	4.02	8.36	10.44			.07	-.144	.C57	3/2-	3/2+
37	60	97	814.7	816.4	12.57	5.96	8.70	8.81			1.05	-.144	.C57	3/2-	
37	61	98	818.0	821.0	13.03	3.35	8.75	11.83			.19	.188	.C33	3/2+	3/2+
37	62	99	823.6	825.5	13.64	5.57	9.19	10.08			1.26	.190	.C27	3/2+	
37	63	100	826.8	829.7	14.13	3.19	9.90	12.85			.35	.198	.C18	3/2+	5/2-
37	64	101	831.9	833.7	14.51	5.10	10.47	11.36			1.30	.195	.C10	3/2+	
37	65	102	834.7	837.5	14.93	2.80	11.14	14.04			.44	.195	.C06	3/2+	5/2+
37	66	103	839.4	841.0	15.38	4.70	11.52	12.54			1.48	.196	-.C02	3/2+	
37	67	104	841.9	844.4	15.67	2.51	12.00	15.06			.79	.195	-.C11	1/2+	1/2+
37	68	105	846.3	847.5	16.02	4.37	12.45	13.63			2.07	.197	-.C21	1/2+	
37	69	106	848.6	850.5	16.41	2.36	12.98	16.01			1.62	.195	-.C26	1/2+	7/2-
37	70	107	852.4	853.2	16.76	3.79	13.13	14.94			2.65	.196	-.C31	1/2+	
37	71	108	854.1	855.7	17.08	1.70	13.19	17.37			1.49	.186	-.C31	3/2+	5/2+
37	72	109	857.2	858.1	17.39	3.08	13.25	16.34			1.83	.173	-.C32	3/2+	
37	73	110	858.4	860.3	17.68	1.22	13.36	18.55			.58	.160	-.C35	1/2+	9/2-
37	74	111	861.2	862.2	17.97	2.75	13.70	17.39			.98	.146	-.C34	1/2+	
37	75	112	862.3	864.1	18.39	1.18	14.32	19.47			-.44	-.104	-.C35	1/2-	5/2-
37	76	113	865.4	865.7	18.72	3.06	15.29	18.01			.78	-.095	-.C33	1/2-	
37	77	114	866.5	867.2	19.06	1.13	16.08	20.27			.35	-.085	-.C34	1/2-	3/2-
37	78	115	869.1	868.5	19.36	2.59	16.26	19.14			1.30	-.C73	-.C28	1/2-	
37	79	116	870.1	869.6	19.68	.97	16.78	21.08			.91	-.C60	-.C24	1/2-	1/2-
37	80	117	873.0	870.6	19.92	2.94	17.75	19.44			2.43	0		P 3/2	
37	81	118	874.0	871.4	20.29	.95	18.37	21.81			2.57	.C18	-.C05	3/2-	11/2-
37	82	119	876.8	872.1	20.58	2.81	18.82	20.24			4.66	C		P 3/2	
37	83	120	875.7	872.7	20.90	-1.10	17.46	24.49			3.03	C		P 3/2 F 7/2	
37	84	121	876.1	873.0	21.22	.46	15.72	23.26			3.10	C		P 3/2	
37	85	122	874.8	873.3	21.54	-1.37	16.09	25.40			1.45	C		P 3/2 F 7/2	
37	86	123	875.0	873.4	21.86	.25	16.51	24.10			1.63	C		F 3/2	
37	87	124	873.4	873.4	22.17	-1.68	16.84	26.32			-.02	C		P 3/2 F 7/2	
37	88	125	873.5	873.2	22.49	.17	17.37	24.79			.53	.C41	.C22	1/2+	
37	89	126	872.2	872.9	22.78	-1.35	18.32	26.51			.82	.101	.C63	5/2-	3/2-
37	90	127	872.7	872.5	23.19	.49	19.23	24.92			1.99	.112	.C67	3/2+	
37	91	128	871.7	871.9	23.37	-1.00	20.05	26.60			1.89	.124	.C73	3/2+	3/2+
37	92	129	871.8	871.3	23.67	.17	20.41	25.73			2.85	.135	.C73	3/2+	
37	93	130	870.3	870.5	24.00	-1.54	20.31	27.69			2.12	.147	.C68	3/2+	3/2-
37	94	131	870.0	869.6	24.36	-.24	20.45	26.66			2.75	.151	.C65	3/2+	
37	95	132	868.3	868.5	24.61	-1.77	20.71	28.43			2.04	.161	.C61	3/2+	3/2-
37	96	133	867.8	867.4	24.93	-.52	21.12	27.47			2.52	.165	.C54	3/2+	
37	97	134	865.7	866.1	25.22	-2.07	21.42	29.30			1.65	.165	.C45	3/2+	5/2-
37	98	135	865.1	864.7	25.55	-.61	21.93	28.12			2.28	.174	.C37	3/2+	
38	22	60	338.8	338.9	-5.69	25.19	6.97	-32.98			2.03	.233	.C18		
38	23	61	361.6	363.3	-5.15	22.85	6.32	-30.73			.44	.220	.C21		3/2+
38	24	62	387.0	386.8	-4.60	25.38	6.25	-32.75			2.03	.198	.C10		
38	25	63	408.6	409.4	-3.96	21.64	6.19	-28.52			.54	.186	.C04		5/2-
38	26	64	432.1	431.2	-3.44	23.47	5.35	-29.92			2.58	.177	-.C11		

Z	N	A	B.E.	80	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
38	27	65	451.9	452.3	-2.72	19.83	4.73-25.71				.21	.094	-.011		7/2-
38	28	66	474.2	472.5	-2.07	22.23	4.56-27.47				1.65	0			
38	29	67	492.2	492.1	-1.52	18.07	3.83-23.20				.54	-.073	-.001		3/2-
38	30	68	511.8	510.9	-.95	19.54	2.38-23.95				1.33	-.080	-.001		
38	31	69	528.1	529.0	-.36	16.31	1.87-20.10				-.65	-.066	-.004		1/2-
38	32	70	546.5	546.6	.17	18.41	1.92-21.65				.60	-.096	-.000		
38	33	71	561.5	563.4	.70	14.95	1.74-17.51				-.81	-.126	.006		5/2-
38	34	72	578.9	579.7	1.21	17.45	1.92-19.42				.84	-.146	.016		
38	35	73	592.9	595.4	1.71	14.00	2.10-15.37				-.29	-.166	.021		9/2+
38	36	74	609.3	610.6	2.20	16.43	2.31-17.28				1.18	-.173	.021		
38	37	75	622.4	625.2	2.87	13.06	2.50-13.11				.60	.217	.006		3/2+
38	38	76	638.0	639.2	4.42	15.66	2.78-14.98				2.52	.226	.005		
38	39	77	649.5	651.9	4.97	11.51	3.51-10.27				1.88	.240	.001		5/2+
38	40	78	662.9	664.1	5.40	13.33	3.38-10.56				2.69	.228	-.001		
38	41	79	673.3	675.8	5.92	10.40	3.63 -7.17				1.22	.222	-.004		3/2-
38	42	80	686.1	687.2	6.53	12.84	3.90 -9.13				.98	-.147	-.020		
38	43	81	696.0	698.0	7.07	9.91	4.48 -6.03				.23	-.146	-.030		5/2+
38	44	82	708.0	708.5	7.55	11.94	4.43 -7.54				1.43	-.135	-.028		
38	45	83	717.1	718.6	8.05	9.09	4.69 -4.25				.65	-.143	-.032		3/2+
38	46	84	728.7	728.3	8.44	11.63	5.30 -6.30				.58	.049	-.002		
38	47	85	737.6	737.7	8.94	8.88	6.04 -3.29				.14	.051	-.004		7/2+
38	48	86	748.7	746.6	9.47	11.17	6.33 -5.12				2.11	0			
38	49	87	757.2	755.2	9.88	8.50	6.97 -2.05				2.11	.034	-.004		9/2+
38	50	88	767.7	763.5	10.39	10.49	7.23 -3.53				4.20	0			
38	51	89	774.2	771.5	10.82	6.43	6.11 .83				2.74	-.024	-.003		5/2+
38	52	90	782.1	779.1	11.30	7.97	4.51 -.06				3.02	0			
38	53	91	787.8	786.4	11.71	5.68	4.70 2.64				1.41	.017	.000		3/2+
38	54	92	795.3	793.4	12.15	7.47	5.11 1.31				1.84	0			
38	55	93	800.3	800.2	12.59	5.01	5.36 4.25				.18	.022	-.000		5/2+
38	56	94	807.3	806.6	13.02	6.97	5.75 2.74				.67	0			
38	57	95	811.6	812.7	13.35	4.31	5.94 5.85				-.40	-.079	.028		7/2+
38	58	96	818.4	818.6	13.68	6.81	6.65 3.87				1.29	-.113	.037		
38	59	97	822.7	824.2	13.99	4.34	7.54 6.72				1.06	-.146	.047		3/2+
38	60	98	829.1	829.6	14.40	6.37	7.87 5.10				1.97	-.135	.052		
38	61	99	832.9	834.7	14.87	3.82	8.03 8.09				1.39	.189	.031		3/2+
38	62	100	838.9	839.6	15.26	5.96	8.44 6.60				2.43	.191	.019		
38	63	101	842.5	844.2	15.67	3.61	9.18 9.35				1.63	.199	.017		5/2-
38	64	102	848.0	848.6	16.06	5.49	9.70 7.92				2.58	.196	.010		
38	65	103	851.2	852.7	16.46	3.20	10.19 10.61				1.75	.201	.006		5/2+
38	66	104	856.2	856.7	16.79	5.03	10.51 9.20				2.74	.197	-.002		
38	67	105	859.1	860.4	17.22	2.94	11.07 11.65				2.10	.201	-.010		1/2+
38	68	106	863.9	863.9	17.59	4.74	11.55 10.26				3.31	.199	-.017		
38	69	107	866.6	867.2	17.94	2.72	12.05 12.64				2.90	.201	-.023		7/2-
38	70	108	870.7	870.3	18.29	4.14	12.17 11.60				3.90	.196	-.030		
38	71	109	872.8	873.2	18.63	2.04	12.24 14.04				2.68	.187	-.030		5/2+
38	72	110	876.2	875.9	18.98	3.43	12.23 12.92				2.95	.172	-.030		
38	73	111	877.8	878.5	19.35	1.59	12.43 15.09				1.64	.157	-.033		9/2-

Z	N	A	B.E.	BC	SP	SN	SA	CP	BAR	X	S	A2	A4	P	N
3E	74	112	881.0	880.8	19.86	3.26	12.93	13.70			1.66	-.114	-.031		
3E	75	113	882.6	883.0	20.28	1.59	13.59	15.82			.98	-.104	-.035		5/2-
3E	76	114	886.0	884.5	20.61	3.39	14.52	14.39			2.19	-.096	-.033		
3E	77	115	887.5	886.8	20.95	1.46	15.23	16.64			1.74	-.090	-.034		3/2-
3E	78	116	890.4	888.4	21.26	2.90	15.40	15.53			2.67	-.074	-.028		
3E	79	117	891.7	889.9	21.59	1.30	15.91	17.49			2.24	-.055	-.022		1/2-
3E	80	118	895.0	891.2	21.98	3.33	16.96	15.71			3.81	C			
3E	81	119	896.2	892.4	22.27	1.23	17.54	17.88			3.91	.017	-.005		11/2-
3E	82	120	899.4	893.4	22.61	3.15	18.00	16.34			6.03	C			
3E	83	121	898.6	894.2	22.93	-.78	16.64	20.54			4.41	C			F 7/2
3E	84	122	899.4	894.5	23.25	.77	14.89	19.51			4.47	C			
3E	85	123	898.3	895.5	23.56	-1.06	15.26	21.47			2.86	C			F 7/2
3E	86	124	898.9	895.9	23.87	.55	15.67	20.28			2.99	C			
3E	87	125	897.5	896.2	24.17	-1.37	15.99	22.50			1.35	C			F 7/2
3E	88	126	897.9	896.3	24.38	.37	16.43	21.07			1.58	C			
3E	89	127	896.8	896.3	24.63	-1.10	17.32	22.96			1.93	.076	.055		3/2-
3E	90	128	897.5	896.2	24.81	.67	18.15	21.48			3.09	.112	.064		
3E	91	129	896.8	895.9	25.12	-.70	19.09	23.16			2.97	.121	.071		3/2+
3E	92	130	897.2	895.6	25.37	.43	19.43	22.31			3.91	.132	.071		
3E	93	131	895.9	895.0	25.64	-1.27	19.35	24.30			3.16	.144	.066		3/2-
3E	94	132	895.9	894.4	25.88	-.00	19.48	23.33			3.66	.150	.059		
3E	95	133	894.4	893.7	26.17	-1.48	19.86	25.11			3.07	.158	.060		3/2-
3E	96	134	894.2	892.8	26.45	-.24	20.22	24.15			3.54	.162	.052		
3E	97	135	892.4	891.8	26.73	-1.79	20.46	25.98			2.68	.167	.048		5/2-
3E	98	136	892.1	890.7	27.00	-.34	20.96	24.82			3.35	.173	.037		
3E	99	137	890.2	889.5	27.24	-1.85	21.46	26.64			2.71	.192	.026		1/2-
39	22	61	330.1	331.0	-8.67	25.09	7.25	-33.42			1.57	.259	.012	5/2+	
39	23	62	353.5	356.0	-8.15	23.36	7.34	-30.24			-.16	.242	.013	5/2+	3/2+
39	24	63	379.3	380.1	-7.66	25.89	6.59	-31.81			1.58	.230	.006	5/2+	
39	25	64	401.4	403.3	-7.23	22.07	6.36	-27.41			.18	.210	.003	5/2+	5/2-
39	26	65	425.5	425.7	-6.66	24.03	5.55	-28.64			1.94	.208	-.006	5/2+	
39	27	66	445.9	447.3	-6.01	20.48	5.02	-24.44			1.22	.220	-.014	5/2+	1/2-
39	28	67	468.3	468.2	-5.92	22.33	4.41	-25.75			.32	-.060	-.001	5/2+	
39	29	68	487.1	488.3	-5.19	18.60	4.10	-21.21			-.68	-.092	-.003	1/2-	3/2-
39	30	69	507.2	507.7	-4.58	20.15	2.67	-22.02			.30	-.106	-.004	1/2-	
39	31	70	524.1	526.4	-4.02	16.87	2.02	-18.19			-1.71	-.095	-.006	1/2-	1/2-
39	32	71	543.2	544.5	-3.34	19.08	2.13	-19.83			-.36	-.118	-.002	1/2-	
39	33	72	558.7	561.9	-2.76	15.53	1.95	-15.81			-1.88	-.136	.005	1/2-	5/2-
39	34	73	576.7	578.8	-2.16	18.04	2.10	-17.77			-.42	-.148	.006	7/2+	
39	35	74	591.3	595.0	-1.63	14.53	2.23	-13.77			-1.55	-.170	.014	7/2+	5/2+
39	36	75	608.5	610.7	-.83	17.23	2.51	-15.98			1.35	.228	.004	5/2+	
39	37	76	622.3	625.9	-.10	13.79	2.80	-12.25			.31	.236	.007	5/2+	3/2-
39	38	77	638.5	640.5	.45	16.21	3.07	-15.56			2.14	.241	.004	5/2+	
39	39	78	651.5	654.6	1.98	13.04	3.72	-10.66			1.55	.252	.000	5/2+	5/2+
39	40	79	665.3	667.3	2.44	13.79	3.40	-10.85			2.50	.246	-.004	5/2+	
39	41	80	676.2	679.6	2.93	10.89	3.33	-6.48			1.05	.242	-.005	5/2+	3/2-

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
39	42	81	689.2	691.4	3.09	13.00	3.44	-8.08			.06	-.152	-.024	7/2+	
39	43	82	699.6	702.8	3.62	10.43	3.99	-4.48			-.75	-.152	-.032	7/2+	5/2+
39	44	83	712.0	713.8	4.06	12.38	4.14	-5.91			.34	-.144	-.027	1/2-	
39	45	84	721.6	724.3	4.55	9.58	4.35	-2.63			-.64	-.140	-.031	1/2-	3/2+
39	46	85	733.5	734.5	4.80	11.89	4.78	-4.44			-.66	.066	-.003	1/2+	
39	47	86	742.8	744.3	5.27	9.34	5.54	-1.48			-1.19	.061	-.002	1/2+	7/2+
39	48	87	754.4	753.8	5.67	11.57	5.86	-3.21			.65	-.026	-.003	5/2+	
39	49	88	763.4	762.9	6.18	9.01	6.50	-.12			.73	.045	-.006	1/2+	5/2+
39	50	89	774.2	771.6	6.48	10.79	6.65	-1.47			2.56	C		P 1/2	
39	51	90	781.3	780.0	7.12	7.08	5.63	2.85			1.38	-.036	.002	5/2+	5/2+
39	52	91	789.7	788.1	7.54	8.38	4.04	1.83			1.64	-.031	-.001	5/2+	
39	53	92	795.8	795.9	8.00	6.14	4.17	4.56			.05	-.036	-.002	5/2+	3/2+
39	54	93	803.8	803.3	8.48	7.95	4.64	3.19			.57	-.040	.003	5/2+	
39	55	94	809.2	810.5	8.93	5.46	4.83	6.08			-1.09	-.044	.007	5/2+	1/2+
39	56	95	816.6	817.4	9.38	7.42	5.21	4.56			-.37	-.055	.016	5/2+	
39	57	96	821.5	821.9	9.91	4.83	5.47	7.55			-1.64	-.084	.026	1/2-	7/2+
39	58	97	828.7	830.2	10.27	7.18	6.12	5.44			-.13	-.111	.034	1/2-	
39	59	98	833.4	836.3	10.69	4.75	6.89	8.23			-.66	-.134	.045	1/2-	3/2+
39	60	99	840.2	842.0	11.12	6.80	7.20	6.52			.35	-.137	.044	1/2-	
39	61	100	844.7	847.6	11.78	4.48	7.66	9.23			.56	.197	.026	5/2+	3/2+
39	62	101	851.0	852.8	12.18	6.35	8.05	7.56			1.66	.202	.017	5/2+	
39	63	102	855.1	857.8	12.62	4.06	8.77	10.31			.87	.207	.016	5/2+	5/2-
39	64	103	861.0	862.6	13.02	5.89	9.09	8.79			1.89	.206	.005	5/2+	
39	65	104	864.6	867.2	13.45	3.62	9.51	11.46			1.07	.210	.005	5/2+	5/2+
39	66	105	870.0	871.5	13.81	5.39	9.80	10.06			2.08	.208	-.003	5/2+	
39	67	106	873.3	875.6	14.21	3.34	10.34	12.54			1.45	.210	-.011	5/2+	1/2+
39	68	107	878.4	879.5	14.57	5.10	10.74	11.17			2.64	.208	-.017	5/2+	
39	69	108	881.5	883.2	14.95	3.10	11.34	13.55			2.15	.205	-.023	5/2+	7/2-
39	70	109	886.0	886.6	15.30	4.48	11.45	12.54			3.16	.207	-.026	5/2+	
39	71	110	898.3	899.9	15.56	2.31	11.39	15.08			1.99	.200	-.030	5/2+	5/2+
39	72	111	892.1	893.0	15.90	3.76	11.37	14.07			2.14	.194	-.025	5/2+	
39	73	112	894.0	895.9	16.18	1.87	11.53	16.32			.55	.160	-.034	5/2+	5/2-
39	74	113	897.7	898.6	16.63	3.71	12.16	14.93			.64	-.117	-.032	1/2-	
39	75	114	899.6	901.1	16.99	1.96	12.90	17.27			-.05	-.106	-.037	5/2+	5/2-
39	76	115	903.3	903.4	17.32	3.72	13.87	15.83			1.15	-.098	-.035	5/2+	
39	77	116	905.1	905.6	17.65	1.79	14.49	16.08			.70	-.093	-.035	5/2+	3/2-
39	78	117	908.4	907.5	18.00	3.26	14.69	16.95			1.65	-.082	-.027	5/2+	
39	79	118	909.9	909.3	18.25	1.55	15.10	18.99			1.21	-.070	-.027	7/2+	1/2-
39	80	119	913.3	911.0	18.33	3.41	15.92	17.47			2.35	C		P 1/2	
39	81	120	915.0	912.5	18.71	1.62	16.57	19.81			2.53	-.023	-.006	5/2+	1/2+
39	82	121	918.4	913.8	18.98	3.42	17.05	18.28			4.57	C		P 1/2	
39	83	122	918.1	915.0	19.50	-.25	15.85	22.32			3.18	-.019	-.004	5/2+	7/2-
39	84	123	919.0	916.0	19.63	.90	13.94	21.29			3.02	C		P 1/2	
39	85	124	918.4	916.9	20.05	-.63	14.41	23.33			1.54	-.016	-.005	5/2+	5/2-
39	86	125	919.2	917.6	20.35	.85	14.80	22.06			1.67	-.016	-.004	5/2+	
39	87	126	918.2	918.2	20.66	-1.06	15.11	24.29			.03	.016	-.005	1/2+	5/2-
39	88	127	919.0	918.6	21.08	.79	15.66	22.75			.57	.036	.022	3/2-	

Z	N	A	B.E.	B0	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
35	89	128	918.2	918.9	21.37	-.81	16.53	24.53			.70	.C97	.C57	3/2+	3/2-
35	90	129	919.1	919.1	21.67	.97	17.33	22.96			1.83	.113	.C62	3/2+	
35	91	130	918.7	919.1	21.96	-.42	18.27	24.59			1.72	.122	.C65	5/2-	3/2+
35	92	131	919.4	919.0	22.25	.72	18.49	23.69			2.66	.132	.C68	5/2-	
35	93	132	918.5	918.8	22.55	-.97	18.53	25.63			1.94	.144	.C64	5/2-	3/2-
35	94	133	918.8	918.5	22.85	.30	18.65	24.62			2.46	.150	.C57	5/2-	
35	95	134	917.6	918.0	23.13	-1.20	18.99	26.39			1.88	.158	.C55	5/2-	3/2-
35	96	135	917.6	917.4	23.41	.05	19.28	25.36			2.39	.163	.C52	5/2-	
35	97	136	916.1	916.7	23.70	-1.50	19.55	27.19			1.56	.165	.C46	5/2-	5/2-
35	98	137	916.1	915.9	24.00	-.04	20.03	26.01			2.29	.177	.C33	5/2+	
35	99	138	914.6	915.0	24.33	-1.53	20.57	27.76			1.76	.186	.C22	5/2+	1/2-
35	100	139	914.5	913.9	24.61	-.07	21.11	26.52			2.79	.194	.C20	5/2+	
35	101	140	912.8	912.8	24.94	-1.64	21.57	28.34			2.38	.201	.C13	5/2+	1/2-
40	22	62	322.4	322.4	-7.66	26.54	6.87-37.76				C.CC	UNSTABLE			
40	23	63	346.8	348.0	-6.72	24.31	4.87-33.57				.86	.240	.C07		3/2+
40	24	64	373.2	372.7	-6.13	26.47	6.15-35.44				2.44	.215	.C02		
40	25	65	396.0	396.6	-5.39	22.81	6.11-31.10				1.13	.193	.C00		5/2-
40	26	66	420.7	419.6	-4.75	24.68	5.41-32.39				2.95	.191	-.C11		
40	27	67	441.7	441.8	-4.20	21.03	4.79-28.15				2.36	.213	-.C15		1/2-
40	28	68	465.1	463.2	-3.19	23.34	4.66-29.88				1.88	C			
40	29	69	484.4	483.5	-2.65	19.34	4.17-25.36				1.01	-.C08	-.C06		3/2-
40	30	70	505.1	503.9	-2.10	20.70	2.63-26.04				1.84	-.C05	-.C05		
40	31	71	522.6	523.2	-1.52	17.45	2.01-22.20				-.05	-.C05	-.C11		1/2-
40	32	72	542.1	541.8	-1.06	19.55	2.03-23.74				1.16	-.105	-.C10		
40	33	73	558.2	559.8	-.51	16.08	1.80-19.67				-.45	-.127	-.C06		5/2-
40	34	74	576.7	577.2	-.02	18.53	1.92-21.56				.87	-.135	-.C05		
40	35	75	591.7	594.0	.46	15.01	1.98-17.46				-.32	-.161	.C05		5/2+
40	36	76	609.3	610.2	.76	17.52	2.06-19.47				.88	-.155	-.C01		
40	37	77	622.1	625.9	-.14	12.89	.95-14.27				-3.65	.C34	-.C03		5/2-
40	38	78	640.1	641.0	1.60	17.95	2.47-17.68				3.06	.238	-.C02		
40	39	79	653.7	655.6	2.15	13.59	3.00-14.09				2.67	.255	-.C06		5/2+
40	40	80	668.9	669.8	3.63	15.26	2.61-15.37				3.67	.247	-.C10		
40	41	81	680.3	682.5	4.14	11.40	2.50-10.76				2.13	.240	-.C10		3/2-
40	42	82	694.4	694.5	5.17	14.03	3.21-11.90				1.73	-.146	-.C31		
40	43	83	703.3	706.8	5.69	10.95	3.76 -8.28				1.01	-.150	-.C37		5/2+
40	44	84	718.2	718.2	6.17	12.87	3.78 -9.68				2.08	-.141	-.C34		
40	45	85	728.3	729.3	6.67	10.06	3.95 -6.44				1.14	-.135	-.C36		3/2+
40	46	86	740.6	740.0	7.08	12.30	4.32 -8.17				.71	.C38	-.C01		
40	47	87	750.4	750.3	7.57	9.83	5.06 -5.47				.34	.045	-.C03		7/2+
40	48	88	762.5	760.2	8.11	12.11	5.54 -7.29				2.32	C			
40	49	89	772.0	769.8	8.54	9.44	6.10 -4.20				2.31	.C33	-.C03		5/2+
40	50	90	783.4	779.0	9.15	11.39	6.32 -5.66				4.25	C			
40	51	91	790.7	787.8	9.43	7.36	5.18 -1.22				2.94	-.024	-.C03		5/2+
40	52	92	799.6	796.4	9.92	8.87	3.56 -2.23				3.22	C			
40	53	93	806.2	804.6	10.36	6.59	3.71 .46				1.63	.C18	.C00		3/2+
40	54	94	814.5	812.5	10.76	8.35	4.09 -.80				2.05	C			

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
4C	55	95	820.4	820.1	11.20	5.90	4.31	2.09			.35	.C21	.C00		5/2+
4C	56	96	828.2	827.4	11.60	7.82	4.67	.61			.88	C			
4C	57	97	833.3	834.4	11.83	5.07	4.72	3.79			-.68	.C64	.C04		1/2+
4C	58	98	840.9	841.1	12.20	7.55	5.30	1.84			.64	-.C9C	.C21		
4C	59	99	845.9	847.5	12.53	5.09	6.08	4.72			.16	-.122	.C36		3/2+
4C	60	100	853.1	853.7	12.93	7.19	6.45	2.91			1.32	-.125	.C37		
4C	61	101	857.8	859.6	13.13	4.66	6.80	5.83			1.16	.184	.C22		3/2+
4C	62	102	864.6	865.3	13.58	6.81	7.24	4.19			2.80	.207	.C02		
4C	63	103	869.0	870.7	13.90	4.38	7.80	7.02			1.55	.197	.C14		5/2-
4C	64	104	875.3	875.9	14.30	6.25	8.13	5.50			2.57	.195	.C07		
4C	65	105	879.3	880.8	14.67	3.99	8.51	8.21			1.82	.201	.C03		5/2+
4C	66	106	885.1	885.5	15.11	5.83	8.85	6.75			2.85	.195	-.C05		
4C	67	107	888.8	890.0	15.48	3.72	9.37	9.22			2.32	.203	-.C12		1/2+
4C	68	108	894.3	894.3	15.87	5.48	9.82	7.84			2.54	.202	-.C18		
4C	69	109	897.8	898.3	16.24	3.47	10.35	10.23			2.14	.205	-.C25		7/2-
4C	70	110	902.6	902.2	16.61	4.85	10.47	9.22			4.13	.202	-.C25		
4C	71	111	905.4	905.8	17.05	2.75	10.50	11.70			2.83	.185	-.C25		5/2+
4C	72	112	909.5	909.2	17.41	4.13	10.48	10.72			2.03	.174	-.C25		
4C	73	113	911.8	912.5	17.85	2.31	10.76	13.00			1.25	-.134	-.C32		5/2-
4C	74	114	916.1	915.5	18.45	4.30	11.63	11.44			2.20	-.118	-.C32		
4C	75	115	918.4	918.4	18.76	2.27	12.32	13.80			1.45	-.108	-.C36		5/2-
4C	76	116	922.4	921.1	19.09	4.05	13.10	12.35			2.61	-.C95	-.C35		
4C	77	117	924.6	923.6	19.43	2.13	13.64	14.59			2.15	-.C94	-.C35		3/2-
4C	78	118	928.1	925.5	19.76	3.59	13.83	13.48			2.07	-.C82	-.C27		
4C	79	119	930.0	928.0	20.09	1.88	14.25	15.48			2.57	-.C66	-.C25		1/2-
4C	80	120	934.0	930.0	20.65	3.96	15.31	13.72			2.55	C			
4C	81	121	935.9	931.8	20.92	1.89	15.90	15.99			4.09	.C17	-.C04		11/2-
4C	82	122	939.7	933.5	21.28	3.79	16.36	14.45			6.20	C			
4C	83	123	939.5	935.0	21.41	-.13	14.99	18.66			4.56	C		F 7/2	
4C	84	124	940.9	936.3	21.91	1.40	13.24	17.45			4.65	C			
4C	85	125	940.5	937.5	22.13	-.42	13.60	19.60			2.04	C		F 7/2	
4C	86	126	941.7	938.5	22.45	1.17	14.00	18.33			2.18	C			
4C	87	127	940.9	939.4	22.76	-.75	14.31	20.56			1.54	C		F 7/2	
4C	88	128	941.9	940.2	22.94	.98	14.73	19.15			1.77	C			
4C	89	129	941.3	940.8	23.15	-.60	15.50	21.03			1.92	.C92	.C55		3/2-
4C	90	130	942.5	941.2	23.39	1.21	16.35	19.53			2.55	.106	.C58		
4C	91	131	942.4	941.6	23.63	-.18	17.26	21.21			2.90	.116	.C68		3/2+
4C	92	132	943.3	941.8	23.88	.97	17.56	20.37			2.77	.128	.C61		
4C	93	133	942.6	941.8	24.13	-.72	17.54	22.36			2.03	.135	.C63		3/2-
4C	94	134	943.2	941.8	24.40	.57	17.66	21.37			2.53	.144	.C57		
4C	95	135	942.2	941.6	24.62	-.98	17.97	23.22			2.83	.152	.C56		5/2+
4C	96	136	942.5	941.3	24.91	.33	18.31	22.19			2.36	.157	.C45		
4C	97	137	941.3	940.8	25.19	-1.21	18.57	24.02			2.52	.162	.C45		5/2-
4C	98	138	941.5	940.3	25.45	.22	19.03	22.84			2.26	.170	.C35		
4C	99	139	940.2	939.6	25.67	-1.31	19.51	24.67			2.67	.175	.C25		1/2-
4C	100	140	940.4	938.9	25.92	.18	20.03	23.46			2.65	.185	.C15		
4C	101	141	939.0	938.0	26.15	-1.40	20.48	25.31			2.15	.190	.C14		7/2+

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
40	102	142	939.0	937.0	26.36	-0.00	20.83	24.17			4.18	.192	.006		
41	22	63	312.4	313.4	-10.05	28.49	6.00	-36.13			1.03	-.208	-.029	1/2-	
41	23	64	337.0	339.6	-9.76	24.60	3.69	-31.61			-.78	.228	.005	5/2-	3/2+
41	24	65	364.1	364.9	-9.08	27.15	5.74	-33.87			.96	.209	.001	5/2-	
41	25	66	387.5	389.3	-8.50	23.39	5.77	-29.59			-.23	.189	.001	5/2-	5/2-
41	26	67	412.8	412.9	-7.91	25.27	5.16	-30.84			1.61	.186	-.017	5/2-	
41	27	68	434.4	435.6	-7.32	21.61	4.70	-26.56			1.03	.209	-.022	5/2-	1/2-
41	28	69	458.3	457.6	-6.81	23.85	4.52	-28.02			1.07	-.086	-.005	7/2+	
41	29	70	478.3	478.9	-6.12	20.02	4.06	-23.55			.03	-.101	-.009	7/2+	3/2-
41	30	71	499.6	499.4	-5.53	21.29	3.32	-24.35			.96	-.111	-.012	7/2+	
41	31	72	517.6	519.3	-4.97	18.01	2.23	-20.48			-.87	-.109	-.014	7/2+	1/2-
41	32	73	537.7	538.5	-4.37	20.15	2.24	-22.07			.32	-.122	-.014	7/2+	
41	33	74	554.4	557.0	-3.81	16.64	2.00	-18.03			-1.31	-.135	-.012	7/2+	5/2-
41	34	75	573.5	575.0	-3.23	19.11	2.03	-19.97			-.02	-.140	-.010	1/2-	
41	35	76	589.0	592.3	-2.73	15.52	2.01	-15.89			-1.30	-.164	-.003	1/2-	9/2+
41	36	77	607.1	609.0	-2.16	18.09	2.06	-17.97			-.04	-.158	-.009	1/2-	
41	37	78	621.6	625.2	-.51	14.54	2.07	-13.88			-1.41	-.167	-.009	1/2-	1/2-
41	38	79	638.8	640.9	-1.28	17.18	2.02	-16.00			.04	-.161	-.015	1/2-	
41	39	80	652.8	656.0	-.89	13.98	2.21	-12.27			1.11	.248	-.011	7/2+	5/2+
41	40	81	668.8	670.7	-.14	16.02	2.02	-14.04			.31	-.152	-.027	1/2-	
41	41	82	681.7	684.8	1.35	12.89	1.87	-10.14			-.90	-.150	-.031	1/2-	3/2-
41	42	83	696.3	697.7	1.88	14.56	2.65	-11.32			.92	-.150	-.034	1/2-	
41	43	84	707.7	710.1	2.40	11.47	3.23	-6.86			.21	-.151	-.040	1/2-	5/2+
41	44	85	721.1	722.0	2.86	13.32	3.55	-8.21			1.32	-.144	-.037	7/2+	
41	45	86	731.6	733.6	3.35	10.57	3.69	-4.96			.40	-.142	-.040	7/2+	3/2+
41	46	87	744.2	744.7	3.58	12.53	3.84	-6.42			-.34	.052	-.003	3/2+	
41	47	88	754.5	755.5	4.04	10.30	4.55	-3.76			-.80	.052	-.002	3/2+	7/2+
41	48	89	767.0	765.9	4.46	12.53	5.19	-5.51			1.13	.017	-.002	3/2+	
41	49	90	776.9	775.9	4.96	9.94	5.79	-2.42			1.15	.038	-.004	3/2+	5/2+
41	50	91	788.7	785.6	5.35	11.79	6.01	-3.85			3.14	C	C	5/2	
41	51	92	796.6	794.9	5.85	7.86	4.85	.58			1.76	-.029	-.002	7/2+	5/2+
41	52	93	805.9	803.9	6.27	9.29	3.35	-.44			1.99	C	C	5/2	
41	53	94	812.9	812.5	6.76	7.08	3.35	2.25			.49	.029	-.000	3/2+	3/2+
41	54	95	821.7	820.9	7.21	8.79	3.76	.93			.93	.025	.001	3/2+	
41	55	96	828.1	828.9	7.65	6.34	3.96	3.81			-.75	.028	-.001	3/2+	5/2+
41	56	97	836.3	836.6	8.07	8.25	4.26	2.33			-.23	.026	-.004	3/2+	
41	57	98	841.9	844.0	8.60	5.60	4.40	5.41			-1.47	-.082	.009	7/2+	7/2+
41	58	99	849.9	851.2	9.02	7.96	4.94	3.36			-.37	-.099	.011	7/2+	
41	59	100	855.3	858.0	9.32	5.39	5.49	6.26			-.51	.152	.022	5/2-	3/2-
41	60	101	862.9	864.6	9.73	7.60	5.92	4.34			.57	.160	.025	5/2-	
41	61	102	868.0	871.0	10.22	5.17	6.33	7.18			-.05	.181	.020	5/2-	3/2+
41	62	103	875.2	877.0	10.61	7.20	6.73	5.40			1.54	.202	.002	5/2-	
41	63	104	880.0	882.8	11.01	4.78	7.03	8.15			.32	.192	.012	5/2-	5/2-
41	64	105	886.7	888.4	11.41	6.69	7.37	6.51			1.36	.191	.006	5/2-	
41	65	106	891.1	893.7	11.79	4.37	7.68	9.25			.60	.197	.002	5/2-	5/2+
41	66	107	897.3	898.8	12.15	6.19	7.98	7.65			1.68	.195	-.006	5/2-	
41	67	108	901.4	903.7	12.53	4.10	8.45	10.44			1.13	.201	-.013	5/2-	1/2+

Z	N	A	B.E.	BO	SP	SN	SA	CB	PAK	X	S	A2	A4	P	N
41	68	109	907.2	908.3	12.92	5.86	8.93	9.00			2.27	.195	-.015	5/2-	
41	69	110	911.1	912.7	13.29	3.85	9.43	11.47			2.00	.202	-.026	5/2-	7/2-
41	70	111	916.3	916.9	13.67	5.23	9.56	10.35			3.02	.200	-.030	5/2-	
41	71	112	919.4	920.9	14.07	3.15	9.61	12.89			1.77	.188	-.025	5/2-	5/2+
41	72	113	924.0	924.7	14.53	4.59	9.72	11.84			1.66	-.145	-.030	1/2-	
41	73	114	926.8	928.3	14.96	2.75	10.16	14.25			.52	-.135	-.034	7/2+	5/2-
41	74	115	931.4	931.7	15.29	4.63	11.03	12.75			1.44	-.122	-.036	7/2+	
41	75	116	934.0	934.9	15.62	2.60	11.75	15.13			.64	-.110	-.038	7/2+	5/2-
41	76	117	938.4	937.9	15.94	4.37	12.41	13.70			1.77	-.102	-.037	7/2+	
41	77	118	940.8	940.8	16.28	2.47	12.92	15.94			1.30	-.095	-.038	7/2+	7/2-
41	78	119	944.7	943.4	16.57	3.88	13.09	14.86			2.18	-.085	-.025	7/2+	
41	79	120	946.9	945.9	16.90	2.20	13.49	16.88			1.75	-.077	-.030	5/2+	1/2-
41	80	121	951.1	948.2	17.10	4.16	14.40	15.31			2.86	C		C 9/2	
41	81	122	953.3	950.4	17.46	2.25	15.10	17.63			3.00	.018	-.005	3/2+	11/2-
41	82	123	957.4	952.3	17.75	4.08	15.78	16.08			5.07	C		C 9/2	
41	83	124	957.6	954.2	18.08	.20	14.36	20.31			3.46	C		C 9/2 F	7/2
41	84	125	959.3	955.8	18.40	1.72	12.66	15.11			3.52	C		C 9/2	
41	85	126	959.2	957.3	18.72	-.10	12.81	21.24			1.93	C		C 9/2 F	7/2
41	86	127	960.7	958.7	19.03	1.48	13.40	15.97			2.06	C		C 9/2	
41	87	128	960.3	959.9	19.34	-.43	13.60	22.19			.43	C		C 9/2 F	7/2
41	88	129	961.6	960.9	19.65	1.28	14.03	20.79			.66	C		C 9/2	
41	89	130	961.3	961.8	19.96	-.28	14.81	22.65			.67	.090	.048	3/2-	7/2-
41	90	131	962.8	962.6	20.25	1.50	15.52	21.03			1.80	.105	.056	3/2-	
41	91	132	962.9	963.2	20.56	.13	16.45	22.66			1.80	.120	.065	3/2-	7/2+
41	92	133	964.2	963.7	20.86	1.27	16.75	21.70			2.67	.128	.064	3/2-	
41	93	134	963.8	964.1	21.16	-.42	16.74	23.63			1.55	.135	.061	3/2-	7/2-
41	94	135	964.6	964.3	21.46	.87	16.89	22.58			2.47	.143	.055	3/2-	
41	95	136	963.9	964.4	21.74	-.70	17.16	24.43			1.74	.150	.054	3/2-	5/2+
41	96	137	964.6	964.4	22.03	.62	17.48	23.35			2.28	.154	.048	3/2-	
41	97	138	963.6	964.2	22.28	-.96	17.72	25.20			1.50	.161	.045	5/2-	5/2-
41	98	139	964.1	963.9	22.58	.52	18.20	23.99			2.21	.168	.034	5/2-	
41	99	140	963.1	963.5	22.85	-1.03	18.66	25.79			1.63	.178	.024	5/2-	1/2-
41	100	141	963.5	963.0	23.12	.45	19.15	24.53			2.61	.182	.015	5/2-	
41	101	142	962.4	962.4	23.39	-1.14	19.54	26.37			2.15	.188	.013	5/2-	7/2+
41	102	143	962.6	961.7	23.62	.23	19.84	25.23			3.13	.191	.007	5/2-	
41	103	144	961.5	960.8	23.93	-1.17	20.31	26.86			2.22	.192	.001	5/2-	5/2-
41	104	145	961.3	959.9	24.16	-.14	20.38	26.00			3.61	.192	-.007	5/2-	
42	22	64	304.6	303.8	-7.80	29.12	7.92	-39.50			2.50	-.185	-.040		
42	23	65	329.5	330.6	-7.51	24.89	5.28	-34.55			.34	-.164	-.036		1/2+
42	24	66	357.2	356.4	-6.98	27.67	6.42	-36.81			1.82	-.143	-.025		
42	25	67	381.2	381.4	-6.35	24.02	6.13	-32.74			.84	.165	.000		5/2-
42	26	68	407.1	405.6	-5.73	25.89	5.56	-34.46			2.55	.153	-.010		
42	27	69	429.5	428.9	-4.95	22.39	5.14	-30.23			1.18	-.102	-.018		1/2-
42	28	70	454.0	451.5	-4.31	24.49	4.95	-31.73			2.47	C			
42	29	71	474.4	473.3	-3.84	20.50	4.42	-27.38			1.73	-.096	-.014		3/2-
42	30	72	496.3	494.4	-3.26	21.87	2.95	-28.04			2.77	-.111	-.018		

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAK	X	S	A2	A4	P	N
42	31	73	514.9	514.8	-2.70	18.57	2.19-24.15				.96	-.110	-.020		1/2-
42	32	74	535.6	534.5	-2.17	20.68	2.17-25.70				2.11	-.121	-.020		
42	33	75	552.7	553.6	-1.64	17.17	1.88-21.62				.41	-.131	-.020		5/2-
42	34	76	572.3	572.1	-1.16	19.59	1.92-23.49				1.16	-.135	-.021		
42	35	77	588.3	590.0	-.67	16.00	1.85-15.35				.12	-.153	-.012		5/2+
42	36	78	607.0	607.2	-.11	18.64	1.96-21.47				1.48	-.146	-.015		
42	37	79	622.0	624.0	.39	15.05	2.00-17.32				-.01	-.153	-.015		1/2-
42	38	80	639.7	640.1	.93	17.72	2.20-19.45				1.60	-.151	-.026		
42	39	81	654.0	655.8	1.19	14.24	3.54-15.45				.36	-.154	-.028		7/2+
42	40	82	670.8	670.5	1.97	16.80	2.39-17.47				2.05	-.150	-.033		
42	41	83	684.2	685.6	2.46	13.38	2.18-13.54				.83	-.146	-.036		7/2+
42	42	84	700.1	699.8	3.82	15.92	2.84-15.54				2.75	-.150	-.039		
42	43	85	712.1	712.6	4.33	11.98	3.42-11.12				2.12	-.153	-.045		5/2+
42	44	86	725.9	725.1	4.83	13.82	3.21-11.58				3.24	-.146	-.042		
42	45	87	736.3	737.1	5.32	11.06	3.32-8.36				2.34	-.146	-.044		7/2+
42	46	88	749.9	748.8	5.75	12.96	3.42-9.76				1.26	.036	-.001		
42	47	89	760.7	760.0	6.24	10.78	4.12-7.34				.90	.049	-.003		7/2+
42	48	90	773.7	770.6	6.73	13.02	4.34-9.37				2.87	0			
42	49	91	784.1	781.3	7.16	10.36	5.37-6.26				2.84	.033	-.003		5/2+
42	50	92	796.4	791.4	7.66	12.29	5.55-7.73				4.92	0			
42	51	93	804.6	801.2	8.07	8.27	4.38-3.26				3.47	-.023	-.003		5/2+
42	52	94	814.4	810.6	8.55	9.76	2.75-4.30				3.75	0			
42	53	95	821.9	819.7	8.94	7.48	2.87-1.57				2.16	.017	.000		3/2+
42	54	96	831.1	828.5	9.37	9.22	3.22-2.86				2.59	0			
42	55	97	837.9	837.0	9.80	6.77	3.40-.02				.94	.021	.000		5/2+
42	56	98	846.5	845.1	10.23	8.66	3.73-1.45				1.42	0			
42	57	99	852.5	853.0	10.55	5.92	3.75-1.74				-.18	.060	.007		1/2+
42	58	100	860.7	860.5	10.86	8.28	4.20-1.18				.76	-.077	.003		
42	59	101	866.4	867.8	11.16	5.69	4.82-2.85				-.06	-.112	.025		11/2-
42	60	102	874.4	874.8	11.57	8.00	5.28-.91				1.02	-.115	.016		
42	61	103	879.8	881.5	11.82	5.42	5.61-3.95				.73	.163	.025		3/2+
42	62	104	887.4	888.0	12.15	7.53	5.95-2.13				1.70	.163	.013		
42	63	105	892.4	894.2	12.42	5.05	6.31-5.14				.57	.175	.013		5/2-
42	64	106	899.5	900.2	12.84	7.11	6.62-3.41				2.01	.176	.006		
42	65	107	904.1	905.9	13.05	4.58	6.83-6.50				.56	-.155	-.011		5/2+
42	66	108	911.0	911.3	13.75	6.89	7.43-4.64				2.09	-.157	-.017		
42	67	109	915.4	916.6	14.08	4.42	7.87-7.52				1.57	-.164	-.022		1/2+
42	68	110	921.8	921.6	14.54	6.32	8.36-6.02				2.85	-.161	-.025		
42	69	111	925.9	926.4	14.80	4.11	8.75-8.63				2.35	-.166	-.028		7/2-
42	70	112	931.5	931.0	15.25	5.68	8.95-7.44				3.35	-.161	-.031		
42	71	113	935.1	935.3	15.65	3.54	9.02-9.96				2.71	-.154	-.034		5/2-
42	72	114	940.2	939.5	16.21	5.15	9.32-8.73				3.17	-.147	-.033		
42	73	115	943.4	943.4	16.60	3.14	9.71-11.09				2.09	-.135	-.036		5/2-
42	74	116	948.4	947.2	16.95	4.98	10.56-9.58				2.98	-.121	-.036		
42	75	117	951.3	950.7	17.29	2.94	11.19-11.92				2.17	-.111	-.038		5/2-
42	76	118	956.0	954.1	17.62	4.70	11.59-10.47				3.28	-.102	-.036		
42	77	119	958.8	957.3	17.96	2.80	12.12-12.67				2.75	-.095	-.037		3/2-

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
42	78	120	963.0	960.2	18.30	4.22	12.29	11.57			3.65	-.084	-.02E		
42	79	121	965.6	963.1	18.69	2.60	12.76	13.49			3.31	-.07E	-.02E		1/2-
42	80	122	970.2	965.7	19.09	4.56	13.74	11.83			4.48	0			
42	81	123	972.7	968.2	19.38	2.54	14.39	14.11			4.57	.017	-.004		11/2-
42	82	124	977.1	970.5	19.73	4.42	14.85	12.55			6.67	0			
42	83	125	977.7	972.6	20.05	.52	13.49	16.77			5.06	0			F 7/2
42	84	126	979.7	974.6	20.36	2.04	11.74	15.58			5.13	0			
42	85	127	979.9	976.4	20.67	.21	12.08	17.72			3.53	0			F 7/2
42	86	128	981.7	978.0	20.98	1.79	12.46	16.47			3.66	0			
42	87	129	981.6	979.5	21.29	-.12	12.76	18.70			2.03	0			F 7/2
42	88	130	983.2	980.9	21.59	1.58	13.17	17.30			2.26	0			
42	89	131	983.0	982.1	21.75	-.11	13.80	19.31			2.02	.086	.045		3/2-
42	90	132	984.8	983.2	22.00	1.75	14.58	17.74			3.15	.102	.054		
42	91	133	985.1	984.1	22.19	.31	15.49	19.46			3.05	.115	.065		3/2+
42	92	134	986.6	984.9	22.43	1.51	15.79	18.40			3.85	.123	.063		
42	93	135	986.4	985.5	22.67	-.18	15.79	20.50			3.10	.133	.061		3/2-
42	94	136	987.6	986.0	22.94	1.14	15.96	19.45			3.59	.136	.055		
42	95	137	987.1	986.4	23.19	-.46	16.22	21.35			2.81	.145	.053		5/2+
42	96	138	988.0	986.7	23.46	.89	16.54	20.27			3.33	.148	.047		
42	97	139	987.3	986.8	23.73	-.69	16.83	22.14			2.55	.157	.043		5/2-
42	98	140	988.1	986.8	23.97	.77	17.26	20.95			3.23	.161	.034		
42	99	141	987.3	986.7	24.20	-.81	17.67	22.78			2.60	.170	.026		1/2-
42	100	142	988.0	986.5	24.45	.70	18.15	21.54			3.58	.178	.017		
42	101	143	987.1	986.1	24.68	-.91	18.55	23.41			3.04	.181	.014		7/2+
42	102	144	987.6	985.6	24.93	.48	18.85	22.29			3.97	.182	.008		
42	103	145	986.5	985.1	25.08	-1.02	19.24	24.06			3.61	.187	.003		5/2-
42	104	146	986.8	984.4	25.45	.24	19.48	23.06			4.50	.186	-.006		
42	105	147	985.6	983.6	25.69	-1.12	19.82	24.69			4.21	.187	-.012		9/2+
42	106	148	985.6	982.6	25.96	-.07	20.13	23.90			5.02	.184	-.015		
43	22	65	294.2	293.8	-10.45	29.83	8.29	-38.79	9.18	.615	2.50	-.184	-.061	5/2+	
43	23	66	319.6	321.1	-9.92	25.42	7.37	-33.92	11.04	.577	.58	-.181	-.056	5/2+	1/2+
43	24	67	347.7	347.5	-9.50	28.09	6.96	-35.91			1.66	-.157	-.044	5/2+	
43	25	68	371.8	373.0	-9.35	24.17	6.54	-31.43			.01	-.140	-.037	5/2+	3/2-
43	26	69	398.4	397.8	-8.62	26.62	6.01	-33.09			1.78	-.131	-.032	5/2+	
43	27	70	421.4	421.6	-8.02	22.99	5.61	-29.05			.71	-.120	-.027	5/2+	1/2-
43	28	71	446.3	444.8	-7.67	24.85	5.19	-30.20			2.29	-.112	-.020	5/2+	
43	29	72	467.5	467.1	-6.95	21.22	4.79	-25.77			1.29	-.117	-.023	5/2+	3/2-
43	30	73	489.9	488.8	-6.37	22.45	3.39	-26.83			2.31	-.125	-.027	5/2+	
43	31	74	509.1	509.7	-5.81	19.13	2.50	-23.03			.60	-.125	-.031	5/2+	1/2-
43	32	75	530.3	530.0	-5.23	21.25	2.46	-24.61			1.74	-.133	-.030	5/2+	
43	33	76	548.1	549.6	-4.67	17.73	2.19	-20.60			.03	-.140	-.025	5/2+	5/2-
43	34	77	568.2	568.6	-4.13	20.13	2.16	-22.51			1.27	-.143	-.030	5/2+	
43	35	78	584.7	587.0	-3.61	16.53	2.05	-18.41			-.39	-.153	-.026	5/2+	9/2+
43	36	79	603.9	604.8	-3.05	19.20	2.14	-20.65			1.10	-.151	-.031	5/2+	
43	37	80	619.5	622.1	-2.51	15.59	2.21	-16.50			-.40	-.154	-.032	5/2+	1/2-
43	38	81	637.8	638.7	-1.99	18.24	2.37	-18.66			1.25	-.154	-.035	5/2+	

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
43	39	82	652.5	654.9	-1.46	14.77	2.60-14.70				.02	-.156	-.037	5/2+	1/2-
43	40	83	669.8	670.5	-.94	17.31	2.73-16.74				1.77	-.154	-.041	5/2+	
43	41	84	683.8	685.7	-.40	13.92	2.67-12.86				.60	-.152	-.042	5/2+	3/2-
43	42	85	700.2	700.4	.08	16.41	3.06-14.85				2.56	-.155	-.046	5/2+	
43	43	86	713.5	714.5	1.46	13.36	3.53-11.34				1.94	-.153	-.053	5/2+	5/2+
43	44	87	727.8	727.5	1.91	14.28	3.24-11.77				3.08	-.148	-.050	5/2+	
43	45	88	739.4	740.0	2.42	11.56	3.33-7.76				2.20	-.146	-.052	5/2+	3/2+
43	46	89	752.6	752.1	2.66	13.21	3.22-8.93				2.61	-.135	-.040	5/2+	
43	47	90	763.6	763.8	2.88	11.00	3.64-5.98				-.01	.052	-.003	5/2+	7/2+
43	48	91	777.0	775.1	3.32	13.47	4.58-7.78				1.92	C		C 9/2	
43	49	92	787.9	786.0	3.78	10.83	5.11-4.62				1.91	.034	-.003	5/2+	5/2+
43	50	93	800.6	796.6	4.23	12.74	5.32-6.10				3.97	C		C 9/2	
43	51	94	809.3	806.8	4.68	8.72	4.10-1.63				2.52	-.023	-.003	5/2+	5/2+
43	52	95	819.5	816.7	5.13	10.21	2.52-2.68				2.82	C		C 9/2	
43	53	96	827.4	826.2	5.57	7.92	2.59-.04				1.24	.018	.000	5/2+	3/2+
43	54	97	837.1	835.4	6.01	9.65	2.96-1.27				1.66	C		C 9/2	
43	55	98	844.3	844.3	6.45	7.21	3.08-1.62				.02	.021	.000	5/2+	5/2+
43	56	99	853.4	852.9	6.87	9.10	3.39-.14				.51	C		C 9/2	
43	57	100	859.8	861.2	7.32	6.36	3.42-3.30				-1.03	.064	.004	5/2+	1/2+
43	58	101	868.5	869.1	7.76	8.72	3.89-1.29				-.02	.085	.002	5/2+	
43	59	102	874.6	876.8	8.13	6.06	4.36-4.32				-1.08	-.114	.002	5/2+	11/2-
43	60	103	883.0	884.2	8.58	8.45	4.84-2.18				.12	-.120	-.002	5/2+	
43	61	104	888.7	891.4	8.88	5.71	5.17-5.21				-1.02	-.132	.003	5/2+	3/2+
43	62	105	896.8	898.2	9.40	8.05	5.62-3.18				.30	-.136	-.007	5/2+	
43	63	106	902.2	904.8	9.74	5.38	5.84-6.22				-.61	-.147	-.009	5/2+	5/2-
43	64	107	909.8	911.2	10.30	7.68	6.31-4.22				.86	-.149	-.016	5/2+	
43	65	108	914.9	917.3	10.75	5.03	6.57-7.22				.10	-.157	-.020	5/2+	5/2+
43	66	109	922.2	923.1	11.16	7.31	7.18-5.32				1.63	-.157	-.025	5/2+	
43	67	110	927.0	928.8	11.56	4.62	7.63-8.16				1.11	-.164	-.028	5/2+	1/2+
43	68	111	933.7	934.1	11.95	6.71	8.16-6.62				2.42	-.162	-.031	5/2+	
43	69	112	938.2	939.3	12.34	4.50	8.55-9.20				1.99	-.166	-.034	5/2+	7/2-
43	70	113	944.3	944.2	12.72	6.06	8.75-7.99				3.03	-.162	-.037	5/2+	
43	71	114	948.2	949.0	13.10	3.92	8.83-10.50				2.37	-.164	-.039	5/2+	5/2-
43	72	115	953.7	953.5	13.45	5.50	9.10-9.27				2.85	-.150	-.038	5/2+	
43	73	116	957.1	957.8	13.77	3.46	9.42-11.69				1.75	-.139	-.040	5/2+	5/2-
43	74	117	962.4	961.9	14.08	5.29	10.11-10.28				2.55	-.127	-.039	5/2+	
43	75	118	965.7	965.8	14.39	3.25	10.62-12.70				1.71	-.117	-.040	5/2+	5/2-
43	76	119	970.7	969.5	14.69	5.01	10.99-11.36				2.76	-.108	-.038	5/2+	
43	77	120	973.8	973.0	15.01	3.12	11.51-13.63				2.20	-.100	-.038	5/2+	3/2-
43	78	121	978.3	976.3	15.30	4.51	11.65-12.61				3.05	-.090	-.031	5/2+	
43	79	122	981.2	979.5	15.61	2.91	12.09-14.62				2.63	-.082	-.028	5/2+	1/2-
43	80	123	986.0	982.4	15.86	4.81	13.02-12.97				3.62	C		C 9/2	
43	81	124	988.9	985.2	16.19	2.86	13.69-15.58				3.71	.017	-.004	5/2+	11/2-
43	82	125	993.6	987.8	16.51	4.75	14.27-13.87				5.81	C		C 9/2	
43	83	126	994.5	990.3	16.84	.85	12.87-18.23				4.21	C		C 9/2 F 7/2	
43	84	127	996.8	992.6	17.16	2.36	11.14-17.04				4.27	C		C 9/2	
43	85	128	997.4	994.7	17.48	.53	11.48-19.17				2.68	C		C 9/2 F 7/2	

Z	N	A	B.E.	BO	SP	SN	SA	CP	BAR	X	S	A2	A4	P	N
43	86	129	999.5	956.7	17.79	2.10	11.86	17.92			2.81	C		C 9/2	
43	87	130	999.7	958.5	18.10	.19	12.15	20.13			1.15	C		C 9/2 F 7/2	
43	88	131	1001.6	1000.1	18.41	1.89	12.55	18.74			1.42	C		C 9/2	
43	89	132	1001.8	1001.7	18.71	.19	13.17	20.74			1.14	.085	.043	5/2+	3/2-
43	90	133	1003.8	1003.0	18.99	2.03	13.92	18.92			2.15	.098	.050	5/2+	
43	91	134	1004.2	1004.2	19.13	.46	14.66	20.80			1.97	.115	.061	5/2+	3/2+
43	92	135	1006.2	1005.3	19.53	1.91	15.07	19.53			2.89	.121	.061	5/2+	
43	93	136	1006.2	1006.3	19.81	.09	15.03	21.59			2.13	.131	.059	5/2+	3/2-
43	94	137	1007.7	1007.1	20.11	1.44	15.20	20.50			2.64	.134	.054	5/2+	
43	95	138	1007.5	1007.7	20.38	-.18	15.44	22.40			1.84	.142	.051	5/2+	5/2+
43	96	139	1008.7	1008.3	20.67	1.18	15.75	21.30			2.37	.144	.046	5/2+	
43	97	140	1008.3	1008.7	20.94	-.42	16.03	23.19			1.58	.153	.042	5/2+	5/2-
43	98	141	1009.3	1009.0	21.20	1.03	16.43	21.99			2.26	.157	.034	3/2-	
43	99	142	1008.7	1009.1	21.46	-.54	16.85	23.86			1.62	.167	.026	3/2-	1/2-
43	100	143	1009.7	1009.1	21.72	.96	17.29	22.59			2.59	.174	.017	3/2-	
43	101	144	1009.1	1009.1	21.99	-.64	17.68	24.44			2.04	.177	.013	3/2-	7/2+
43	102	145	1009.8	1008.9	22.26	.75	17.99	23.28			2.95	.177	.007	3/2-	
43	103	146	1009.0	1008.5	22.51	-.76	18.36	25.06			2.57	.181	.002	3/2-	5/2-
43	104	147	1009.6	1008.1	22.79	.51	18.64	24.03			3.52	.182	-.006	3/2-	
43	105	148	1008.7	1007.6	23.05	-.86	18.94	25.64			3.24	.193	-.013	3/2-	9/2+
43	106	149	1008.9	1006.9	23.32	.21	19.29	24.81			4.11	.181	-.022	3/2-	
43	107	150	1007.8	1006.1	23.58	-1.06	19.59	26.37			3.75	.180	-.024	3/2-	7/2-
44	22	66	284.9	283.2	-9.28	30.29	7.98-41.84	6.54 .651	3.14	-.162	-.053				
44	23	67	311.0	311.1	-8.61	26.09	7.19-37.03	8.50 .622	1.99	-.181	-.060				1/2+
44	24	68	339.6	338.0	-8.03	28.66	6.73-39.06	11.50 .593	2.84	-.146	-.042				
44	25	69	364.6	364.1	-7.26	24.95	6.79-34.78		1.06	.133	-.001				5/2-
44	26	70	391.6	389.4	-6.84	27.04	6.15-36.38		3.00	-.116	-.027				
44	27	71	415.3	413.8	-6.13	23.69	5.83-32.49		1.72	.074	-.008				7/2-
44	28	72	440.9	437.5	-5.34	25.64	5.58-33.89		3.44	0					
44	29	73	462.3	460.4	-5.17	21.39	4.57-29.17		2.01	.042	-.001				1/2-
44	30	74	485.3	482.6	-4.68	22.94	3.02-30.11		3.32	-.097	-.021				
44	31	75	504.9	504.1	-4.14	19.67	2.20-26.34		1.49	-.092	-.022				1/2-
44	32	76	520.7	524.9	-3.65	21.74	2.06-27.87		2.85	-.117	-.026				
44	33	77	544.9	545.0	-3.16	18.23	1.72-23.82		1.15	-.128	-.028				5/2-
44	34	78	565.5	564.6	-2.66	20.63	1.67-25.69		2.35	-.129	-.029				
44	35	79	582.5	583.5	-2.23	16.96	1.47-21.50		.64	-.144	-.023				1/2-
44	36	80	602.2	601.8	-1.69	19.74	1.61-23.77		2.14	-.139	-.031				
44	37	81	618.3	619.5	-1.20	16.08	1.68-19.50		.64	-.145	-.032				5/2+
44	38	82	637.0	636.7	-.71	18.73	1.77-21.74		2.30	-.145	-.035				
44	39	83	652.3	653.4	-.21	15.27	1.99-17.78		1.13	-.150	-.037				1/2-
44	40	84	670.1	669.5	.28	17.80	2.07-19.81		2.87	-.148	-.040				
44	41	85	684.5	685.2	.77	14.42	2.25-15.93		1.71	-.146	-.043				3/2-
44	42	86	701.4	700.3	1.23	16.87	2.32-17.90		3.65	-.149	-.046				
44	43	87	715.2	715.0	1.72	13.85	2.79-14.36		3.09	-.148	-.054				5/2+
44	44	88	730.8	729.2	3.02	15.57	2.43-15.62		4.21	-.141	-.051				
44	45	89	742.8	742.2	3.49	12.04	2.49-11.61		3.35	-.140	-.054				3/2+

L	N	A	R.E.	BC	SP	SN	SA	CE	EAR	X	S	A2	A4	P	N
44	46	90	756.8	754.8	4.24	13.95	2.62	-12.27			2.08	.C2C	-.C01		
44	47	91	768.5	766.5	4.91	11.67	3.23	-9.57			1.66	.C35	-.C0C		7/2+
44	48	92	782.5	778.7	5.43	13.98	4.25	-11.41			3.76	C			
44	49	93	793.7	750.1	5.85	11.25	4.73	-8.26			3.71	.C31	-.C02		5/2+
44	50	94	806.9	801.1	6.31	13.19	4.89	-9.73			5.80	C			
44	51	95	816.1	811.8	6.74	9.16	3.69	-5.26			4.33	-.C15	-.C04		5/2+
44	52	96	826.7	822.1	7.18	10.65	2.04	-6.30			4.63	C			
44	53	97	835.0	832.0	7.60	8.34	2.12	-3.56			3.00	C			D 5/2
44	54	98	845.1	841.7	8.04	10.10	2.45	-4.88			3.46	C			
44	55	99	852.8	851.0	8.46	7.62	2.60	-1.98			1.81	.018	.C01		5/2+
44	56	100	862.3	860.0	8.88	9.52	2.90	-3.44			2.31	C			
44	57	101	869.0	868.7	9.23	6.72	2.85	-.22			.60	.C53	.C07		1/2+
44	58	102	878.1	877.1	9.60	9.09	3.26	-2.13			1.04	C			
44	59	103	884.4	885.2	9.85	6.31	3.66	1.06			.04	.C94	.C06		3/2+
44	60	104	893.2	893.0	10.14	8.74	4.12	-.95			1.08	.101	.C04		
44	61	105	899.2	900.5	10.45	6.02	4.45	2.17			.25	.133	.C14		3/2-
44	62	106	907.6	907.8	10.82	8.43	4.88	.11			1.31	-.125	-.C03		
44	63	107	913.3	914.7	11.11	5.68	5.14	3.21			.32	-.137	-.C07		3/2+
44	64	108	921.3	921.5	11.47	8.03	5.64	1.26			1.82	-.142	-.C15		
44	65	109	926.7	928.0	11.84	5.40	5.99	4.29			1.03	-.151	-.C18		5/2+
44	66	110	934.4	934.2	12.20	7.66	6.54	2.41			2.60	-.153	-.C22		
44	67	111	939.5	940.2	12.55	5.17	7.13	5.30			2.10	-.160	-.C27		1/2+
44	68	112	946.6	945.9	12.92	7.08	7.32	3.75			3.40	-.158	-.C30		
44	69	113	951.5	951.5	13.27	4.85	7.74	6.37			2.96	-.163	-.C33		7/2-
44	70	114	957.9	956.8	13.64	6.43	7.85	5.14			3.95	-.158	-.C36		
44	71	115	962.2	961.9	13.99	4.27	8.02	7.67			3.31	-.160	-.C38		5/2-
44	72	116	968.1	966.7	14.38	5.85	8.22	6.42			3.77	-.143	-.C37		
44	73	117	971.9	971.4	14.79	3.88	8.55	8.81			2.74	-.132	-.C35		5/2-
44	74	118	977.6	975.8	15.17	5.67	9.07	7.39			3.61	-.115	-.C38		
44	75	119	981.3	980.1	15.58	3.66	9.60	5.74			2.81	-.105	-.C35		5/2-
44	76	120	986.7	984.1	15.97	5.39	10.01	8.36			3.85	-.095	-.C36		
44	77	121	990.1	988.0	16.34	3.45	10.55	10.61			3.40	-.094	-.C36		3/2-
44	78	122	995.1	991.6	16.74	4.92	10.77	5.52			4.24	-.080	-.C21		
44	79	123	998.2	995.1	16.99	3.16	11.13	11.60			3.11	C			D 3/2
44	80	124	1003.7	998.4	17.66	5.47	12.38	5.62			5.28	C			
44	81	125	1006.7	1001.5	17.83	3.04	12.82	12.38			5.20	C			D 3/2
44	82	126	1011.9	1004.5	18.29	5.21	13.47	10.54			7.46	C			
44	83	127	1013.1	1007.2	18.61	1.17	12.10	14.90			5.86	C			F 7/2
44	84	128	1015.8	1009.9	18.92	2.67	10.34	13.72			5.62	C			
44	85	129	1016.6	1012.3	19.24	.85	10.67	15.86			4.33	C			F 7/2
44	86	130	1019.0	1014.6	19.54	2.41	11.04	14.62			4.46	C			
44	87	131	1019.5	1016.7	19.85	.50	11.32	16.84			2.83	C			F 7/2
44	88	132	1021.7	1018.7	20.15	2.19	11.72	15.46			3.06	C			
44	89	133	1021.9	1020.5	20.16	.20	12.05	17.75			2.07	.C62	.C34		1/2+
44	90	134	1024.3	1022.1	20.48	2.34	12.81	15.91			3.22	.C88	.C42		
44	91	135	1024.9	1023.6	20.66	.64	13.56	17.87			3.08	.105	.C55		3/2+
44	92	136	1027.1	1025.0	20.90	2.15	13.96	16.55			4.02	.117	.C60		

Z	N	A	B.E.	BO	SP	SN	SA	GB	BAR	X	S	A2	A4	P	N
44	93	137	1027.4	1026.2	21.15	.35	14.00	18.52			3.26	.127	.055		3/2-
44	94	138	1029.1	1027.3	21.44	1.72	14.21	17.51			3.74	.125	.053		
44	95	139	1029.2	1028.3	21.70	.08	14.47	19.46			2.90	.137	.050		5/2+
44	96	140	1030.7	1029.1	21.98	1.46	14.79	18.35			3.41	.135	.044		
44	97	141	1030.5	1029.8	22.23	-.17	15.07	20.28			2.61	.147	.041		5/2-
44	98	142	1031.8	1030.4	22.54	1.33	15.51	19.04			3.31	.152	.033		
44	99	143	1031.5	1030.8	22.77	-.31	15.90	20.89			2.63	.160	.027		1/2-
44	100	144	1032.7	1031.1	23.01	1.20	16.33	19.72			3.51	.165	.020		
44	101	145	1032.3	1031.3	23.25	-.40	16.74	21.60			2.96	.170	.014		7/2+
44	102	146	1033.3	1031.4	23.52	1.02	17.06	20.44			3.85	.165	.006		
44	103	147	1032.8	1031.3	23.76	-.53	17.44	22.25			3.44	.173	.002		5/2-
44	104	148	1033.5	1031.1	23.99	.74	17.70	21.26			4.33	.171	-.007		
44	105	149	1032.9	1030.8	24.23	-.62	18.10	22.90			4.08	.175	-.014		9/2+
44	106	150	1033.4	1030.4	24.52	.49	18.35	22.03			4.98	.174	-.015		
44	107	151	1032.6	1029.9	24.78	-.80	18.68	23.60			4.82	.178	-.026		7/2-
44	108	152	1032.7	1029.3	25.05	.13	18.87	22.91			5.43	.170	-.025		
44	109	153	1031.5	1028.7	25.30	-1.20	18.99	24.54			4.97	.165	-.034		1/2-
45	22	67	273.1	272.1-11.72	30.89	7.93-41.28	4.78	.693	2.35	-.162	-.053	3/2+			
45	23	68	299.8	300.6-11.18	26.64	7.17-36.41	6.49	.655	1.13	-.174	-.061	3/2+	1/2+		
45	24	69	329.0	328.1-10.61	29.22	6.56-38.25	9.49	.631	2.20	-.143	-.048	2/2+			
45	25	70	354.4	354.7-10.13	25.44	6.58-33.61	11.88	.604	.24	.125	-.004	1/2+	5/2-		
45	26	71	382.0	380.5 -9.58	27.59	6.08-35.06	14.87	.565	2.37	-.115	-.033	3/2+			
45	27	72	406.3	405.5 -9.03	24.24	6.15-30.98			1.04	.075	-.007	1/2-	7/2-		
45	28	73	432.4	429.7 -8.56	26.11	5.64-32.23			2.69	0		C 9/2			
45	29	74	454.4	453.1 -7.95	22.00	4.64-27.42			1.66	-.083	-.017	3/2+	3/2-		
45	30	75	477.8	475.9 -7.45	23.44	3.24-28.45			2.78	-.107	-.027	3/2+			
45	31	76	498.0	497.5 -8.91	20.21	2.23-24.70			1.06	-.106	-.031	3/2+	1/2-		
45	32	77	520.3	519.2 -6.38	22.27	2.06-26.24			2.24	-.120	-.031	3/2+			
45	33	78	539.1	539.9 -5.84	18.76	1.69-22.33			.51	-.126	-.033	3/2+	5/2-		
45	34	79	560.2	559.9 -5.33	21.15	1.58-24.43			1.71	-.127	-.034	3/2+			
45	35	80	577.7	579.3 -4.82	17.46	1.31-20.26			-.12	-.135	-.031	3/2+	1/2-		
45	36	81	597.9	598.1 -4.30	20.25	1.44-22.69			1.47	-.137	-.036	3/2+			
45	37	82	614.5	616.4 -3.79	16.59	1.49-18.70			-.03	-.141	-.037	3/2+	9/2+		
45	38	83	633.7	634.1 -3.29	19.23	1.53-20.97			1.63	-.142	-.035	3/2+			
45	39	84	649.5	651.2 -2.79	15.77	1.72-17.06			.45	-.147	-.040	3/2+	1/2-		
45	40	85	667.8	667.9 -2.30	18.29	1.77-15.19			2.20	-.148	-.043	3/2+			
45	41	86	682.7	684.0 -1.81	14.90	1.89-15.32			1.08	-.144	-.047	3/2+	9/2+		
45	42	87	700.1	699.6 -1.29	17.39	1.97-17.35			3.00	-.145	-.045	2/2+			
45	43	88	714.4	714.8 -.83	14.31	2.36-13.88			2.45	-.146	-.055	3/2+	5/2+		
45	44	89	730.5	729.5 -.36	16.04	2.00-15.24			3.58	-.140	-.053	3/2+			
45	45	90	743.8	743.7 .90	13.30	1.94-11.82			2.72	-.138	-.055	2/2+	3/2+		
45	46	91	758.1	756.7 1.31	14.36	2.02-12.30			1.45	.033	-.002	1/2-			
45	47	92	770.3	769.4 1.79	12.14	2.60 -8.05			1.06	.047	.001	1/2-	7/2+		
45	48	93	784.7	781.6 2.21	14.41	3.81 -9.90			3.07	0		C 9/2			
45	49	94	796.4	793.4 2.68	11.72	4.53 -6.72			3.04	.033	-.003	1/2-	9/2+		
45	50	95	810.0	804.9 3.11	13.62	4.69 -6.23			5.10	0		C 9/2			

Z	N	A	B.E.	BC	SP	SN	SA	GB	PAR	X	S	A2	A4	P	N
45	51	96	819.6	816.0	3.57	9.62	3.48	-3.75			3.65	-.020	-.004	1/2-	5/2+
45	52	97	830.7	826.8	4.00	11.08	1.81	-4.80			3.94	C		C 5/2	
45	53	98	839.5	837.2	4.44	8.78	1.88	-2.05			2.32	C		C 5/2 D	5/2
45	54	99	850.0	847.2	4.86	10.52	2.19	-3.37			2.78	C		C 5/2	
45	55	100	858.1	857.0	5.30	8.06	2.33	-.49			1.15	.021	-.000	1/2-	5/2+
45	56	101	868.0	866.4	5.72	9.94	2.61	-1.99			1.64	C		C 5/2	
45	57	102	875.2	875.5	6.18	7.18	2.58	1.23			-.01	.055	.007	1/2-	1/2+
45	58	103	884.7	884.3	6.59	9.51	2.99	-.84			.58	.040	-.005	1/2-	
45	59	104	891.4	892.8	7.01	6.72	3.35	2.45			-.63	.091	.004	7/2+	3/2+
45	60	105	900.6	901.0	7.40	9.14	3.76	.25			.37	.095	.001	7/2+	
45	61	106	906.9	908.5	7.76	6.37	4.07	3.37			-.74	.120	.005	7/2+	3/2-
45	62	107	915.7	916.6	8.11	8.78	4.40	1.20			.60	-.122	-.011	3/2+	
45	63	108	921.8	923.5	8.51	6.08	4.77	4.26			-.36	-.135	-.014	3/2+	3/2+
45	64	109	930.2	931.1	8.91	8.43	5.15	2.10			1.17	-.140	-.021	3/2+	
45	65	110	936.0	937.5	9.29	5.78	5.54	5.03			.36	-.145	-.021	3/2+	5/2+
45	66	111	944.1	944.5	9.69	8.06	5.93	3.02			1.96	-.150	-.028	3/2+	
45	67	112	949.6	950.9	10.05	5.53	6.43	5.84			1.41	-.158	-.025	3/2+	1/2+
45	68	113	957.1	957.0	10.43	7.47	6.59	4.24			2.70	-.154	-.032	3/2+	
45	69	114	962.3	962.9	10.79	5.20	6.97	6.81			2.27	-.161	-.034	3/2+	7/2-
45	70	115	969.1	968.6	11.16	6.81	7.07	5.57			3.30	-.155	-.037	3/2+	
45	71	116	973.7	974.0	11.52	4.63	7.20	8.08			2.63	-.157	-.035	3/2+	5/2-
45	72	117	980.0	979.3	11.90	6.26	7.40	6.78			3.12	-.140	-.038	3/2+	
45	73	118	984.2	984.3	12.27	4.25	7.73	5.33			2.14	-.130	-.040	3/2+	5/2-
45	74	119	990.2	989.1	12.62	6.02	8.24	7.95			3.02	-.115	-.035	3/2+	
45	75	120	994.2	993.7	12.97	4.02	8.79	10.45			2.23	-.105	-.040	3/2+	5/2-
45	76	121	1000.0	998.0	13.31	5.73	9.24	9.13			3.30	-.095	-.037	3/2+	
45	77	122	1003.8	1002.2	13.65	3.83	9.82	11.47			2.81	-.093	-.037	3/2+	3/2-
45	78	123	1009.0	1006.2	13.98	5.24	10.06	10.40			3.62	-.075	-.027	3/2+	
45	79	124	1012.5	1010.1	14.31	3.49	10.43	12.88			2.48	C		C 5/2 D	3/2
45	80	125	1018.3	1013.7	14.63	5.80	11.71	11.00			4.65	C		C 5/2	
45	81	126	1021.7	1017.1	14.96	3.36	12.17	13.75			4.57	C		C 5/2 D	3/2
45	82	127	1027.2	1020.4	15.28	5.53	12.88	11.91			6.83	C		C 5/2	
45	83	128	1028.7	1023.5	15.61	1.49	11.51	16.26			5.23	C		C 5/2 F	7/2
45	84	129	1031.7	1026.4	15.92	2.99	9.75	15.08			5.29	C		C 5/2	
45	85	130	1032.9	1029.2	16.24	1.17	10.07	17.21			3.71	C		C 5/2 F	7/2
45	86	131	1035.6	1031.7	16.55	2.72	10.44	15.97			3.84	C		C 5/2	
45	87	132	1036.4	1034.2	16.87	.81	10.71	18.15			2.22	C		C 5/2 F	7/2
45	88	133	1038.9	1036.4	17.17	2.45	11.11	16.81			2.44	C		C 5/2	
45	89	134	1039.4	1028.6	17.47	.51	11.42	15.10			1.25	.052	.027	5/2+	1/2+
45	90	135	1042.0	1040.5	17.72	2.59	12.12	17.23			2.41	.084	.038	1/2-	
45	91	136	1042.8	1042.3	17.92	.84	12.77	15.01			2.17	.105	.055	1/2-	3/2+
45	92	137	1045.1	1044.0	18.09	2.32	13.06	17.72			2.91	.113	.054	1/2-	
45	93	138	1045.9	1045.5	18.45	.71	13.32	15.59			2.36	.124	.057	1/2-	3/2-
45	94	139	1047.9	1046.9	18.75	2.03	13.43	18.48			2.86	.126	.057	1/2-	
45	95	140	1048.2	1048.1	19.03	.35	13.69	20.48			1.98	.133	.047	1/2-	5/2+
45	96	141	1050.0	1049.2	19.33	1.76	14.01	15.30			2.51	.135	.042	1/2-	
45	97	142	1050.1	1050.2	19.59	.09	14.28	21.24			1.65	.143	.038	1/2-	5/2-

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
45	98	143	1051.6	1051.0	19.79	1.53	14.64	20.04			2.30	.147	.029	7/2+	
45	99	144	1051.7	1051.8	20.14	.04	15.10	21.80			1.74	.155	.026	7/2+	1/2-
45	100	145	1053.1	1052.3	20.42	1.48	15.55	20.59			2.60	.156	.019	7/2+	
45	101	146	1053.0	1052.8	20.67	-.14	15.95	22.47			2.06	.164	.012	7/2+	7/2+
45	102	147	1054.3	1053.1	20.94	1.28	16.27	21.29			3.01	.166	.006	7/2+	
45	103	148	1054.0	1053.3	21.23	-.24	16.68	23.06			2.50	.165	-.000	7/2+	5/2-
45	104	149	1055.0	1053.4	21.49	1.01	16.94	22.02			3.46	.166	-.007	7/2+	
45	105	150	1054.7	1053.4	21.74	-.37	17.33	23.76			3.20	.170	-.013	7/2+	5/2+
45	106	151	1055.4	1053.3	22.01	.76	17.58	22.87			4.10	.168	-.015	7/2+	
45	107	152	1054.9	1053.0	22.26	-.56	17.88	24.45			3.92	.172	-.024	7/2+	7/2-
45	108	153	1055.3	1052.6	22.55	.42	18.10	23.70			4.62	.165	-.025	7/2+	
45	109	154	1054.4	1052.3	22.81	-.94	18.22	25.35			4.17	.164	-.034	7/2+	1/2-
45	110	155	1054.4	1051.9	23.07	.03	18.39	24.63			4.65	.156	-.037	7/2+	
46	22	68	262.6	260.6-10.55	31.51	7.68-44.07	2.51	.736	2.02	.016	-.000				
46	23	69	290.0	289.6	-9.80	27.38	7.10-39.05	4.17	.698	.55	.072	-.000			3/2-
46	24	70	320.1	317.6	-8.96	30.07	6.89-41.22	7.21	.663	2.60	.075	-.005			
46	25	71	346.2	344.8	-8.26	26.13	6.92-36.75	9.73	.636	1.70	.095	-.006			5/2-
46	26	72	374.5	371.1	-7.52	28.33	6.59-38.39	12.34	.613	3.35	C				
46	27	73	399.4	356.6	-6.90	24.67	6.51-34.44	15.75	.587	2.88	.056	-.010			7/2-
46	28	74	426.2	421.4	-6.21	26.80	6.27-35.87			4.81	C				
46	29	75	448.6	445.3	-5.79	22.41	4.99-30.98			3.25	.027	-.001			1/2-
46	30	76	472.5	463.6	-5.27	23.96	3.31-31.95			3.98	C				
46	31	77	493.3	491.1	-4.75	20.73	2.65-28.21			2.18	C			P 3/2	
46	32	78	516.0	512.9	-4.35	22.68	2.39-29.62			3.01	C				
46	33	79	535.0	534.1	-4.07	19.04	1.76-25.49			1.04	.054	-.007			1/2-
46	34	80	556.6	554.7	-3.58	21.64	1.66-27.56			1.95	C				
46	35	81	574.5	574.6	-3.21	17.83	1.26-23.25			-.05	.035	-.006			3/2-
46	36	82	595.0	593.9	-2.84	20.58	1.21-25.50			1.10	C				
46	37	83	612.0	612.7	-2.52	16.96	1.21-21.38			.20	-.103	-.023			3/2-
46	38	84	631.7	630.9	-2.07	19.68	1.15-23.69			1.91	-.113	-.025			
46	39	85	647.8	648.5	-1.68	16.16	1.24-19.71			.74	-.124	-.030			3/2-
46	40	86	666.6	665.6	-1.21	18.77	1.27-21.95			2.45	-.125	-.033			
46	41	87	682.0	682.2	-.74	15.37	1.37-18.10			1.45	-.125	-.037			7/2+
46	42	88	699.7	698.3	-.35	17.78	1.34-20.05			3.18	-.125	-.037			
46	43	89	714.4	714.0	.02	14.68	1.61-16.47			2.58	-.137	-.043			5/2+
46	44	90	731.2	729.1	.70	16.72	1.46-18.13			2.02	C				
46	45	91	745.0	743.8	1.28	13.88	1.49-14.48			1.20	C			G 9/2	
46	46	92	761.4	758.1	3.31	16.39	2.31-16.50			3.32	C				
46	47	93	774.0	771.2	3.73	12.57	2.84-12.28			2.84	.017	.001			7/2+
46	48	94	788.9	783.9	4.22	14.90	3.79-13.37			5.03	C				
46	49	95	801.0	796.1	4.61	12.12	4.24-10.18			4.91	.026	-.001			5/2+
46	50	96	815.1	808.1	5.09	14.09	4.35-11.68			7.04	C				
46	51	97	825.1	819.6	5.49	10.02	3.12	-7.21		5.55	-.015	.004			5/2+
46	52	98	836.7	830.8	5.95	11.53	1.46	-8.24		5.87	C				
46	53	99	845.9	841.6	6.38	9.21	1.51	-5.52		4.25	C				D 5/2
46	54	100	856.8	852.1	6.79	10.94	1.80	-6.82		4.71	C				

L	N	A	B.E.	BC	SP	SN	SA	CB	R/R	X	S	A2	A4	P	N
46	55	101	865.2	862.2	7.16	8.43	1.89	-3.85			2.98	C			D 5/2
46	56	102	875.6	872.1	7.62	10.40	2.19	-5.37			2.55	C			
46	57	103	883.1	881.6	7.88	7.44	2.00	-2.05			1.66	-.047	-.005		1/2+
46	58	104	893.1	890.8	8.39	10.02	2.50	-4.18			2.28	C			
46	59	105	900.0	899.7	8.61	6.94	2.72	-.73			.54	-.045	-.006		3/2+
46	60	106	909.5	908.3	8.96	9.50	3.13	-2.91			1.47	-.055	-.005		
46	61	107	916.1	916.6	9.20	6.61	3.42	.40			.30	-.097	-.002		1/2-
46	62	108	925.3	924.7	9.55	9.13	3.81	-1.71			1.34	-.093	-.004		
46	63	109	931.5	932.5	9.75	6.28	4.07	1.50			.26	-.116	.000		3/2-
46	64	110	940.3	940.0	10.03	8.71	4.36	-.55			1.44	-.114	-.006		
46	65	111	946.3	947.2	10.29	6.04	4.72	2.56			.82	-.134	-.012		5/2-
46	66	112	954.6	954.2	10.59	8.35	5.04	.51			2.38	-.138	-.018		
46	67	113	960.5	960.9	10.92	5.87	5.51	3.36			1.93	-.151	-.021		1/2+
46	68	114	968.3	967.4	11.23	7.77	5.62	1.54			2.14	-.147	-.024		
46	69	115	973.9	973.7	11.60	5.57	6.01	4.26			2.74	-.154	-.028		7/2-
46	70	116	981.0	979.7	11.93	7.14	6.07	2.86			2.65	-.146	-.030		
46	71	117	986.0	985.5	12.26	4.96	6.19	5.63			2.99	-.150	-.033		1/2+
46	72	118	992.8	991.1	12.79	6.80	6.56	4.22			2.48	-.124	-.032		
46	73	119	997.4	996.5	13.18	4.63	6.42	6.81			2.63	-.117	-.033		3/2+
46	74	120	1003.9	1001.6	13.68	6.52	7.55	5.21			3.62	-.101	-.032		
46	75	121	1008.3	1006.5	14.08	4.41	8.09	7.67			3.02	-.095	-.034		5/2-
46	76	122	1014.5	1011.3	14.52	6.17	8.59	6.28			4.13	-.083	-.025		
46	77	123	1018.7	1015.8	14.86	4.17	9.09	8.65			3.75	-.080	-.032		3/2-
46	78	124	1024.6	1020.1	15.59	5.97	9.68	7.24			4.49	C			
46	79	125	1028.5	1024.3	16.02	3.92	10.11	5.65			4.27	C			D 3/2
46	80	126	1034.7	1028.2	16.33	6.12	11.31	7.78			6.43	C			
46	81	127	1038.3	1032.0	16.65	3.68	11.83	10.54			6.34	C			D 3/2
46	82	128	1044.2	1035.6	16.97	5.84	12.19	8.71			6.55	C			
46	83	129	1046.0	1039.0	17.29	1.81	10.97	12.05			6.95	C			F 7/2
46	94	130	1049.3	1042.2	17.60	3.30	9.06	11.89			7.05	C			
46	85	131	1050.8	1045.3	17.91	1.48	9.37	14.03			5.46	C			F 7/2
46	86	132	1053.8	1048.2	18.22	3.03	9.73	12.80			5.55	C			
46	87	133	1054.9	1050.9	18.52	1.12	10.00	15.02			3.97	C			F 7/2
46	88	134	1057.7	1053.5	18.82	2.79	10.39	13.65			4.15	C			
46	89	135	1058.4	1055.5	19.04	.72	10.61	16.03			2.45	C			F 7/2
46	90	136	1061.1	1058.2	19.07	2.62	11.04	14.44			2.86	C			
46	91	137	1062.1	1060.3	19.26	1.03	11.87	16.33			2.33	-.058	-.053		3/2+
46	92	138	1064.7	1062.3	19.52	2.58	12.10	14.92			4.08	-.106	-.054		
46	93	139	1065.6	1064.1	19.73	.92	12.39	16.85			3.50	-.120	-.057		3/2-
46	94	140	1067.9	1065.7	20.05	2.35	12.58	15.51			3.83	-.120	-.045		
46	95	141	1068.5	1067.3	20.28	.59	12.82	17.59			3.02	-.128	-.046		5/2+
46	96	142	1070.5	1068.7	20.55	2.02	13.12	16.49			2.57	-.125	-.041		
46	97	143	1070.9	1069.5	20.79	.34	13.38	18.38			2.73	-.137	-.035		5/2-
46	98	144	1072.7	1071.0	21.06	1.60	13.71	17.27			3.28	-.140	-.025		
46	99	145	1072.9	1072.0	21.29	.27	14.16	15.10			2.72	-.151	-.026		1/2-
46	100	146	1074.7	1072.9	21.55	1.74	14.56	17.80			3.61	-.158	-.011		
46	101	147	1074.8	1073.6	21.79	.10	14.97	15.80			2.99	-.155	-.012		7/2+

Z	N	A	B.E.	BC	SP	SN	SA	CP	BA	X	S	A2	A4	P	N
46	102	148	1076.3	1074.2	22.04	1.54	15.30	18.56			3.91	.160	.006		
46	103	149	1076.3	1074.7	22.25	-.03	15.67	20.44			3.43	.163	.002		5/2-
46	104	150	1077.6	1075.0	22.61	1.37	16.02	19.34			4.41	.162	-.006		
46	105	151	1077.5	1075.2	22.85	-.13	16.42	21.14			4.14	.165	-.012		5/2+
46	106	152	1078.5	1075.4	23.11	1.03	16.70	20.23			5.02	.163	-.017		
46	107	153	1078.2	1075.4	23.34	-.33	16.99	21.88			4.80	.166	-.023		7/2-
46	108	154	1078.9	1075.3	23.63	.71	17.21	21.08			5.56	.160	-.025		
46	109	155	1078.2	1075.2	23.88	-.69	17.32	22.73			5.11	.158	-.033		1/2-
46	110	156	1078.6	1075.0	24.19	.34	17.53	21.97			5.62	.145	-.036		
46	111	157	1077.6	1074.8	24.45	-.94	17.79	23.63			5.13	.146	-.041		3/2-
46	112	158	1077.9	1074.4	24.75	.28	18.29	22.68			5.85	.135	-.043		
47	22	69	250.2	248.6-12.44	32.41	8.11-42.39	2.35	.776	1.58	-.022	-.006	3/2+			
47	23	70	278.0	278.1-11.93	27.90	7.50-37.31	3.16	.735	.06	.066	-.006	7/2+	3/2-		
47	24	71	308.6	306.7-11.40	30.60	7.21-35.57	5.38	.703	2.14	.074	-.012	7/2+			
47	25	72	335.3	334.4-10.84	26.69	7.26-35.14	7.39	.672	1.24	.093	-.013	1/2-	5/2-		
47	26	73	364.2	361.2-10.36	28.61	6.85-36.95	10.97	.643	2.96	.035	-.001	1/2+			
47	27	74	389.5	387.3-9.85	25.37	6.78-32.72	13.74	.621	2.40	.060	-.011	7/2+	7/2-		
47	28	75	416.8	412.5-9.35	27.31	6.50-34.30	16.92	.595	4.21	C		C 9/2			
47	29	76	439.8	437.0-8.78	22.98	5.24-29.30	18.72	.570	2.64	-.026	-.001	3/2+	3/2-		
47	30	77	464.3	460.8-8.27	24.47	3.60-30.38			3.52	-.015	.002	3/2+			
47	31	78	485.5	483.8-7.73	21.27	2.67-26.62			1.77	-.017	.002	3/2+	1/2-		
47	32	79	508.7	506.2-7.23	23.17	2.61-28.04			2.55	-.015	-.007	3/2+			
47	33	80	528.3	527.8-6.71	19.57	1.97-23.93			.65	.055	-.012	7/2+	1/2-		
47	34	81	550.4	548.9-6.20	22.14	1.83-26.11			1.56	-.015	-.006	3/2+			
47	35	82	568.8	569.3-5.70	18.33	1.40-21.72			-.37	.052	-.012	7/2+	3/2-		
47	36	83	589.8	589.1-5.20	21.08	1.33-23.99			.75	-.030	-.003	3/2+			
47	37	84	607.2	608.4-4.79	17.37	1.24-19.79			-.97	-.053	-.012	3/2+	3/2-		
47	38	85	627.3	627.1-4.33	20.14	1.12-22.10			.41	-.042	-.007	3/2+			
47	39	86	643.9	645.2-3.96	16.53	1.07-18.00			-.58	-.092	-.022	1/2+	5/2+		
47	40	87	663.1	662.8-3.52	19.21	1.05-20.30			.41	-.038	-.006	3/2+			
47	41	88	678.9	679.5-3.09	15.79	1.06-16.31			.30	-.117	-.025	1/2+	7/2+		
47	42	89	697.2	696.5-2.57	18.30	1.06-18.56			.76	-.024	-.001	3/2+			
47	43	90	712.2	712.5-2.19	15.06	1.23-14.66			1.33	-.123	-.037	1/2+	5/2+		
47	44	91	729.8	728.2-1.38	17.54	1.37-16.79			1.63	.070	-.002	7/2+			
47	45	92	744.1	743.3-.89	14.37	1.43-13.05			.83	-.017	-.005	3/2+	5/2+		
47	46	93	760.9	758.1-.50	16.78	2.18-15.03			2.87	C		C 9/2			
47	47	94	774.7	772.3-.74	13.81	2.68-11.56			2.43	.021	.003	7/2+	7/2+		
47	48	95	790.0	785.5	1.15	15.31	3.63-12.68		4.57	C		C 9/2			
47	49	96	802.6	798.2	1.63	12.55	4.08-8.74		4.45	.026	-.000	7/2+	5/2+		
47	50	97	817.1	810.6	2.03	14.49	4.16-10.28		6.58	C		C 9/2			
47	51	98	827.6	822.5	2.52	10.51	2.95-5.80		5.14	-.017	.005	3/2+	5/2+		
47	52	99	839.6	834.1	2.90	11.92	1.25-6.91		5.42	C		C 9/2			
47	53	100	849.2	845.4	3.34	9.64	1.28-4.09		3.80	C		C 9/2 D 5/2			
47	54	101	860.6	856.3	3.76	11.36	1.56-5.39		4.26	C		C 9/2			
47	55	102	869.5	866.5	4.25	8.92	1.70-2.53		2.63	.015	.005	7/2+	5/2+		
47	56	103	880.2	877.1	4.60	10.75	1.93-4.01		3.11	C		C 9/2			

Z	N	A	B.F.	BC	SP	SN	SA	CP	PAR	X	L	A2	A4	P	N
47	57	104	888.1	887.0	5.05	7.89	1.75	-0.68			1.16	-.025	.009	3/2+	7/2+
47	58	105	898.5	896.7	5.42	10.39	2.21	-2.88			1.85	C		C 9/2	
47	59	106	905.8	906.0	5.80	7.32	2.35	.69			-.06	.010	.014	7/2+	3/2+
47	60	107	915.7	915.0	6.22	9.92	2.76	-1.59			.84	-.027	.009	3/2+	
47	61	108	922.8	923.7	6.64	7.02	3.05	1.71			-.16	.090	-.012	1/2-	1/2-
47	62	109	932.3	932.1	6.99	9.49	3.40	-.59			.93	.093	-.012	7/2+	
47	63	110	938.9	940.3	7.38	6.66	3.69	2.60			-.42	.102	-.012	1/2-	3/2-
47	64	111	948.1	948.2	7.87	9.16	4.07	.27			.88	.101	-.014	1/2-	
47	65	112	954.4	955.8	8.08	0.31	4.30	3.44			-.13	.117	-.015	1/2-	3/2-
47	66	113	963.1	963.2	8.44	8.71	4.58	1.25			1.22	.117	-.016	1/2-	
47	67	114	969.0	970.3	8.53	5.96	4.75	4.32			1.00	-.147	-.022	1/2+	1/2+
47	68	115	977.3	977.1	9.05	8.29	4.98	2.35			1.65	.123	-.015	1/2-	
47	69	116	983.1	983.8	9.21	5.73	5.18	5.23			1.04	.134	-.022	1/2-	7/2-
47	70	117	990.8	990.2	9.81	7.74	5.45	3.48			2.17	.124	-.022	1/2-	
47	71	118	996.2	996.3	10.23	5.38	5.64	6.24			1.62	.132	-.025	1/2-	5/2+
47	72	119	1003.4	1002.2	10.66	7.22	6.05	4.70			2.57	.117	-.024	1/2-	
47	73	120	1008.3	1008.0	10.94	4.92	6.33	7.48			1.80	.115	-.027	1/2-	9/2-
47	74	121	1015.2	1013.4	11.30	6.88	6.95	5.91			2.78	-.089	-.028	1/2+	
47	75	122	1020.0	1018.7	11.66	4.78	7.48	8.57			2.26	-.086	-.030	1/2+	5/2-
47	76	123	1026.5	1023.8	12.03	6.54	8.00	7.15			3.35	-.069	-.026	1/2-	
47	77	124	1031.1	1028.7	12.43	4.56	8.55	9.68			3.07	-.067	-.026	1/2-	3/2-
47	78	125	1037.4	1033.3	12.78	6.33	9.15	8.14			4.08	C		C 9/2	
47	79	126	1041.7	1037.8	13.12	4.25	9.57	10.95			3.85	C		C 9/2 D 3/2	
47	80	127	1048.1	1042.1	13.44	6.44	10.76	9.09			6.01	C		C 9/2	
47	81	128	1052.1	1046.2	13.77	4.01	11.29	11.83			5.93	C		C 9/2 D 3/2	
47	82	129	1058.3	1050.1	14.08	6.15	11.64	10.01			6.17	C		C 9/2	
47	83	130	1060.4	1053.8	14.41	2.13	10.41	14.34			6.57	C		C 9/2 F 7/2	
47	84	131	1064.0	1057.4	14.72	3.61	8.50	13.18			6.63	C		C 9/2	
47	85	132	1065.8	1060.8	15.04	1.80	8.81	15.31			5.05	C		C 9/2 F 7/2	
47	86	133	1069.1	1064.0	15.35	3.34	9.16	14.08			5.18	C		C 9/2	
47	87	134	1070.6	1067.0	15.66	1.43	9.42	16.29			3.57	C		C 9/2 F 7/2	
47	88	135	1073.7	1069.9	15.97	3.10	9.80	14.93			3.79	C		C 9/2	
47	89	136	1074.7	1072.6	16.28	1.03	10.02	17.30			2.10	C		C 9/2 F 7/2	
47	90	137	1077.6	1075.2	16.58	2.92	10.45	15.71			2.46	C		C 9/2	
47	91	138	1078.8	1077.6	16.72	1.17	11.11	17.76			2.45	.091	.045	7/2+	3/2+
47	92	139	1081.6	1079.8	16.99	2.86	11.37	15.72			3.07	.093	.044	7/2+	
47	93	140	1082.7	1081.9	17.08	1.01	11.54	17.90			2.39	.115	.047	7/2+	3/2-
47	94	141	1085.3	1083.9	17.39	2.66	11.88	16.50			2.95	.109	.046	7/2+	
47	95	142	1086.2	1085.7	17.73	.92	12.09	18.53			2.16	.122	.043	7/2+	5/2+
47	96	143	1088.5	1087.4	17.93	2.23	12.29	17.33			2.65	.122	.039	7/2+	
47	97	144	1089.2	1088.9	18.28	.69	12.63	19.27			1.86	.130	.036	7/2+	5/2-
47	98	145	1091.3	1090.3	18.59	2.11	12.98	17.96			2.49	.132	.027	1/2-	
47	99	146	1091.7	1091.5	18.75	.43	13.32	20.01			1.75	.145	.018	1/2-	7/2+
47	100	147	1093.8	1092.7	19.12	2.10	13.88	18.54			2.76	.150	.010	1/2-	
47	101	148	1094.1	1093.7	19.32	.30	14.14	20.56			2.07	.151	.011	1/2-	1/2-
47	102	149	1095.9	1094.5	19.62	1.84	14.51	19.30			3.00	.151	.003	1/2-	
47	103	150	1096.2	1095.3	19.93	.28	14.93	21.06			2.65	.158	-.000	1/2-	5/2-

Z	N	A	R.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
47	104	151	1097.9	1055.9	20.23	1.67	15.32	19.77			3.66	.155	-.007	1/2-	
47	105	152	1098.0	1056.4	20.48	.12	15.67	21.53			3.36	.155	-.012	1/2-	5/2+
47	106	153	1099.3	1056.8	20.77	1.32	15.98	20.66			4.26	.155	-.017	1/2-	
47	107	154	1099.2	1057.0	21.00	-.09	16.25	22.22			4.00	.155	-.021	1/2-	7/2-
47	108	155	1100.2	1057.2	21.26	.97	16.46	21.48			4.75	.152	-.026	1/2-	
47	109	156	1099.8	1057.4	21.53	-.42	16.59	23.15			4.22	.150	-.032	1/2-	1/2-
47	110	157	1100.5	1057.5	21.91	.72	16.89	22.26			5.01	.143	-.035	1/2-	
47	111	158	1099.8	1057.4	22.18	-.66	17.15	23.93			4.54	.140	-.040	1/2-	3/2-
47	112	159	1100.4	1057.3	22.47	.57	17.69	22.94			5.22	.133	-.042	1/2-	
47	113	160	1099.6	1057.1	22.73	-.79	18.11	24.60			4.94	.130	-.046	1/2-	1 1/2+
48	24	72	299.4	255.3	-9.23	31.12	8.53	-42.77	5.06	.743	4.16	C			
48	25	73	326.4	323.5	-8.92	27.00	8.14	-38.18	6.56	.705	2.94	C			F 7/2
48	26	74	356.0	350.6	-8.14	29.60	7.67	-40.23	5.58	.679	5.17	C			
48	27	75	381.7	377.4	-7.77	25.73	7.27	-35.92	12.07	.652	4.37	.031	-.002		7/2-
48	28	76	409.7	403.2	-7.10	27.98	6.92	-37.52	15.41	.632	6.56	C			
48	29	77	433.1	428.2	-6.70	23.39	5.44	-32.62	17.11	.612	4.95	C			P 3/2
48	30	78	458.1	452.4	-6.13	25.03	3.68	-23.64	18.91	.590	5.72	C			
48	31	79	475.4	476.0	-5.65	21.75	3.02	-25.95			3.93	C			P 3/2
48	32	80	503.6	498.8	-5.14	23.68	2.73	-21.34			4.75	C			
48	33	81	523.5	521.0	-4.75	19.96	1.97	-27.15			2.55	.023	-.005		1/2-
48	34	82	546.3	542.6	-4.17	22.72	2.01	-25.31			3.65	C			
48	35	83	565.1	563.5	-3.70	18.80	1.77	-24.99			1.57	C			F 5/2
48	36	84	586.6	583.8	-3.20	21.57	1.71	-27.22			2.83	C			
48	37	85	604.5	603.5	-2.75	17.82	1.70	-23.02			.92	C			F 5/2
48	38	86	625.1	622.7	-2.25	20.64	1.77	-25.36			2.41	C			
48	39	87	642.0	641.3	-1.87	16.91	1.71	-21.15			.70	C			P 1/2
48	40	88	661.8	659.4	-1.30	19.78	1.81	-23.54			2.41	C			
48	41	89	677.8	676.5	-1.05	16.04	1.69	-19.36			.93	-.020	.000		5/2+
48	42	90	696.8	694.0	-.38	18.97	1.89	-21.76			2.82	C			
48	43	91	712.2	710.5	-.03	15.41	1.93	-17.78			1.67	C			G 5/2
48	44	92	730.3	726.6	.54	18.11	2.26	-20.00			3.65	C			
48	45	93	745.1	742.2	.97	14.80	2.38	-16.26			2.87	C			G 5/2
48	46	94	762.4	757.4	1.46	17.27	2.94	-18.29			4.97	C			
48	47	95	776.6	772.1	1.85	14.15	3.25	-14.77			4.43	C			G 5/2
48	48	96	793.1	786.5	3.07	16.53	3.39	-16.63			6.65	C			
48	49	97	806.1	799.6	3.43	12.96	3.78	-12.69			6.47	.015	.000		5/2+
48	50	98	821.0	812.4	3.92	14.99	3.87	-13.47			8.64	C			
48	51	99	831.9	824.8	4.23	10.82	2.57	-9.07			7.05	C			D 5/2
48	52	100	844.3	836.9	4.77	12.46	.94	-10.07			7.47	C			
48	53	101	854.4	848.5	5.19	10.06	.98	-7.35			5.86	C			D 5/2
48	54	102	866.2	859.9	5.61	11.78	1.22	-8.61			6.30	C			
48	55	103	875.4	870.9	5.96	9.27	1.29	-5.71			4.59	C			D 5/2
48	56	104	886.7	881.5	6.42	11.21	1.56	-7.18			5.14	C			
48	57	105	894.8	891.8	6.73	8.19	1.32	-3.81			2.06	.020	.008		1/2+
48	58	106	905.7	901.9	7.23	10.89	1.81	-5.99			3.88	C			
48	59	107	913.4	911.6	7.55	7.64	2.01	-2.43			1.81	C			G 7/2

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
48	60	108	923.7	921.0	7.95	10.32	2.31	-4.53			2.72	C			
48	61	109	930.9	930.1	8.11	7.19	2.56	-1.12			.75	C			G 7/2
48	62	110	940.7	938.9	8.49	9.86	2.92	-3.37			1.86	.015	-.004		
48	63	111	947.6	947.5	8.64	6.82	3.13	.14			.45	.062	-.006		5/2+
48	64	112	957.0	955.7	8.96	9.47	3.48	-2.16			1.63	.058	-.007		
48	65	113	963.6	963.7	9.18	6.52	3.72	1.17			.53	.087	-.009		1/2+
48	66	114	972.6	971.5	9.50	9.03	4.04	-1.02			1.77	.083	-.010		
48	67	115	978.9	978.9	9.86	6.32	4.32	2.08			.85	.097	-.012		5/2+
48	68	116	987.5	986.2	10.18	8.61	4.58	-.02			2.15	.092	-.014		
48	69	117	993.5	993.2	10.44	5.99	4.70	3.01			1.55	.112	-.017		7/2-
48	70	118	1001.7	999.9	10.85	8.15	5.07	1.07			2.67	.096	-.017		
48	71	119	1007.7	1006.4	11.14	5.67	5.18	4.01			2.18	.114	-.018		5/2+
48	72	120	1015.0	1012.7	11.61	7.70	5.74	2.22			3.10	.087	-.018		
48	73	121	1020.3	1018.8	12.01	5.31	6.08	5.12			2.35	-.051	-.022		3/2+
48	74	122	1027.8	1024.6	12.57	7.44	6.73	3.30			3.61	-.058	-.019		
48	75	123	1032.9	1030.2	12.90	5.11	7.20	6.00			3.17	-.061	-.022		5/2-
48	76	124	1040.0	1035.6	13.46	7.10	7.78	4.40			4.34	C			
48	77	125	1044.8	1040.8	13.69	4.80	8.16	7.07			3.93	C			H1 1/2
48	78	126	1051.8	1045.8	14.42	7.06	9.05	5.20			5.58	C			
48	79	127	1056.4	1050.7	14.75	4.58	9.46	7.81			5.76	C			D 3/2
48	80	128	1063.2	1055.3	15.06	6.76	10.24	6.13			7.90	C			
48	81	129	1067.5	1059.7	15.38	4.33	10.65	8.71			7.81	C			D 3/2
48	82	130	1074.0	1063.9	15.69	6.47	11.00	7.14			10.05	C			
48	83	131	1076.4	1068.0	16.01	2.45	9.77	11.23			6.45	C			F 7/2
48	84	132	1080.3	1071.8	16.32	3.92	7.86	10.08			6.51	C			
48	85	133	1082.4	1075.5	16.63	2.11	8.16	12.21			6.92	C			F 7/2
48	86	134	1086.1	1079.0	16.94	3.64	8.50	10.99			7.05	C			
48	87	135	1087.8	1082.4	17.25	1.74	8.76	13.21			5.43	C			F 7/2
48	88	136	1091.2	1085.6	17.54	3.40	9.13	11.86			5.65	C			
48	89	137	1092.6	1088.6	17.85	1.33	9.34	14.23			3.96	C			F 7/2
48	90	138	1095.8	1091.5	18.14	3.22	9.76	12.75			4.32	C			
48	91	139	1096.6	1094.2	17.79	.82	9.86	15.44			3.39	.067	.045		3/2+
48	92	140	1099.8	1096.7	18.13	3.19	10.43	13.52			3.65	.061	.032		
48	93	141	1101.0	1099.1	18.37	1.25	10.66	15.56			3.44	.101	.045		3/2-
48	94	142	1104.0	1101.3	18.67	2.96	11.04	13.91			3.95	.096	.044		
48	95	143	1105.0	1103.4	18.77	1.02	11.14	16.11			3.15	.114	.047		5/2-
48	96	144	1107.6	1105.4	19.17	2.62	11.42	14.73			3.64	.111	.040		
48	97	145	1108.4	1107.2	19.29	.80	11.64	16.86			2.84	.126	.036		5/2+
48	98	146	1110.9	1108.9	19.66	2.48	12.09	15.38			3.44	.124	.030		
48	99	147	1111.5	1110.4	19.85	.63	12.36	17.44			2.64	.135	.023		7/2+
48	100	148	1113.9	1111.8	20.07	2.32	12.90	16.05			3.53	.138	.016		
48	101	149	1114.4	1113.1	20.36	.58	13.21	18.05			3.11	.155	.006		1/2-
48	102	150	1116.5	1114.2	20.56	2.04	13.52	16.71			3.75	.145	.006		
48	103	151	1116.9	1115.2	20.66	.38	13.80	18.70			3.33	.154	.002		5/2-
48	104	152	1118.7	1116.1	20.87	1.87	14.14	17.37			4.23	.150	-.006		
48	105	153	1119.2	1116.9	21.19	.45	14.62	19.09			4.03	.155	-.010		5/2+
48	106	154	1120.7	1117.5	21.35	1.47	14.72	18.64			4.87	.151	-.015		

Z	N	A	B.E.	BC	SP	SN	SA	CE	EAR	X	S	A2	A4	P	N
48	107	155	1120.9	1118.0	21.67	.23	15.07	19.75			4.61	.154	-.C19		7/2-
48	108	156	1122.1	1118.4	21.95	1.25	15.29	18.84			5.43	.148	-.C28		
48	109	157	1122.0	1118.9	22.19	-.18	15.44	20.67			4.94	.146	-.C30		1/2-
48	110	158	1123.0	1119.2	22.47	1.00	15.73	19.73			5.63	.137	-.C33		
48	111	159	1122.5	1119.4	22.72	-.43	15.99	21.51			5.16	.134	-.C37		3/2-
48	112	160	1123.4	1119.5	23.03	.87	16.53	20.43			5.97	.125	-.C40		
48	113	161	1122.8	1119.5	23.18	-.63	16.84	22.28			5.50	.124	-.C42		11/2+
48	114	162	1123.5	1119.4	23.58	.72	17.28	21.28			6.34	.114	-.C43		
48	115	163	1122.8	1119.2	23.85	-.66	17.68	23.00			6.07	.111	-.C46		3/2-
49	26	75	345.0	340.0	-10.97	30.04	8.10	-38.92	8.55	.716	5.08	.C31	-.C03	5/2+	
49	27	76	371.4	367.1	-10.32	26.38	7.79	-34.72	10.77	.687	4.54	.C54	-.C20	5/2+	7/2-
49	28	77	399.7	393.3	-10.01	28.29	7.27	-36.41	13.74	.659	6.41	.C20	.C01	5/2+	
49	29	78	423.7	418.8	-9.39	24.01	5.91	-31.33	15.52	.638	4.94	.C30	-.C02	5/2+	1/2-
49	30	79	449.2	443.6	-8.98	25.45	4.05	-32.38	17.24	.619	5.61	.C26	-.C02	5/2+	
49	31	80	471.5	467.6	-8.44	22.29	3.35	-28.66	18.65	.600	3.86	.C27	-.C03	5/2+	3/2-
49	32	81	495.6	491.0	-7.98	24.14	3.03	-30.04	20.37	.575	4.64	.C26	-.C02	5/2+	
49	33	82	516.2	513.7	-7.38	20.56	2.32	-25.96			2.55	.C34	-.C05	5/2+	1/2-
49	34	83	539.3	535.7	-6.97	23.13	2.27	-28.25			3.63	.C29	-.C04	5/2+	
49	35	84	558.6	557.1	-6.43	19.34	2.05	-23.80			1.61	.C38	-.C10	5/2+	3/2-
49	36	85	580.7	577.9	-5.98	22.02	1.93	-26.04			2.79	.C30	-.C04	5/2+	
49	37	86	599.0	598.1	-5.50	18.31	1.91	-21.83			.87	.C24	-.C05	5/2+	5/2-
49	38	87	620.1	617.8	-5.03	21.11	1.94	-24.15			2.35	.C27	-.C05	5/2+	
49	39	88	637.5	636.8	-4.54	17.40	1.97	-19.98			.67	.C27	-.C04	5/2+	1/2-
49	40	89	657.7	655.4	-4.09	20.22	2.05	-22.35			2.35	.C27	-.C02	5/2+	
49	41	90	674.3	673.4	-3.57	16.56	2.08	-18.21			.91	.C30	-.C04	5/2+	1/2+
49	42	91	693.6	690.9	-3.16	19.38	2.25	-20.68			2.77	.C27	-.C01	5/2+	
49	43	92	704.5	707.9	-2.67	15.89	2.35	-16.64			1.64	.C28	-.C01	5/2+	3/2+
49	44	93	728.1	724.5	-2.25	18.53	2.59	-18.86			3.64	.C27	-.C01	5/2+	
49	45	94	743.3	740.5	-1.80	15.25	2.78	-15.11			2.81	.C26	-.C00	5/2+	5/2+
49	46	95	761.0	756.2	-1.36	17.71	2.95	-17.12			4.90	.C25	-.C01	5/2+	
49	47	96	775.7	771.3	-.88	14.68	3.26	-13.66			4.40	.C27	-.C00	5/2+	7/2+
49	48	97	792.6	786.1	-.52	16.89	3.37	-15.47			6.52	.C19	.C00	5/2+	
49	49	98	806.8	800.4	.73	14.21	3.77	-12.29			6.43	.C28	-.C02	5/2+	5/2+
49	50	99	822.0	813.6	.97	15.22	3.68	-13.09			6.37	C		C 5/2	
49	51	100	833.5	826.5	1.61	11.46	2.54	-7.89			7.03	.C21	.C04	5/2+	1/2+
49	52	101	846.3	838.9	1.93	12.78	.83	-9.00			7.34	.C17	.C02	5/2+	
49	53	102	856.8	851.0	2.38	10.52	.84	-6.22			5.77	.C21	.C01	5/2+	3/2+
49	54	103	869.0	862.8	2.78	12.16	1.10	-7.49			6.20	.C20	.C01	5/2+	
49	55	104	878.7	874.2	3.25	9.74	1.20	-4.63			4.54	.C22	.C01	5/2+	5/2+
49	56	105	890.3	885.3	3.60	11.56	1.39	-6.09			5.03	.C20	.C00	5/2+	
49	57	106	899.0	896.0	4.11	8.71	1.19	-2.78			3.08	.C36	-.C03	5/2+	1/2+
49	58	107	910.2	906.4	4.43	11.20	1.64	-5.07			3.80	.C24	-.C00	5/2+	
49	59	108	918.4	916.5	5.00	8.21	1.96	-1.51			2.74	.C71	-.C37	5/2+	3/2+
49	60	109	929.0	926.3	5.28	10.60	2.17	-3.67			2.78	.C36	-.C06	5/2+	
49	61	110	936.6	935.8	5.71	7.61	2.47	-.19			.89	.C32	-.C10	5/2+	5/2+
49	62	111	946.9	945.0	6.18	10.33	2.88	-2.55			2.58	.C70	-.C28	5/2+	

Z	N	A	B.E.	BO	SP	SN	SA	CB	PAR	X	S	A2	A4	P	R
49	63	112	954.1	954.0	6.53	7.17	3.03	.88			.35	.052	-.005	5/2+	5/2+
49	64	113	963.9	962.6	6.91	9.86	3.40	-1.45			1.55	.051	-.010	5/2+	
49	65	114	970.8	971.0	7.23	6.84	3.57	1.88			.16	.061	-.010	5/2+	1/2+
49	66	115	980.2	979.1	7.61	9.42	3.83	-.43			1.44	.055	-.010	5/2+	
49	67	116	986.7	986.9	7.81	6.52	4.04	2.85			.25	.070	-.011	5/2+	3/2-
49	68	117	995.7	994.5	8.22	9.02	4.35	.60			1.61	.065	-.011	5/2+	
49	69	118	1001.9	1001.9	8.44	6.21	4.60	3.83			.58	.073	-.013	5/2+	5/2-
49	70	119	1010.6	1009.0	8.90	8.61	4.92	1.68			2.00	.067	-.012	5/2+	
49	71	120	1016.5	1015.9	9.13	5.91	5.10	4.83			1.05	.070	-.014	5/2+	7/2+
49	72	121	1024.7	1022.5	9.65	8.21	5.57	2.83			2.55	.061	-.012	5/2+	
49	73	122	1030.3	1028.9	9.96	5.62	5.81	5.89			1.82	.065	-.014	5/2+	7/2-
49	74	123	1038.1	1035.1	10.32	7.81	6.39	4.03			3.20	.043	-.008	5/2+	
49	75	124	1043.6	1041.1	10.71	5.49	6.97	6.89			2.92	-.052	-.015	1/2+	5/2-
49	76	125	1051.1	1046.8	11.09	7.47	7.56	5.13			4.33	.027	-.004	5/2+	
49	77	126	1056.2	1052.4	11.47	5.18	7.47	7.97			3.98	.028	-.004	5/2+	5/2-
49	78	127	1063.4	1057.7	11.60	7.19	8.62	6.25			5.75	C		C 5/2	
49	79	128	1068.5	1062.8	12.11	5.08	9.14	8.87			5.73	.015	-.005	5/2+	3/2+
49	80	129	1075.4	1067.8	12.26	6.90	9.71	7.20			7.66	C		C 5/2	
49	81	130	1080.3	1072.5	12.63	4.90	10.37	9.69			7.86	.018	-.004	5/2+	11/2-
49	82	131	1086.9	1077.1	12.90	6.53	10.46	8.13			5.80	C		C 5/2	
49	83	132	1089.6	1081.4	13.22	2.78	9.22	12.45			8.21	C		C 5/2 F 7/2	
49	84	133	1093.9	1085.6	13.53	4.24	7.31	11.30			8.27	C		C 5/2	
49	85	134	1096.3	1089.6	13.85	2.43	7.60	13.42			6.65	C		C 5/2 F 7/2	
49	86	135	1100.2	1093.4	14.16	3.95	7.94	12.21			6.81	C		C 5/2	
49	87	136	1102.3	1097.1	14.47	2.05	8.19	14.41			5.21	C		C 5/2 F 7/2	
49	88	137	1106.0	1100.6	14.78	3.70	8.55	13.07			5.42	C		C 5/2	
49	89	138	1107.7	1103.9	15.18	1.73	8.86	15.33			3.87	.017	.005	5/2+	7/2-
49	90	139	1111.2	1107.1	15.47	3.51	9.26	13.76			4.22	.015	.005	5/2+	
49	91	140	1112.5	1110.1	15.93	1.28	9.51	16.29			2.70	.031	.023	7/2+	5/2-
49	92	141	1115.8	1112.5	16.03	3.30	9.89	14.27			3.13	.036	.017	5/2+	
49	93	142	1117.1	1115.6	16.08	1.30	10.03	16.81			2.40	.071	.035	7/2+	7/2-
49	94	143	1120.3	1118.1	16.35	3.23	10.40	14.77			3.05	.073	.036	7/2+	
49	95	144	1121.6	1120.5	16.57	1.24	10.83	16.97			2.24	.095	.035	5/2+	5/2-
49	96	145	1124.5	1122.7	16.90	2.95	10.93	15.33			2.80	.092	.034	5/2+	
49	97	146	1125.5	1124.8	17.08	.98	10.99	17.61			1.87	.104	.034	5/2+	5/2+
49	98	147	1128.2	1126.8	17.25	2.68	11.44	16.11			2.47	.104	.027	5/2+	
49	99	148	1129.1	1128.6	17.59	.93	11.69	18.15			1.75	.115	.025	5/2+	7/2+
49	100	149	1131.7	1130.3	17.85	2.58	12.16	16.56			2.62	.115	.015	5/2+	
49	101	150	1132.4	1131.8	17.97	.71	12.43	18.69			1.55	.133	.014	5/2+	1/2-
49	102	151	1134.8	1133.2	18.30	2.46	12.70	17.21			2.80	.125	.005	5/2+	
49	103	152	1135.3	1134.5	18.46	.54	12.94	15.24			2.26	.135	.004	5/2+	5/2-
49	104	153	1137.5	1135.6	18.75	2.16	13.27	17.86			3.15	.133	-.003	5/2+	
49	105	154	1137.9	1136.6	18.73	.42	13.41	15.82			2.73	.142	-.005	5/2+	5/2+
49	106	155	1139.9	1137.5	19.20	1.94	13.68	18.72			3.64	.133	-.015	5/2+	
49	107	156	1140.2	1138.3	19.31	.34	13.90	20.33			3.35	.141	-.020	5/2+	7/2-
49	108	157	1141.8	1139.0	19.71	1.65	14.23	19.28			4.22	.131	-.023	5/2+	
49	109	158	1141.9	1139.7	19.95	.06	14.39	21.08			3.81	.133	-.026	5/2+	1/2-

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
49	110	159	1143.3	1140.3	20.30	1.36	14.77	20.03			4.56	.122	-.028	5/2+	
49	111	160	1143.0	1140.7	20.51	-.22	14.98	21.84			4.06	.120	-.032	5/2+	1/2-
49	112	161	1144.3	1141.1	20.87	1.22	15.49	20.63			4.96	.110	-.034	5/2+	
49	113	162	1144.0	1141.4	21.22	-.28	15.89	22.41			4.61	.108	-.037	5/2+	11/2+
49	114	163	1145.1	1141.5	21.57	1.06	16.38	21.31			5.60	.101	-.038	5/2+	
49	115	164	1144.6	1141.5	21.81	-.41	16.76	24.08			5.38	.100	-.041	5/2+	3/2-
49	116	165	1146.7	1141.5	23.47	2.07	18.52	21.98			7.51	.093	-.037	5/2+	
49	117	166	1146.2	1141.3	22.49	-.48	18.96	23.62			7.25	.087	-.035	5/2+	5/2-

50	27	77	362.5	356.2	-8.90	26.60	7.81-39.81	9.56	.722	6.30	0				F 7/2
50	28	78	391.6	383.0	-8.10	29.09	7.30-41.63	12.54	.655	8.62	0				
50	29	79	416.0	409.0	-7.72	24.39	5.97-36.64	13.97	.671	7.01	C				P 3/2
50	30	80	442.0	434.2	-7.15	26.02	4.00-37.65	15.65	.646	7.77	C				
50	31	81	464.8	458.8	-6.69	22.75	3.37-33.97	17.05	.631	5.95	C				P 3/2
50	32	82	489.4	482.6	-6.18	24.65	2.98-35.34	18.94	.613	6.75	C				
50	33	83	510.3	505.8	-5.90	20.64	2.06-31.07	19.57	.593	4.46	C				F 5/2
50	34	84	534.0	528.3	-5.24	23.75	2.18-33.35	21.68	.570	5.72	C				
50	35	85	553.8	550.2	-4.80	19.78	2.00-29.02			3.61	C				F 5/2
50	36	86	576.4	571.5	-4.30	22.52	1.80-31.25			4.86	C				
50	37	87	595.1	592.2	-3.82	18.79	1.78-27.05			2.96	C				F 5/2
50	38	88	616.7	612.3	-3.36	21.57	1.78-29.33			4.42	C				
50	39	89	634.6	631.8	-2.91	17.85	1.81-25.16			2.72	C				P 1/2
50	40	90	655.3	650.8	-2.43	20.70	1.86-27.52			4.41	C				
50	41	91	672.2	669.3	-2.08	16.92	1.87-23.29			2.85	C				G 5/2
50	42	92	692.1	687.3	-1.54	19.93	2.02-25.70			4.80	C				
50	43	93	708.4	704.8	-1.11	16.32	2.30-21.77			3.65	C				G 5/2
50	44	94	727.4	721.8	-.65	18.99	2.32-23.96			5.65	C				
50	45	95	743.1	738.3	-.20	15.70	2.62-20.24			4.83	C				G 5/2
50	46	96	761.3	754.3	.24	18.15	2.65-22.23			6.91	C				
50	47	97	776.3	770.0	.64	15.08	2.93-18.74			6.37	C				G 5/2
50	48	98	793.7	785.1	1.13	17.38	3.04-20.55			8.57	C				
50	49	99	808.1	799.9	1.35	14.42	3.27-17.32			8.23	C				G 5/2
50	50	100	824.8	814.3	2.78	16.65	3.39-18.87			10.53	C				
50	51	101	836.5	827.5	3.00	11.68	2.11-13.71			8.94	C				D 5/2
50	52	102	849.8	840.4	3.51	13.30	.43-14.01			9.36	C				
50	53	103	860.7	852.9	3.90	10.91	.52-11.39			7.75	C				D 5/2
50	54	104	873.3	865.1	4.32	12.60	.65-12.55			8.19	C				
50	55	105	883.4	876.5	4.68	10.10	.69 -9.64			6.47	C				D 5/2
50	56	106	895.4	888.4	5.14	12.02	.93-11.10			7.02	C				
50	57	107	904.3	899.5	5.34	8.91	.57 -7.63			4.75	C				G 7/2
50	58	108	916.1	910.3	5.92	11.77	1.13 -9.87			5.75	C				
50	59	109	924.5	920.8	6.15	8.44	1.38 -6.33			3.65	C				G 7/2
50	60	110	935.6	921.0	6.64	11.09	1.58 -8.53			4.55	C				
50	61	111	943.6	940.5	7.00	7.97	1.92 -5.02			2.67	C				G 7/2
50	62	112	944.2	950.5	7.27	10.60	2.20 -7.21			3.68	C				
50	63	113	961.7	959.9	7.62	7.52	2.54 -3.71			1.85	C				G 7/2
50	64	114	971.9	968.8	7.94	10.18	2.85 -5.78			3.04	C				

L	N	A	B.E.	BC	SP	SN	SA	CE	BAK	X	S	A2	A4	P	N
50	65	115	979.0	977.6	8.20	7.10	3.13	-2.39			1.39	C			S 1/2
50	66	116	986.8	986.1	8.59	9.80	3.46	-4.60			2.71	C			
50	67	117	995.6	994.3	8.84	6.77	3.70	-1.24			1.35	-.033	-.001		1 1/2-
50	68	118	1005.0	1002.3	9.26	9.44	4.11	-3.44			2.73	C			
50	69	119	1011.5	1010.0	9.51	6.46	4.25	-.19			1.57	-.028	-.004		5/2-
50	70	120	1020.5	1017.4	9.95	9.05	4.69	-2.33			3.08	C			
50	71	121	1026.7	1024.7	10.26	6.21	4.92	.80			2.12	-.020	-.006		3/2+
50	72	122	1035.4	1031.6	10.73	8.68	5.45	-1.28			3.76	C			
50	73	123	1041.3	1038.4	11.05	5.95	5.72	1.73			2.95	C			H 1 1/2
50	74	124	1047.7	1044.9	11.60	8.35	6.38	-.30			4.78	C			
50	75	125	1055.4	1051.2	11.82	5.71	6.78	2.50			4.18	C			H 1 1/2
50	76	126	1063.4	1057.3	12.37	8.02	7.36	.55			6.12	C			
50	77	127	1068.9	1063.2	12.65	5.46	7.72	3.33			5.71	C			H 1 1/2
50	78	128	1076.6	1068.9	13.17	7.71	8.33	1.48			7.75	C			
50	79	129	1081.8	1074.3	13.32	5.23	6.77	4.10			7.52	C			D 3/2
50	80	130	1089.2	1079.6	13.81	7.39	9.10	2.43			9.65	C			
50	81	131	1094.2	1084.7	13.88	4.97	9.50	5.02			9.55	C			D 3/2
50	82	132	1101.3	1089.5	14.44	7.09	9.84	3.40			11.77	C			
50	83	133	1104.4	1094.2	14.76	3.09	8.60	7.55			10.18	C			F 7/2
50	84	134	1108.9	1098.7	15.06	4.55	6.68	6.42			10.23	C			
50	85	135	1111.7	1103.0	15.38	2.74	6.97	6.55			8.65	C			F 7/2
50	86	136	1115.9	1107.2	15.68	4.25	7.30	7.35			8.77	C			
50	87	137	1118.3	1111.1	15.98	2.35	7.54	9.57			7.16	C			F 7/2
50	88	138	1122.3	1114.9	16.28	4.00	7.90	8.23			7.37	C			
50	89	139	1124.2	1118.5	16.48	1.93	8.10	10.61			5.68	C			F 7/2
50	90	140	1128.0	1122.0	16.79	3.81	8.51	9.04			6.04	C			
50	91	141	1129.3	1125.3	16.78	1.27	8.45	11.88			4.11	-.018	.014		5/2-
50	92	142	1133.1	1128.4	17.33	3.85	9.08	10.22			4.73	C			
50	93	143	1134.3	1131.4	17.22	1.19	9.46	13.06			3.17	-.030	.022		5/2-
50	94	144	1137.8	1134.2	17.43	3.44	9.70	11.73			3.57	C			
50	95	145	1139.1	1136.9	17.50	1.32	9.77	14.20			3.15	.076	.041		5/2-
50	96	146	1142.3	1139.4	17.80	3.25	10.06	12.74			3.64	.066	.034		
50	97	147	1143.5	1141.8	18.02	1.19	10.23	15.00			2.78	.088	.037		5/2+
50	98	148	1146.5	1144.0	18.30	2.97	10.57	13.57			3.38	.083	.034		
50	99	149	1147.5	1146.1	18.36	.99	10.76	15.80			2.54	.104	.033		7/2-
50	100	150	1150.3	1148.0	18.61	2.83	11.11	14.24			3.33	.106	.028		
50	101	151	1151.2	1149.8	18.79	.89	11.37	16.35			2.65	.125	.020		1/2-
50	102	152	1153.8	1151.5	19.00	2.57	11.62	14.85			3.45	.124	.014		
50	103	153	1154.6	1153.1	19.24	.79	11.83	16.85			2.98	.141	.008		5/2-
50	104	154	1157.0	1154.5	19.46	2.38	12.17	15.45			3.76	.133	.001		
50	105	155	1157.8	1155.8	19.88	.84	12.63	17.20			3.66	.150	-.005		5/2+
50	106	156	1159.7	1156.9	19.88	1.94	12.70	16.16			4.18	.135	-.011		
50	107	157	1160.3	1158.0	20.14	.60	12.85	17.89			4.06	.148	-.020		7/2-
50	108	158	1162.2	1158.9	20.36	1.86	13.25	16.75			4.71	.132	-.021		
50	109	159	1162.5	1159.8	20.60	.30	13.32	18.56			4.33	.135	-.026		1/2-
50	110	160	1164.1	1160.7	20.84	1.59	13.67	17.50			4.96	.120	-.025		
50	111	161	1164.1	1161.4	21.07	.01	13.86	19.34			4.50	.120	-.032		1/2-

Z	N	A	B.E.	BC	SP	SN	SA	CR	BAR	X	S	A2	A4	P	N	
50	112	162	1165.6	1162.0	21.35	1.50	14.37	18.10			5.25	.101	-.031			
50	113	163	1165.6	1162.5	21.59	-.03	14.76	19.88			4.91	.100	-.033		1 1/2+	
50	114	164	1167.9	1162.9	22.89	2.36	16.25	17.71			6.89	.090	-.032			
50	115	165	1167.9	1163.2	23.27	-.03	16.86	20.32			6.85	.092	-.036		3/2-	
50	116	166	1169.1	1163.3	22.35	1.15	17.29	19.38			7.72	.075	-.031			
50	117	167	1168.9	1163.4	22.69	-.15	17.80	20.98			7.56	.067	-.030		5/2-	
50	118	168	1169.8	1163.3	23.27	.92	18.30	19.96			6.17	C				
51	29	80	403.6	398.7-12.42	25.00	3.87-35.28	10.73	.703	4.93	-.027	-.001	7/2+	3/2-			
51	30	81	430.0	424.4-12.00	26.43	2.01-36.32	12.11	.679	5.61	-.022	-.003	7/2+				
51	31	82	453.3	449.4-11.48	23.28	1.27-32.61	13.40	.654	3.87	-.022	-.003	7/2+	1/2-			
51	32	83	478.4	473.8-11.01	25.11	.94-33.98	15.12	.627	4.65	-.021	-.004	7/2+				
51	33	84	499.9	497.4-10.34	21.51	.16-29.88	16.03	.622	2.62	-.044	.015	7/2+	5/2-			
51	34	85	524.0	520.4-10.02	24.11	.13-32.07	18.02	.608	3.63	-.024	-.002	7/2+				
51	35	86	544.3	542.8	-9.51	20.29	-.14-27.73	18.97	.590	1.56	-.027	-.002	7/2+	1/2-		
51	36	87	567.3	564.5	-9.04	22.99	-.28-29.97	20.87	.565	2.80	-.027	-.001	7/2+			
51	37	88	586.6	585.7	-8.54	19.29	-.33-25.79			.94	-.028	-.003	7/2+	3/2-		
51	38	89	606.6	606.3	-8.09	22.02	-.33-28.07			2.38	-.027	-.001	7/2+			
51	39	90	627.0	626.3	-7.60	18.34	-.30-23.92			.72	-.030	-.000	7/2+	1/2-		
51	40	91	648.1	645.8	-7.15	21.15	-.26-26.27			2.39	-.027	-.002	7/2+			
51	41	92	665.6	664.7	-6.56	17.51	-.15-22.17			.98	-.032	-.001	7/2+	5/2+		
51	42	93	685.9	683.1	-6.23	20.26	-.11-24.52			2.79	-.025	-.002	7/2+			
51	43	94	702.7	701.0	-5.75	16.80	.12-20.56			1.67	-.025	-.002	7/2+	7/2+		
51	44	95	722.1	718.5	-5.32	19.42	.16-22.75			3.64	-.022	-.003	7/2+			
51	45	96	738.2	735.4	-4.87	16.16	.42-19.03			2.83	-.021	-.003	7/2+	5/2+		
51	46	97	756.8	751.9	-4.44	18.57	.46-21.01			4.85	-.015	-.004	7/2+			
51	47	98	772.4	768.0	-3.95	15.57	.78-17.56			4.41	-.020	-.004	7/2+	3/2+		
51	48	99	790.0	783.6	-3.68	17.65	.72-19.26			6.41	C		C 7/2			
51	49	100	805.1	798.8	-3.00	15.11	1.15-16.13			6.37	.023	.004	1/2+	5/2+		
51	50	101	822.0	813.6	-2.82	16.84	1.09-17.55			8.38	C		C 7/2			
51	51	102	835.0	828.0	-1.49	13.00	-.11-13.19			7.05	-.020	-.004	7/2+	5/2+		
51	52	103	846.5	841.3	-1.27	13.52	-1.81-13.48			7.23	C		C 7/2			
51	53	104	859.9	854.2	-.73	11.44	-1.82-10.11			5.77	-.016	.006	7/2+	3/2+		
51	54	105	873.0	866.8	-.32	13.01	-1.60-11.36			6.20	-.016	-.004	7/2+			
51	55	106	883.5	879.0	.14	10.56	-1.56-8.50			4.56	-.016	.007	7/2+	1/2+		
51	56	107	895.9	890.9	.50	12.38	-1.35-9.95			5.04	-.016	-.004	7/2+			
51	57	108	905.4	902.4	1.12	9.54	-1.56-6.66			3.11	-.025	.011	7/2+	7/2+		
51	58	109	917.4	913.6	1.32	11.98	-1.14-8.78			3.81	-.020	-.002	7/2+			
51	59	110	926.3	924.5	1.78	8.90	-.96-5.24			1.88	.023	.012	1/2+	3/2+		
51	60	111	937.8	935.1	2.17	11.48	-.67-7.49			2.85	-.037	.012	7/2+			
51	61	112	946.2	945.4	2.61	8.40	-.48-4.02			1.08	-.043	.015	7/2+	3/2+		
51	62	113	957.2	955.4	3.03	11.02	-.06-6.28			2.06	-.042	.012	7/2+			
51	63	114	965.3	965.0	3.62	8.11	.44-3.02			.70	-.055	.022	7/2+	3/2+		
51	64	115	975.8	974.4	3.93	10.49	.61-5.00			1.71	-.053	.016	7/2+			
51	65	116	983.4	983.6	4.42	7.59	1.02-1.75			.30	-.064	.017	7/2+	1/2+		
51	66	117	993.5	992.4	4.74	10.12	1.29-3.81			1.46	-.056	.012	7/2+			
51	67	118	1000.8	1001.0	5.21	7.24	1.69-.64			.19	-.066	.006	7/2+	5/2-		

Z	N	A	B.E.	BL	SP	SN	SA	CE	PAR	X	S	A2	A4	P	N
51	69	119	1010.5	1009.3	5.50	9.72	1.99	-2.65			1.51	-.062	.004	7/2+	
51	69	120	1017.4	1017.4	5.94	6.91	2.39	.42			.41	-.067	.003	7/2+	1/2+
51	70	121	1026.7	1025.2	6.22	9.33	2.70	-1.61			1.80	-.056	-.004	7/2+	
51	71	122	1033.3	1032.8	6.62	6.61	3.10	1.42			.86	-.058	-.006	7/2+	7/2-
51	72	123	1042.3	1040.1	6.89	8.95	3.44	-.55			2.42	-.050	-.008	7/2+	
51	73	124	1048.6	1047.2	7.27	6.33	3.66	2.40			1.66	-.051	-.010	7/2+	3/2+
51	74	125	1057.1	1054.1	7.43	8.51	4.16	.55			3.15	-.040	-.007	7/2+	
51	75	126	1063.2	1060.7	7.79	6.08	4.61	3.33			2.65	-.042	-.005	7/2+	5/2-
51	76	127	1071.4	1067.2	8.01	8.24	5.05	1.47			4.35	-.027	-.005	7/2+	
51	77	128	1077.3	1073.4	8.41	5.86	5.42	4.28			4.02	-.025	-.006	7/2+	3/2-
51	78	129	1085.2	1079.4	8.55	7.85	5.80	2.57			5.78	0		G 7/2	
51	79	130	1090.9	1085.2	9.04	5.72	6.33	5.21			5.75	-.018	-.006	7/2+	1/2-
51	80	131	1098.4	1090.8	9.21	7.57	6.71	3.54			7.68	C		G 7/2	
51	81	132	1103.9	1096.1	9.71	5.47	7.10	6.11			7.75	-.016	-.005	7/2+	1/2+
51	82	133	1111.2	1101.3	9.86	7.24	7.44	4.49			5.82	C		G 7/2	
51	83	134	1114.6	1106.3	10.18	3.42	5.95	8.79			8.23	C		G 7/2 F 7/2	
51	84	135	1119.4	1111.2	10.50	4.87	4.29	7.66			8.25	C		G 7/2	
51	85	136	1122.5	1115.8	10.82	3.06	4.57	9.78			6.72	C		G 7/2 F 7/2	
51	86	137	1127.1	1120.2	11.14	4.57	4.90	8.59			6.84	C		G 7/2	
51	87	138	1129.7	1124.5	11.45	2.67	5.14	10.79			5.24	C		G 7/2 F 7/2	
51	88	139	1134.0	1128.6	11.76	4.31	5.49	9.46			5.45	C		G 7/2	
51	89	140	1136.3	1132.5	12.07	2.24	5.69	11.83			3.78	C		G 7/2 F 7/2	
51	90	141	1140.4	1136.3	12.37	4.11	6.10	10.27			4.13	C		G 7/2	
51	91	142	1142.6	1139.8	13.28	2.18	6.55	12.49			3.65	.067	.044	1/2+	3/2+
51	92	143	1146.6	1143.3	13.47	4.04	7.08	11.17			4.37	.071	.045	1/2+	
51	93	144	1148.7	1146.5	14.38	2.10	7.91	13.35			3.66	.085	.054	1/2+	3/2-
51	94	145	1152.5	1149.6	14.73	3.78	8.40	12.01			4.25	.087	.051	1/2+	
51	95	146	1154.3	1152.6	15.21	1.80	8.89	14.26			3.15	.096	.050	1/2+	5/2-
51	96	147	1157.8	1155.4	15.41	3.46	9.12	12.97			3.72	.094	.047	1/2+	
51	97	148	1159.3	1158.1	15.76	1.54	9.41	15.12			2.68	.106	.044	1/2+	5/2+
51	98	149	1162.5	1160.6	16.01	3.22	9.68	13.84			3.21	.095	.041	1/2+	
51	99	150	1163.8	1162.9	16.29	1.27	9.97	15.94			2.16	.105	.035	1/2+	7/2-
51	100	151	1166.8	1165.1	16.46	2.99	10.28	14.53			2.81	.105	.034	1/2+	
51	101	152	1167.8	1167.2	16.64	1.07	10.42	16.70			1.84	.114	.028	1/2+	1/2-
51	102	153	1170.6	1169.2	16.86	2.79	10.63	15.33			2.55	.113	.023	1/2+	
51	103	154	1171.6	1171.0	17.05	.98	10.90	17.39			2.14	.141	.011	1/2+	5/2-
51	104	155	1174.2	1172.7	17.26	2.60	11.14	16.15			2.91	.135	.007	1/2+	
51	105	156	1175.1	1174.2	17.32	.90	11.49	18.04			2.34	.140	.000	1/2+	7/2-
51	106	157	1177.4	1175.6	17.70	2.33	11.66	16.90			3.09	.132	-.004	1/2+	
51	107	158	1178.2	1176.9	17.83	.72	11.95	18.72			2.76	.142	-.014	3/2+	7/2-
51	108	159	1180.3	1178.1	18.08	2.12	12.13	17.79			2.46	.128	-.016	3/2+	
51	109	160	1180.8	1179.3	18.31	.53	12.32	19.45			3.05	.131	-.021	3/2+	1/2-
51	110	161	1182.7	1180.4	18.57	1.86	12.53	18.38			3.72	.117	-.022	3/2+	
51	111	162	1182.9	1181.4	18.83	.27	12.74	20.14			3.25	.117	-.027	3/2+	1/2-
51	112	163	1184.7	1182.2	19.06	1.74	13.12	18.95			4.11	.104	-.028	3/2+	
51	113	164	1184.9	1183.0	19.29	.20	13.54	20.61			3.75	.103	-.032	3/2+	11/2+
51	114	165	1187.5	1183.6	19.51	2.58	14.89	18.48			5.76	.095	-.032	2/2+	

Z	N	A	H.E.	BC	SP	SN	SA	CP	BAK	X	S	A2	A4	P	A
51	115	166	1187.7	1164.1	19.75	.21	15.38	20.04			5.70	.096	-.036	3/2+	3/2-
51	116	167	1189.1	1164.5	20.05	1.46	15.78	19.88			6.71	.086	-.032	3/2+	
51	117	168	1189.0	1164.8	20.09	-.11	16.08	21.79			6.40	.075	-.034	3/2+	5/2-
51	118	169	1190.2	1185.0	20.38	1.21	15.21	20.83			7.17	.052	-.021	3/2+	
51	119	170	1189.9	1165.1	20.36	-.33	15.36	22.33			6.75	-.043	.006	1/2+	5/2-
51	120	171	1191.3	1165.1	20.57	1.40	16.42	21.08			8.26	-.030	-.004	1/2+	
52	31	83	443.6	429.6	-9.65	23.74	-.66-35.91	10.35	.665		4.01	C		P	3/2
52	32	84	469.2	464.4	-9.16	25.61	-1.07-37.27	11.66	.665		4.82	C			
52	33	85	491.2	488.6	-8.74	21.93	-1.89-33.13	12.47	.645		2.64	.025	.000		1/2-
52	34	86	515.8	512.0	-8.22	24.63	-1.91-35.23	14.12	.633		3.78	C			
52	35	87	536.6	534.5	-7.76	20.75	-2.00-30.99	15.38	.616		1.65	C		F	5/2
52	36	88	560.0	557.1	-7.29	23.46	-2.33-33.18	17.42	.601		2.92	C			
52	37	89	579.8	578.7	-6.83	19.74	-2.36-29.03	18.36	.582		1.06	C		F	5/2
52	38	90	602.3	599.7	-6.36	22.50	-2.39-31.25	20.51	.563		2.51	C			
52	39	91	621.1	620.2	-5.91	18.80	-2.38-27.16				.84	C		P	1/2
52	40	92	642.7	640.1	-5.45	21.61	-2.34-29.45				2.52	C			
52	41	93	660.6	659.5	-5.04	17.91	-2.29-25.36				1.07	-.021	-.003		5/2+
52	42	94	681.3	678.4	-4.55	20.75	-2.23-27.70				2.92	C			
52	43	95	696.6	696.8	-4.11	17.23	-1.91-23.77				1.78	C		G	5/2
52	44	96	718.4	714.7	-3.66	19.87	-1.96-25.94				3.78	C			
52	45	97	735.0	732.1	-3.22	16.59	-1.69-22.24				2.97	C		G	5/2
52	46	98	754.0	749.0	-2.78	19.01	-1.67-24.22				5.05	C			
52	47	99	770.0	765.5	-2.39	15.96	-1.41-20.73				4.51	C		G	5/2
52	48	100	788.2	781.5	-1.81	18.24	-1.32-22.54				6.70	C			
52	49	101	803.6	797.1	-1.50	15.41	-.99-19.36				6.52	.015	.002		5/2+
52	50	102	821.0	812.3	-.97	17.37	-1.00-20.81				8.66	C			
52	51	103	834.2	827.1	-.74	13.23	-2.20-16.33				7.10	C		D	5/2
52	52	104	849.1	841.5	.55	14.82	-4.04-17.38				7.51	C			
52	53	105	860.8	854.5	.86	11.75	-3.96-14.01				5.92	C		D	5/2
52	54	106	874.2	867.9	1.27	13.42	-3.84-14.59				6.36	C			
52	55	107	885.2	880.5	1.64	10.93	-3.82-11.69				4.67	C		D	5/2
52	56	108	898.0	892.8	2.09	12.83	-3.59-13.10				5.22	C			
52	57	109	907.8	904.7	2.41	9.86	-3.83	-9.80			3.21	-.018	.012		1/2+
52	58	110	920.3	916.3	2.87	12.44	-3.42-11.87				3.96	C			
52	59	111	929.5	927.6	3.21	9.24	-3.09	-8.38			1.92	C		G	1/2
52	60	112	941.4	938.6	3.60	11.87	-2.99-10.39				2.82	C			
52	61	113	950.1	949.2	3.95	8.76	-2.67	-6.90			.92	C		G	1/2
52	62	114	961.5	959.6	4.31	11.38	-2.38	-8.74			2.04	-.025	.008		
52	63	115	970.0	969.6	4.71	8.51	-1.84	-5.56			1.04	-.067	.025		1/2+
52	64	116	980.9	979.4	5.06	10.84	-1.60	-7.40			1.54	-.062	.020		
52	65	117	988.9	988.9	5.53	8.06	-1.06	-4.32			.71	-.075	.021		1/2+
52	66	118	999.3	998.1	5.81	10.40	-.84	-6.28			1.72	-.072	.013		
52	67	119	1007.0	1007.1	6.28	7.71	-.23	-3.29			.64	-.084	.011		5/2-
52	68	120	1017.0	1015.8	6.55	9.95	-.04	-5.20			1.81	-.076	.008		
52	69	121	1024.3	1024.2	6.94	7.30	.49	-2.19			.74	-.081	.002		1/2+
52	70	122	1034.0	1032.4	7.25	9.64	.69	-4.14			1.55	-.064	-.004		

Z	N	A	B.E.	BC	SP	SN	SA	CP	FA	X	S	A2	A4	P	N
52	71	123	1041.0	1040.3	7.62	6.98	1.21	-1.22			1.15	-.072	-.007		7/2-
52	72	124	1050.2	1048.0	7.94	9.27	1.43	-3.14			2.58	-.056	-.010		
52	73	125	1056.9	1055.4	8.28	6.67	1.89	-.39			1.86	-.061	-.011		3/2+
52	74	126	1065.7	1062.6	8.62	8.85	2.05	-2.15			3.25	-.035	-.008		
52	75	127	1072.1	1069.6	8.93	6.38	2.49	.70			2.61	-.032	.001		5/2-
52	76	128	1080.8	1076.4	9.36	8.67	2.81	-1.16			4.42	0			
52	77	129	1086.9	1082.9	9.64	6.14	3.24	1.37			4.02	0			4 1/2
52	78	130	1095.3	1089.3	10.15	8.36	3.59	-.47			6.05	0			
52	79	131	1101.2	1095.4	10.32	5.85	4.00	2.23			5.83	0			D 3/2
52	80	132	1109.2	1101.3	10.79	8.04	4.33	.42			7.95	0			
52	81	133	1114.9	1107.0	10.95	5.62	4.72	3.15			7.86	0			D 3/2
52	82	134	1122.6	1112.5	11.43	7.72	5.05	1.38			10.07	0			
52	83	135	1126.3	1117.8	11.75	3.74	3.82	5.68			8.45	0			F 7/2
52	84	136	1131.5	1122.9	12.06	5.18	1.91	4.56			6.55	0			
52	85	137	1134.9	1127.5	12.37	3.37	2.19	6.69			6.58	0			F 7/2
52	86	138	1139.7	1132.6	12.68	4.87	2.51	5.50			7.10	0			
52	87	139	1142.7	1137.2	12.99	2.98	2.75	7.72			5.51	0			F 7/2
52	88	140	1147.3	1141.6	13.29	4.61	3.10	6.40			5.72	0			
52	89	141	1149.9	1145.8	13.59	2.55	3.30	8.76			4.04	0			F 7/2
52	90	142	1154.3	1149.9	13.89	4.41	3.70	7.33			4.40	0			
52	91	143	1157.0	1153.8	14.43	2.73	4.49	9.68			5.02	.090	.055		3/2+
52	92	144	1161.3	1157.5	14.67	4.28	4.97	8.75			5.57	.092	.058		
52	93	145	1163.7	1161.0	15.01	2.44	6.14	10.92			4.68	.102	.061		3/2-
52	94	146	1167.8	1164.4	15.27	4.04	6.33	9.89			5.14	.101	.058		
52	95	147	1169.7	1167.7	15.64	2.17	7.31	11.95			4.15	.113	.053		5/2-
52	96	148	1173.6	1170.8	15.88	3.69	7.57	10.75			4.60	.112	.045		
52	97	149	1175.6	1173.7	16.27	1.93	8.18	12.72			3.71	.130	.042		5/2+
52	98	150	1178.9	1175.5	16.44	3.38	8.31	11.53			4.10	.114	.046		
52	99	151	1180.5	1179.1	16.75	1.58	8.70	13.58			3.02	.115	.041		7/2-
52	100	152	1183.8	1181.6	16.98	3.23	8.96	12.19			3.62	.120	.036		
52	101	153	1185.2	1184.0	17.34	1.42	9.40	14.22			2.77	.133	.027		1/2-
52	102	154	1188.2	1186.2	17.58	3.04	9.61	12.85			3.53	.135	.020		
52	103	155	1189.6	1188.3	17.97	1.36	10.08	14.76			3.20	.158	.008		5/2-
52	104	156	1192.4	1190.2	18.16	2.78	10.29	13.56			3.68	.142	.008		
52	105	157	1193.6	1192.0	18.45	1.19	10.70	15.41			3.18	.149	-.001		7/2-
52	106	158	1196.1	1193.7	18.66	2.54	10.86	14.29			3.93	.143	-.007		
52	107	159	1197.3	1195.2	19.12	1.19	11.20	15.88			3.73	.150	-.012		7/2-
52	108	160	1199.5	1196.7	19.19	2.18	11.44	15.13			4.32	.135	-.016		
52	109	161	1200.3	1198.1	19.46	.79	11.63	16.76			3.89	.140	-.023		1/2-
52	110	162	1202.3	1199.5	19.63	2.03	11.80	15.76			4.51	.127	-.025		
52	111	163	1202.8	1200.7	19.91	.54	12.04	17.47			4.02	.125	-.025		3/2-
52	112	164	1204.7	1201.8	20.03	1.86	12.31	16.39			4.77	.113	-.031		
52	113	165	1205.1	1202.8	20.27	.44	12.74	18.01			4.41	.111	-.035		11/2+
52	114	166	1206.9	1203.7	19.47	1.77	13.01	16.91			5.34	.102	-.036		
52	115	167	1207.2	1204.4	19.56	.31	13.35	18.59			5.12	.101	-.040		3/2-
52	116	168	1210.0	1205.1	20.90	2.80	13.79	16.34			7.22	.072	-.036		
52	117	169	1210.3	1205.6	21.26	.25	14.07	19.09			6.96	.085	-.033		5/2-

Z	N	A	B.E.	BC	SP	SN	SA	CE	EAR	X	S	A2	A4	P	N
52	118	170	1211.4	1206.0	21.21	1.16	14.07	18.39			7.43	.056	-.024		
52	119	171	1211.6	1206.4	21.69	.14	14.36	19.51			7.33	.050	-.021		13/2+
52	120	172	1212.9	1206.6	21.59	1.30	14.74	18.56			6.32	-.019	-.005		
52	121	173	1213.0	1206.7	21.82	.09	15.14	19.86			6.47	-.021	-.005		1/2-
52	122	174	1214.2	1206.7	22.01	1.26	15.22	18.92			5.86	0			
53	32	85	457.3	454.6-11.99	26.06	-1.05-35.55	8.31	.698	2.68	.019	.005	3/2+			
53	33	86	479.8	479.2-11.39	22.53	-1.80-31.60	9.00	.677	.69	.048	.005	3/2+	1/2-		
53	34	87	504.8	503.1-11.02	25.00	-1.91-33.57	10.84	.657	1.67	.023	-.002	3/2+			
53	35	88	526.1	526.4-10.51	21.26	-2.16-29.43	11.71	.640	-.35	.021	-.006	3/2+	3/2-		
53	36	89	549.9	549.1-10.07	23.90	-2.37-31.53	13.75	.620	.86	.026	-.002	3/2+			
53	37	90	570.2	571.2 -9.58	20.23	-2.43-27.44	14.73	.614	-.92	-.002	-.016	3/2+	5/2-		
53	38	91	593.1	592.7 -9.14	22.93	-2.49-29.63	16.88	.598	.44	.016	-.005	3/2+			
53	39	92	612.4	613.6 -8.67	19.27	-2.50-25.52	17.94	.581	-1.21	.019	-.005	3/2+	1/2-		
53	40	93	634.4	634.0 -8.23	22.05	-2.48-27.76	20.23	.563	.46	.016	-.005	3/2+			
53	41	94	652.8	653.6 -7.73	18.41	-2.41-23.77			-.86	.044	.006	3/2+	1/2+		
53	42	95	674.0	673.1 -7.32	21.16	-2.40-25.99			.89	.022	-.001	3/2+			
53	43	96	691.7	692.0 -6.85	17.70	-2.20-22.34			-.20	.027	.002	3/2+	3/2+		
53	44	97	712.0	710.3 -6.43	20.29	-2.17-24.48			1.76	.023	-.000	3/2+			
53	45	98	729.0	728.1 -5.99	17.03	-1.93-20.81			.95	.022	.001	3/2+	5/2+		
53	46	99	748.5	745.5 -5.56	19.44	-1.91-22.78			3.02	.016	.002	3/2+			
53	47	100	764.9	762.4 -5.09	16.43	-1.64-19.34			2.54	.023	.004	3/2+	7/2+		
53	48	101	783.5	778.5 -4.73	18.59	-1.61-21.09			4.62	0		7/2			
53	49	102	799.4	794.9 -4.23	15.92	-1.26-17.96			4.55	.026	.001	3/2+	9/2+		
53	50	103	817.1	810.5 -3.89	17.71	-1.20-19.37			6.56	0		7/2			
53	51	104	830.9	825.7 -3.34	13.77	-2.54-14.99			5.19	.019	.006	3/2+	1/2+		
53	52	105	846.0	840.6 -3.04	15.12	-4.26-15.95			5.46	0		7/2			
53	53	106	858.9	855.0 -1.95	12.84	-4.43-13.23			3.88	0		7/2	5/2		
53	54	107	872.7	868.4 -1.54	13.83	-4.12-13.82			4.32	0		7/2			
53	55	108	884.1	881.4 -1.06	11.42	-4.14-10.35			2.74	.017	.006	3/2+	5/2+		
53	56	109	897.3	894.1 -.73	13.16	-3.99-11.76			3.19	0		7/2			
53	57	110	907.6	906.4 -.21	10.37	-4.18 -8.50			1.45	.025	.022	3/2+	1/2+		
53	58	111	920.4	918.4 .08	12.73	-3.83-10.33			1.96	0		7/2			
53	59	112	930.2	930.1 .70	9.86	-3.51 -7.21			1.73	.085	.056	3/2+	1/2-		
53	60	113	942.5	941.4 1.08	12.25	-3.24 -9.02			1.98	-.082	.034	11/2-			
53	61	114	952.0	952.5 1.85	9.54	-2.60 -5.96			1.19	-.095	.051	11/2-	3/2+		
53	62	115	963.7	963.2 2.17	11.69	-2.39 -7.67			1.70	-.092	.035	11/2-			
53	63	116	972.7	973.6 2.66	9.00	-1.79 -4.65			.35	-.096	.041	11/2-	1/2+		
53	64	117	983.8	983.8 2.96	11.14	-1.67 -6.35			1.11	-.092	.032	11/2-			
53	65	118	992.3	993.6 3.34	8.45	-1.34 -3.31			-.21	-.101	.029	11/2-	5/2+		
53	66	119	1003.0	1003.2 3.64	10.70	-1.13 -5.17			.73	-.097	.022	5/2+			
53	67	120	1011.1	1012.5 4.01	8.08	-.64 -2.17			-.44	-.103	.018	5/2+	9/2-		
53	68	121	1021.4	1021.6 4.32	10.30	-.46 -4.01			.65	-.097	.011	5/2+			
53	69	122	1029.1	1030.4 4.72	7.69	-.01 -1.14			-.35	-.103	.005	5/2+	7/2-		
53	70	123	1039.0	1038.9 4.97	9.90	.17 -2.89			.78	.092	.002	3/2+			
53	71	124	1046.3	1047.2 5.35	7.35	.61 -.12			-.05	.096	.002	3/2+	7/2-		
53	72	125	1055.7	1055.2 5.49	9.42	.70 -1.80			1.04	.077	-.001	3/2+			

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAK	X	S	AZ	A4	P	N
53	73	126	1062.8	1063.C	5.92	7.09	1.18	.81			.44	-.077	-.C14	5/2+	3/2+
53	74	127	1072.0	1070.5	6.30	9.23	1.46	-.96			1.93	-.060	-.C16	7/2+	
53	75	128	1078.9	1077.9	6.73	6.81	1.95	1.59			1.46	-.061	-.C18	7/2+	5/2-
53	76	129	1087.5	1085.C	6.72	8.66	2.11	.10			2.60	.020	-.C03	3/2+	
53	77	130	1094.1	1091.6	7.11	6.53	2.55	2.52			2.26	.C23	-.C03	3/2+	5/2-
53	78	131	1102.6	1098.5	7.34	8.59	2.90	.82			4.15	C		C 7/2	
53	79	132	1108.9	1104.9	7.67	6.22	3.27	3.53			3.93	C		C 7/2 D	3/2
53	80	133	1117.2	1111.2	7.99	8.36	3.77	1.72			6.05	C		C 7/2	
53	81	134	1123.2	1117.2	8.32	5.95	4.01	4.44			5.97	C		C 7/2 D	3/2
53	82	135	1131.2	1123.C	8.64	8.04	4.48	2.67			6.18	C		C 7/2	
53	83	136	1135.3	1128.7	8.96	4.06	3.07	6.96			6.61	C		C 7/2 F	7/2
53	84	137	1140.8	1134.1	9.28	5.50	1.33	5.84			6.67	C		C 7/2	
53	85	138	1144.5	1139.4	9.60	3.69	1.60	7.96			5.11	C		C 7/2 F	7/2
53	86	139	1149.7	1144.4	9.91	5.19	1.92	6.78			5.24	C		C 7/2	
53	87	140	1152.9	1149.3	10.22	3.29	2.15	6.98			3.65	C		C 7/2 F	7/2
53	88	141	1157.9	1154.C	10.53	4.92	2.50	7.66			3.86	C		C 7/2	
53	89	142	1160.8	1158.5	10.95	2.97	2.80	9.91			3.34	.C67	.C45	3/2+	1/2+
53	90	143	1165.9	1162.9	11.62	5.08	3.56	8.23			4.78	.C87	.C55	1/2-	
53	91	144	1169.3	1167.C	12.25	3.36	4.68	10.27			4.65	.102	.C70	1/2-	3/2+
53	92	145	1173.9	1171.C	12.58	4.61	5.18	9.37			5.36	.106	.C71	1/2-	
53	93	146	1176.9	1174.9	13.15	3.01	6.01	11.23			4.52	.113	.C65	1/2-	3/2-
53	94	147	1181.1	1178.6	13.34	4.23	6.20	10.37			4.88	.112	.C65	1/2-	
53	95	148	1183.6	1182.1	13.67	2.49	6.59	12.38			3.84	.115	.C62	1/2-	5/2+
53	96	149	1187.5	1185.5	13.87	3.90	6.70	11.30			4.22	.115	.C55	1/2-	
53	97	150	1189.7	1188.7	14.13	2.15	7.10	13.28			3.17	.126	.C55	1/2-	5/2-
53	98	151	1193.3	1191.7	14.38	3.64	7.28	12.15			3.59	.125	.C51	1/2-	
53	99	152	1195.2	1194.7	14.64	1.84	7.58	14.22			2.40	.126	.C46	1/2-	1/2-
53	100	153	1198.6	1197.4	14.86	3.46	7.82	12.88			2.55	.125	.C40	1/2-	
53	101	154	1200.3	1200.1	15.11	1.67	8.22	14.94			1.95	.137	.C31	3/2+	1/2-
53	102	155	1203.6	1202.5	15.34	3.27	8.49	13.81			2.63	.136	.C24	3/2+	
53	103	156	1205.2	1204.9	15.56	1.59	9.01	15.67			2.05	.152	.C15	3/2+	5/2-
53	104	157	1208.2	1207.1	15.82	3.04	9.25	14.56			2.67	.144	.C11	3/2+	
53	105	158	1209.6	1209.2	16.05	1.43	9.70	16.38			2.11	.150	.C02	3/2+	7/2-
53	106	159	1212.4	1211.1	16.28	2.77	9.88	15.32			2.84	.145	-.C04	3/2+	
53	107	160	1213.8	1212.9	16.53	1.44	10.41	16.88			2.60	.150	-.C10	5/2+	7/2-
53	108	161	1216.2	1214.6	16.77	2.42	10.50	16.17			3.22	.142	-.C16	1/2+	
53	109	162	1217.3	1216.3	17.01	1.04	10.82	17.74			2.76	.142	-.C22	1/2+	1/2-
53	110	163	1219.5	1217.9	17.23	2.25	10.95	16.78			3.37	.131	-.C24	1/2+	
53	111	164	1220.3	1219.4	17.47	.78	11.20	18.44			2.87	.125	-.C25	1/2+	3/2-
53	112	165	1222.4	1220.7	17.67	2.06	11.41	17.40			3.55	.115	-.C31	1/2+	
53	113	166	1223.1	1222.0	17.90	.68	11.82	19.03			3.23	.115	-.C35	1/2+	11/2+
53	114	167	1225.0	1223.1	18.11	1.98	12.06	17.91			4.13	.106	-.C37	1/2+	
53	115	168	1225.6	1224.1	18.36	.55	12.41	19.55			3.90	.104	-.C41	1/2+	3/2-
53	116	169	1228.6	1225.0	18.56	3.00	12.84	17.33			5.96	.C96	-.C37	1/2+	
53	117	170	1229.0	1225.8	18.77	.46	13.09	18.75			5.66	.C85	-.C35	1/2+	5/2-
53	118	171	1230.3	1226.4	18.87	1.26	12.89	19.49			6.01	.063	-.C26	5/2+	
53	119	172	1230.7	1227.C	19.08	.35	13.35	20.56			5.84	.C54	-.C22	5/2+	13/2+

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	A
53	120	173	1232.0	1227.4	19.17	1.39	13.52	19.73			6.69	-.035	-.004	5/2+	
53	121	174	1232.4	1227.8	19.41	.33	14.19	21.00			6.83	-.032	-.005	5/2+	1/2-
53	122	175	1233.9	1228.0	19.68	1.54	14.33	20.02			8.26	-.021	-.007	5/2+	
53	123	176	1234.1	1228.2	19.89	.23	14.70	21.54			8.54	-.023	-.011	5/2+	3/2-
54	34	88	495.8	493.8	-8.95	25.40	-1.70-36.11	7.93	.687	2.31	.058	.024			
54	35	89	517.6	517.5	-8.41	21.60	-1.83-32.14	8.64	.671	1.93	.120	.079		1/2+	
54	36	90	542.0	540.7	-7.99	24.32	-2.15-33.91	10.58	.652	1.98	.090	.041			
54	37	91	562.7	563.2	-7.48	20.74	-2.15-30.06	11.51	.636	.83	.121	.057		3/2-	
54	38	92	586.1	585.1	-7.03	23.38	-2.23-32.10	13.78	.624	1.76	.097	.042			
54	39	93	605.9	606.5	-6.49	19.81	-2.17-28.25	14.96	.612	.41	.107	.047		3/2+	
54	40	94	628.3	627.3	-6.14	22.40	-2.26-30.35	17.20	.597	1.62	.088	.034			
54	41	95	647.2	647.6	-5.60	18.95	-2.11-26.62	18.48	.581	.32	.089	.035		5/2-	
54	42	96	668.6	667.4	-5.42	21.35	-2.37-28.60	20.63	.565	1.23	-.019	-.000			
54	43	97	686.7	686.6	-4.97	18.16	-2.12-25.00			.64	.072	.029		3/2+	
54	44	98	707.4	705.4	-4.56	20.70	-2.18-27.15			2.07	C				
54	45	99	724.9	723.6	-4.12	17.47	-1.94-23.64			1.27	C			G 5/2	
54	46	100	744.8	741.4	-3.70	19.86	-1.95-25.62			3.34	C				
54	47	101	761.6	758.8	-3.28	16.85	-1.69-22.63			2.89	.022	.005		7/2+	
54	48	102	780.7	775.7	-2.82	19.04	-1.66-24.32			5.00	C				
54	49	103	797.0	792.1	-2.45	16.30	-1.32-21.23			4.88	.025	.002		5/2+	
54	50	104	815.1	808.2	-2.00	18.16	-1.40-22.65			6.96	C				
54	51	105	829.3	823.8	-1.61	14.16	-2.65-18.26			5.52	-.015	.006		5/2+	
54	52	106	844.8	839.0	-1.18	15.55	-4.47-19.24			5.83	C				
54	53	107	858.1	853.8	-.77	13.25	-4.45-16.52			4.25	C			D 5/2	
54	54	108	873.0	868.3	.29	14.89	-4.38-17.74			4.69	C				
54	55	109	884.7	881.7	.62	11.75	-4.38-14.20			3.01	C			D 5/2	
54	56	110	898.3	894.8	1.08	13.62	-4.18-15.01			3.57	C				
54	57	111	909.2	907.5	1.62	10.90	-4.21-11.81			2.11	.044	.027		1/2+	
54	58	112	922.2	919.9	1.87	12.98	-4.06-13.26			2.33	C				
54	59	113	932.7	931.9	2.45	10.45	-3.47-10.16			2.21	.096	.050		5/2+	
54	60	114	945.3	943.7	2.79	12.59	-3.31-11.61			2.55	.095	.046			
54	61	115	955.2	955.1	3.25	9.99	-2.57-8.67			2.15	.114	.056		3/2-	
54	62	116	967.3	966.2	3.57	12.02	-2.42-10.23			2.79	.109	.051			
54	63	117	976.7	977.0	4.00	9.44	-1.74-7.33			1.51	.118	.045		3/2+	
54	64	118	988.2	987.5	4.35	11.49	-1.63-8.97			2.13	.111	.040			
54	65	119	997.0	997.8	4.74	8.84	-1.31-6.01			.79	.121	.035		1/2+	
54	66	120	1008.1	1007.7	5.13	11.09	-1.06-7.84			1.67	.113	.029			
54	67	121	1016.6	1017.4	5.51	8.46	-.66-5.02			.52	.121	.022		1/2+	
54	68	122	1027.1	1026.8	5.77	10.56	-.50-6.71			1.52	.117	.014			
54	69	123	1035.3	1035.9	6.23	8.15	-.06-3.96			.65	.125	.009		5/2+	
54	70	124	1045.4	1044.8	6.45	10.12	.07-5.59			1.57	.108	.004			
54	71	125	1053.1	1053.4	6.84	7.74	.51-2.91			.81	.114	-.001		7/2-	
54	72	126	1062.8	1061.8	7.12	9.70	.57-4.51			1.79	.094	-.002			
54	73	127	1070.3	1069.9	7.48	7.46	1.05-2.11			1.11	-.086	-.013		3/2+	
54	74	128	1079.7	1077.8	7.62	9.36	1.14-3.77			2.31	-.066	-.015			
54	75	129	1086.8	1085.5	7.99	7.18	1.66-1.33			1.87	-.065	-.018		5/2-	

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAK	X	S	A2	A4	P	N
54	76	130	1095.8	1052.9	8.26	8.94	1.75	-2.80			2.87	C			
54	77	131	1102.7	1100.1	8.64	6.90	2.26	-.41			3.07	-.065	-.019		3/2-
54	78	132	1111.6	1107.1	8.97	8.92	2.51	-2.10			4.50	C			
54	79	133	1118.2	1113.9	9.29	6.55	2.92	.43			4.28	C			D 3/2
54	80	134	1126.8	1120.4	9.61	8.68	3.24	-1.37			6.39	C			
54	81	135	1133.1	1126.8	9.93	6.27	3.61	1.36			6.31	C			D 3/2
54	82	136	1141.5	1132.9	10.24	8.35	3.93	-.40			6.52	C			
54	83	137	1145.8	1138.9	10.56	4.36	2.68	3.89			6.95	C			F 7/2
54	84	138	1151.6	1144.6	10.87	5.81	.77	2.78			7.01	C			
54	85	139	1155.6	1150.2	11.18	4.00	1.03	4.90			5.45	C			F 7/2
54	86	140	1161.1	1155.6	11.49	5.49	1.35	3.73			5.58	C			
54	87	141	1164.7	1160.7	11.79	3.60	1.57	5.93			3.95	C			F 7/2
54	88	142	1169.9	1165.7	12.09	5.22	1.91	4.62			4.21	C			
54	89	143	1173.4	1170.6	12.53	3.40	2.34	6.88			3.82	.067	.045		1/2+
54	90	144	1178.7	1175.2	12.85	5.40	3.13	5.66			5.34	.091	.058		
54	91	145	1182.5	1179.7	13.19	3.71	4.28	7.59			5.32	.107	.070		3/2+
54	92	146	1187.3	1184.0	13.47	4.88	4.76	6.80			5.80	.106	.065		
54	93	147	1190.7	1188.1	13.81	3.36	5.39	8.67			5.23	.115	.065		3/2-
54	94	148	1195.2	1192.1	14.09	4.50	5.62	7.88			5.56	.118	.065		
54	95	149	1198.0	1195.9	14.41	2.82	5.99	9.83			4.57	.125	.062		5/2+
54	96	150	1202.2	1199.5	14.69	4.17	6.12	8.79			4.54	.125	.058		
54	97	151	1204.7	1203.0	15.00	2.51	6.46	10.73			3.92	.132	.054		5/2-
54	98	152	1208.6	1206.4	15.28	3.91	6.68	9.63			4.30	.131	.050		
54	99	153	1210.7	1209.6	15.56	2.12	6.87	11.67			3.16	.135	.045		1/2-
54	100	154	1214.5	1212.6	15.83	3.73	7.22	10.34			3.70	.136	.038		
54	101	155	1216.6	1215.5	16.29	2.13	7.76	12.20			2.99	.147	.031		7/2+
54	102	156	1220.0	1218.3	16.47	3.45	7.98	11.19			3.58	.145	.021		
54	103	157	1222.0	1220.9	16.82	1.93	8.48	13.00			3.05	.158	.015		5/2-
54	104	158	1225.2	1223.3	17.03	3.25	8.70	11.92			3.63	.152	.011		
54	105	159	1226.9	1225.7	17.31	1.71	9.04	13.68			3.05	.156	.002		7/2-
54	106	160	1229.9	1227.9	17.53	3.00	9.25	12.63			3.75	.152	-.005		
54	107	161	1231.6	1229.9	17.80	1.71	9.77	14.15			3.49	.155	-.010		7/2-
54	108	162	1234.2	1231.9	18.00	2.61	9.84	13.50			4.09	.149	-.017		
54	109	163	1235.5	1233.9	18.25	1.28	9.94	15.13			3.62	.148	-.023		1/2-
54	110	164	1238.0	1235.7	18.44	2.45	10.20	14.12			4.17	.137	-.025		
54	111	165	1239.0	1237.4	18.68	1.02	10.43	15.76			3.65	.134	-.030		3/2-
54	112	166	1241.3	1239.0	18.92	2.30	10.70	14.71			4.36	.124	-.032		
54	113	167	1242.2	1240.5	19.11	.87	11.02	16.36			3.94	.121	-.037		11/2+
54	114	168	1244.3	1241.9	19.31	2.19	11.35	15.33			4.78	.110	-.035		
54	115	169	1245.1	1243.1	19.55	.79	11.70	16.85			4.54	.108	-.043		3/2-
54	116	170	1247.0	1244.3	19.83	1.88	11.80	16.01			5.26	.100	-.040		
54	117	171	1249.0	1245.3	19.97	2.00	13.49	16.10			6.20	.091	-.036		9/2-
54	118	172	1250.4	1246.2	20.13	1.42	12.11	16.90			6.47	.066	-.025		
54	119	173	1251.0	1247.0	20.33	.55	12.42	17.92			6.22	.056	-.024		13/2+
54	120	174	1252.6	1247.7	20.55	1.61	12.86	17.04			7.07	-.045	-.002		
54	121	175	1253.1	1248.2	20.78	.56	13.28	18.25			7.17	-.037	-.004		1/2-
54	122	176	1254.9	1248.7	20.99	1.75	13.73	17.21			8.57	-.023	-.007		

Z	N	A	B.E.	BC	SP	SN	SA	CP	EAR	X	S	A2	A4	P	N
54	123	177	1255.4	1249.1	21.23	.47	14.11	18.74			8.87	-.023	-.012		3/2-
54	124	178	1256.7	1249.3	21.45	1.35	14.19	18.08			10.04	C			
54	125	179	1257.1	1249.5	21.68	.39	14.56	19.27			10.43	C			P 1/2
55	36	91	531.9	531.7-10.10	24.59	-1.23	-32.84	7.99	.679	1.95	.132	.075		3/2+	
55	37	92	553.2	554.7	-9.50	21.34	-1.14	-28.94	9.04	.661	.41	.142	.074	3/2+	3/2+
55	38	93	576.9	577.1	-9.22	23.65	-1.39	-30.76	11.02	.648	1.30	.131	.062	3/2+	
55	39	94	597.2	598.9	-8.73	20.31	-1.31	-27.03	12.25	.634	-.23	.136	.057	3/2+	3/2-
55	40	95	619.8	620.2	-8.45	22.68	-1.57	-28.90	14.33	.622	.92	.124	.045	3/2+	
55	41	96	639.2	640.9	-8.03	19.36	-1.48	-25.29	15.61	.612	-.50	.120	.046	3/2+	5/2-
55	42	97	661.0	661.1	-7.63	21.75	-1.77	-27.29	17.76	.597	.92	.109	.043	3/2+	
55	43	98	679.5	680.8	-7.23	18.56	-1.62	-23.70	19.15	.583	-.27	.107	.039	3/2+	1/2-
55	44	99	700.5	699.9	-6.96	20.97	-1.81	-25.69	21.43	.569	1.27	.091	.033	3/2+	
55	45	100	718.4	718.6	-6.53	17.89	-1.63	-22.35			.41	.086	.031	3/2+	5/2+
55	46	101	738.2	736.9	-6.56	19.84	-2.08	-23.89			1.37	.013	-.002	5/2+	
55	47	102	755.6	754.6	-6.06	17.35	-1.76	-20.94			1.20	.057	.014	1/2+	7/2+
55	48	103	775.0	771.9	-5.72	19.39	-1.82	-22.61			2.02	C		C 7/2	
55	49	104	791.7	788.8	-5.28	16.74	-1.51	-19.68			2.95	.030	.002	5/2+	5/2+
55	50	105	810.2	805.3	-4.88	18.55	-1.55	-21.04			4.99	C		C 7/2	
55	51	106	824.8	821.3	-4.47	14.57	-2.90	-16.71			3.58	.022	.007	5/2+	1/2+
55	52	107	840.8	836.9	-4.05	15.97	-4.64	-17.66			3.87	C		C 7/2	
55	53	108	854.4	852.1	-3.64	13.66	-4.75	-14.99			2.31	C		C 7/2	D 5/2
55	54	109	869.7	867.0	-3.23	15.29	-4.57	-15.99			2.75	C		C 7/2	
55	55	110	882.5	881.4	-2.16	12.82	-4.60	-13.17			1.52	.043	.030	5/2+	5/2+
55	56	111	896.6	894.9	-1.69	14.09	-4.33	-14.18			2.26	.056	.030	1/2+	
55	57	112	908.2	908.0	-1.06	11.53	-4.22	-10.55			2.02	.104	.056	3/2+	1/2-
55	58	113	921.7	920.8	-.49	13.55	-3.83	-12.03			2.91	.111	.056	3/2+	
55	59	114	932.9	933.2	.20	11.14	-3.05	-9.21			2.05	.121	.066	3/2+	3/2-
55	60	115	945.8	945.4	.53	12.92	-2.86	-10.59			2.72	.121	.062	3/2+	
55	61	116	956.2	957.2	1.00	10.46	-2.26	-7.75			1.61	.126	.064	3/2+	5/2+
55	62	117	968.6	968.6	1.32	12.33	-2.17	-9.20			2.18	.126	.057	3/2+	
55	63	118	978.4	979.8	1.74	9.85	-1.86	-6.36			.81	.132	.052	3/2+	3/2+
55	64	119	990.2	990.7	2.04	11.80	-1.76	-7.91			1.49	.129	.047	3/2+	
55	65	120	999.5	1001.3	2.47	9.26	-1.50	-5.03			.12	.136	.040	3/2+	5/2-
55	66	121	1010.8	1011.6	2.66	11.28	-1.36	-6.64			.84	.130	.034	1/2+	
55	67	122	1019.6	1021.6	3.07	8.87	-.93	-3.92			-.35	.136	.025	1/2+	1/2+
55	68	123	1030.5	1031.4	3.41	10.90	-.73	-5.55			.58	.129	.019	1/2+	
55	69	124	1039.0	1040.9	3.75	8.49	-.33	-2.84			-.25	.136	.010	1/2+	5/2+
55	70	125	1049.4	1050.1	4.04	10.41	-.21	-4.37			.63	.126	.008	1/2+	
55	71	126	1057.5	1059.1	4.41	8.11	.20	-1.78			-.15	.130	.001	1/2+	7/2-
55	72	127	1067.4	1067.8	4.57	9.86	.17	-3.16			.64	.111	-.001	1/2+	
55	73	128	1075.1	1076.3	4.81	7.69	.51	-.74			-.17	.108	-.007	1/2+	7/2+
55	74	129	1084.7	1084.5	5.07	9.63	.72	-2.35			.96	-.086	-.014	11/2-	
55	75	130	1092.2	1092.5	5.36	7.48	1.10	.08			.45	-.081	-.019	3/2+	5/2-
55	76	131	1101.5	1100.3	5.71	9.29	1.15	-1.40			1.64	-.058	-.017	3/2+	
55	77	132	1108.7	1107.8	6.05	7.23	1.58	.92			1.36	-.057	-.019	3/2+	3/2-
55	78	133	1117.8	1115.1	6.19	9.07	1.98	-.60			2.69	C		C 7/2	

Z	N	A	R.E.	BC	SP	SN	SA	CB	BAK	X	S	A2	A4	P	N
55	79	134	1124.7	1122.2	6.52	6.88	2.34	1.80			2.47	0		G 7/2	D 3/2
55	80	135	1133.7	1129.1	6.84	9.00	2.74	.01			4.59	C		G 7/2	
55	81	136	1140.3	1135.8	7.17	6.59	3.11	2.72			4.51	C		G 7/2	D 3/2
55	82	137	1148.9	1142.2	7.48	8.67	3.41	1.10			6.71	C		G 7/2	
55	83	138	1153.6	1148.5	7.80	4.70	2.17	5.24			5.15	C		G 7/2	F 7/2
55	84	139	1159.8	1154.5	8.12	6.12	.25	4.13			5.22	C		G 7/2	
55	85	140	1164.1	1160.4	8.44	4.32	.51	6.25			3.67	C		G 7/2	F 7/2
55	86	141	1169.9	1166.1	8.75	5.80	.81	5.07			3.80	C		G 7/2	
55	87	142	1173.8	1171.6	9.06	3.91	1.03	7.27			2.22	C		G 7/2	F 7/2
55	88	143	1179.4	1176.9	9.50	5.66	1.50	5.83			3.33	.C6C	.C37	1/2+	
55	89	144	1183.6	1182.0	10.27	4.18	2.39	7.66			3.56	.092	.C61	3/2+	3/2-
55	90	145	1189.3	1186.9	10.51	5.64	3.11	6.52			4.54	.101	.C65	3/2+	
55	91	146	1193.4	1191.7	10.90	4.09	4.23	8.39			4.36	.106	.C74	1/2+	3/2+
55	92	147	1198.6	1196.3	11.25	5.23	4.39	7.55			5.13	.117	.C73	1/2+	
55	93	148	1202.3	1200.7	11.60	3.72	4.74	9.60			4.46	.124	.C71	3/2+	3/2-
55	94	149	1207.1	1205.0	11.87	4.77	4.91	8.68			4.76	.124	.C67	3/2+	
55	95	150	1210.2	1209.1	12.18	3.13	5.02	10.61			3.77	.131	.C64	3/2+	5/2+
55	96	151	1214.6	1213.0	12.45	4.44	5.24	9.63			4.13	.131	.C60	3/2+	
55	97	152	1217.5	1216.8	12.75	2.81	5.55	11.55			3.12	.136	.C56	3/2+	5/2-
55	98	153	1221.6	1220.4	13.01	4.16	5.82	10.51			3.50	.136	.C52	3/2+	
55	99	154	1224.0	1223.9	13.29	2.40	6.03	12.55			2.35	.141	.C47	3/2+	1/2-
55	100	155	1228.0	1227.2	13.55	3.99	6.38	11.27			2.86	.142	.C40	3/2+	
55	101	156	1230.4	1230.3	13.85	2.43	6.97	13.11			2.15	.152	.C33	1/2-	7/2+
55	102	157	1234.2	1233.4	14.15	3.75	7.26	12.11			2.80	.153	.C26	1/2-	
55	103	158	1236.4	1236.2	14.38	2.16	7.76	13.96			2.18	.162	.C20	1/2-	5/2-
55	104	159	1239.8	1239.0	14.60	3.46	7.96	12.97			2.77	.158	.C15	1/2-	
55	105	160	1241.8	1241.6	14.84	1.95	8.32	14.73			2.09	.160	.C04	1/2+	7/2-
55	106	161	1245.0	1244.0	15.07	3.22	8.51	13.69			2.76	.155	-.C03	1/2+	
55	107	162	1247.0	1246.4	15.33	1.96	9.04	15.34			2.47	.158	-.C05	1/2+	7/2-
55	108	163	1249.9	1248.6	15.63	2.92	9.19	14.53			3.07	.152	-.C12	1/2+	
55	109	164	1251.3	1250.8	15.78	1.44	9.18	16.24			2.56	.152	-.C22	1/2+	1/2-
55	110	165	1254.0	1252.9	15.99	2.66	9.43	15.32			3.08	.141	-.C24	1/2+	
55	111	166	1255.2	1254.9	16.23	1.25	9.65	16.88			2.55	.138	-.C30	1/2+	3/2-
55	112	167	1257.7	1256.7	16.44	2.52	9.91	15.86			3.23	.129	-.C32	1/2+	
55	113	168	1258.9	1258.4	16.73	1.16	10.29	17.44			2.89	.125	-.C35	1/2+	11/2+
55	114	169	1261.2	1260.1	16.86	2.32	10.54	16.51			3.60	.115	-.C40	5/2+	
55	115	170	1262.2	1261.5	17.10	1.03	10.90	18.01			3.35	.111	-.C44	5/2+	3/2-
55	116	171	1264.3	1262.9	17.32	2.09	11.01	17.18			4.02	.101	-.C42	5/2+	
55	117	172	1266.6	1264.2	17.54	2.22	12.69	17.26			4.95	.C93	-.C40	5/2+	5/2-
55	118	173	1268.1	1265.3	17.69	1.57	11.24	18.12			5.20	.C75	-.C33	1/2+	
55	119	174	1268.9	1266.3	17.87	.73	11.51	19.11			4.81	.C60	-.C26	1/2+	13/2+
55	120	175	1270.6	1267.3	18.02	1.76	12.01	18.28			5.55	-.C51	-.C07	11/2-	
55	121	176	1271.3	1268.1	18.18	.72	12.38	19.63			5.57	-.045	-.C04	3/2+	1/2-
55	122	177	1273.3	1268.8	18.43	2.00	13.00	18.67			6.95	-.C16	-.C11	3/2+	
55	123	178	1274.0	1269.4	18.65	.69	13.35	20.02			7.24	-.C23	-.C14	3/2+	3/2-
55	124	179	1275.6	1269.9	18.87	1.57	13.39	19.36			8.40	C		G 7/2	
55	125	180	1276.2	1270.3	19.10	.62	13.77	20.51			8.79	0		G 7/2	P 1/2

Z	N	A	B.E.	RC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
55	126	191	1277.5	1270.5	19.33	1.25	13.89	20.11			5.91	C		G 7/2	
55	127	182	1275.5	1270.4	19.56	-1.92	11.81	23.50			7.97	C		C 7/2 G 7/2	
56	37	93	545.3	545.7	-7.89	21.84	-6.62-31.71	6.79 .690			1.37	.160	.066		3/2+
56	38	94	569.3	568.5	-7.51	24.03	-.91-23.41	8.57 .674			2.48	.152	.064		
56	39	95	590.2	590.6	-7.01	20.81	-.84-29.79	9.75 .657			.94	.161	.055		3/2-
56	40	96	613.1	612.5	-6.71	22.98	-1.25-31.53	11.59 .644			2.06	.144	.052		
56	41	97	632.9	633.7	-6.32	19.75	-1.30-27.96	12.94 .623			.56	.138	.048		5/2-
56	42	98	655.0	654.3	-5.92	22.15	-1.55-30.03	15.78 .621			1.87	.125	.042		
56	43	99	674.0	674.4	-5.50	18.98	-1.52-26.54	16.50 .612			.68	.121	.038		1/2-
56	44	100	695.2	694.0	-5.24	21.23	-1.63-28.43	18.65 .598			2.03	.095	.032		
56	45	101	713.5	713.1	-4.83	18.30	-1.49-25.15	20.26 .587			1.11	.091	.031		5/2+
56	46	102	733.8	731.8	-4.37	20.30	-1.89-26.90	22.37 .572			2.48	.074	.017		
56	47	103	751.6	749.9	-4.01	17.72	-1.64-23.94				1.95	.068	.014		7/2+
56	48	104	771.2	767.7	-3.73	19.66	-1.85-25.63				3.56	C			
56	49	105	788.4	784.9	-3.28	17.19	-1.50-23.04				3.55	.036	.001		5/2+
56	50	106	807.3	801.8	-2.92	18.91	-1.64-24.32				5.52	C			
56	51	107	822.3	818.2	-2.47	15.01	-2.93-20.08				4.14	-.021	.006		5/2+
56	52	108	838.7	834.3	-2.11	16.33	-4.75-20.98				4.40	0			
56	53	109	853.0	849.9	-1.49	14.28	-4.62-18.28				3.40	.053	.023		3/2+
56	54	110	868.6	865.1	-1.14	15.64	-4.53-19.30				3.83	.053	.024		
56	55	111	881.7	880.0	-.87	13.09	-4.69-16.25				2.63	.067	.045		1/2+
56	56	112	896.8	894.5	.20	15.16	-4.42-17.68				3.28	.084	.037		
56	57	113	908.9	908.0	.74	12.07	-4.10-14.11				3.07	.115	.061		3/2+
56	58	114	922.9	921.1	1.15	13.96	-3.76-14.81				3.89	.124	.059		
56	59	115	934.4	934.0	1.55	11.55	-3.12-11.98				3.00	.138	.062		3/2-
56	60	116	947.7	946.5	1.93	13.30	-2.79-13.13				3.70	.135	.055		
56	61	117	958.6	958.6	2.35	10.88	-2.36-10.38				2.61	.148	.055		5/2+
56	62	118	971.3	970.5	2.71	12.69	-2.26-11.79				3.17	.144	.052		
56	63	119	981.5	982.0	3.10	10.25	-2.00 -9.06				1.82	.144	.051		3/2+
56	64	120	993.7	993.3	3.45	12.14	-1.88-10.57				2.45	.141	.045		
56	65	121	1003.3	1004.2	3.86	9.67	-1.64 -7.81				1.18	.148	.038		5/2-
56	66	122	1014.9	1014.9	4.17	11.59	-1.54 -9.36				1.97	.145	.032		
56	67	123	1024.2	1025.3	4.56	9.26	-1.11 -6.68				.80	.150	.024		1/2+
56	68	124	1035.4	1035.4	4.87	11.20	-1.00 -8.29				1.64	.142	.016		
56	69	125	1044.3	1045.3	5.26	8.88	-.58 -5.69				.74	.147	.007		5/2+
56	70	126	1055.0	1054.8	5.55	10.70	-.44 -7.19				1.65	.136	.005		
56	71	127	1063.5	1064.1	5.92	8.48	-.11 -4.68				.91	.140	-.003		7/2-
56	72	128	1073.6	1073.2	6.17	10.12	-.12 -5.99				1.62	.123	-.004		
56	73	129	1081.6	1082.0	6.50	8.02	.17 -3.59				.76	.117	-.011		7/2+
56	74	130	1091.5	1090.6	6.77	9.90	.37 -5.15				1.70	-.087	-.015		
56	75	131	1099.3	1098.9	7.10	7.80	.71 -3.05				1.17	-.082	-.015		5/2-
56	76	132	1108.9	1107.0	7.37	9.56	.91 -4.50				2.34	-.064	-.017		
56	77	133	1116.4	1114.9	7.69	7.56	1.28 -2.20				2.04	-.062	-.020		3/2-
56	78	134	1125.7	1122.5	7.90	9.28	1.62 -3.63				3.18	C			
56	79	135	1132.9	1129.9	8.22	7.20	1.92 -1.34				2.97	0			D 3/2
56		136	1142.2	1137.1	8.53	9.31	2.31 -3.06				5.08	C			

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
56	81	137	1149.3	1144.1	8.98	7.04	2.80	-53			5.16	.C17	-.CC2		11/2-
56	82	138	1158.1	1150.9	9.16	8.84	2.96	-2.15			7.20	C			
56	83	139	1163.1	1157.5	9.47	5.02	1.71	2.13			5.64	C			F 7/2
56	84	140	1169.5	1163.8	9.78	6.43	-2.20	1.03			5.70	C			
56	85	141	1174.2	1170.0	10.09	4.63	.05	3.15			4.16	C			F 7/2
56	86	142	1180.3	1176.0	10.40	6.11	.34	1.98			4.28	C			
56	87	143	1184.5	1181.8	10.70	4.21	.55	4.19			2.71	C			F 7/2
56	88	144	1190.5	1187.4	11.05	6.01	1.07	2.93			3.89	.C63	.C37		
56	89	145	1195.0	1192.8	11.37	4.49	1.97	4.88			4.16	.C95	.C61		7/2-
56	90	146	1201.0	1198.0	11.69	5.96	2.71	3.84			5.22	.105	.C65		
56	91	147	1205.3	1203.1	12.00	4.39	3.70	5.73			4.97	.112	.C72		7/2+
56	92	148	1211.1	1208.0	12.53	5.77	4.07	4.98			6.02	.122	.C72		
56	93	149	1215.0	1212.7	12.67	3.66	4.22	7.03			5.19	.129	.C70		7/2-
56	94	150	1220.0	1217.2	12.96	5.06	4.40	6.16			5.51	.129	.C65		
56	95	151	1223.5	1221.6	13.29	3.46	4.50	8.04			4.57	.137	.C62		5/2+
56	96	152	1228.2	1225.8	13.58	4.73	4.73	7.10			4.95	.138	.C58		
56	97	153	1231.3	1229.9	13.90	3.12	5.03	8.99			4.01	.142	.C55		5/2-
56	98	154	1235.8	1233.8	14.17	4.44	5.30	7.98			4.38	.142	.C51		
56	99	155	1238.5	1237.5	14.48	2.71	5.51	5.96			3.28	.149	.C45		1/2-
56	100	156	1242.8	1241.1	14.76	4.27	5.86	8.70			3.81	.150	.C38		
56	101	157	1245.5	1244.5	15.07	2.75	6.49	10.60			3.13	.157	.C32		7/2+
56	102	158	1249.5	1247.8	15.34	4.02	6.78	5.49			3.80	.159	.C27		
56	103	159	1252.0	1251.0	15.65	2.47	7.12	11.29			3.22	.168	.C19		5/2-
56	104	160	1255.7	1254.0	15.90	3.71	7.38	10.32			3.80	.169	.C14		
56	105	161	1257.9	1256.8	16.14	2.19	7.64	12.07			3.17	.168	.C03		9/2+
56	106	162	1261.5	1259.6	16.52	3.61	8.00	10.88			3.84	.159	-.C02		
56	107	163	1263.6	1262.1	16.66	2.10	8.40	12.55			3.44	.161	-.C10		7/2-
56	108	164	1266.8	1264.6	16.89	3.15	8.55	11.75			4.03	.156	-.C13		
56	109	165	1268.5	1267.1	17.19	1.74	8.58	13.38			3.47	.154	-.C19		1/2-
56	110	166	1271.3	1269.4	17.36	2.82	8.78	12.54			4.01	.146	-.C25		
56	111	167	1272.8	1271.7	17.59	1.49	8.99	14.11			3.42	.141	-.C30		7/2-
56	112	168	1275.6	1273.8	17.82	2.74	9.29	13.09			4.12	.131	-.C35		
56	113	169	1276.9	1275.7	18.04	1.38	9.65	14.67			3.72	.128	-.C39		11/2+
56	114	170	1279.5	1277.6	18.26	2.53	9.88	13.76			4.42	.119	-.C41		
56	115	171	1280.7	1279.3	18.49	1.26	10.28	15.25			4.15	.114	-.C45		7/2-
56	116	172	1283.0	1280.9	18.69	2.30	10.39	14.45			4.75	.104	-.C42		
56	117	173	1285.5	1282.4	18.91	2.43	12.03	14.52			5.69	.096	-.C41		9/2-
56	118	174	1287.2	1283.8	19.06	1.72	11.87	15.44			5.86	.081	-.C35		
56	119	175	1288.1	1285.1	19.25	.93	10.80	16.47			5.35	.062	-.C27		17/2+
56	120	176	1290.2	1286.2	19.57	2.07	11.45	15.40			6.18	-.C57	-.C06		
56	121	177	1291.2	1287.3	19.89	1.04	11.94	16.59			6.32	-.C52	-.C07		1/2-
56	122	178	1293.3	1288.2	19.92	2.03	12.37	15.82			7.44	-.C25	-.C10		
56	123	179	1294.2	1289.0	20.15	.92	12.73	17.10			7.73	-.027	-.C13		7/2-
56	124	180	1295.9	1289.8	20.35	1.76	12.74	16.49			8.84	C			
56	125	181	1296.8	1290.4	20.57	.84	13.11	17.67			9.24	C			P 1/2
56	126	182	1298.2	1290.9	20.79	1.47	13.23	17.27			10.36	C			
56	127	183	1296.6	1291.0	21.02	-1.70	11.15	20.66			8.42	C			G 9/2

Z	N	A	B.F.	BC	SP	SN	SA	CB	RAQ	X	S	A2	A4	P	N
56	128	184	1296.7	1250.9	21.24	.14	10.27	19.05			6.42	C			
57	39	96	590.8	582.2	-9.33	21.24	-6.68-28.74	7.61 .664			.33	.175	.C55	3/2+	3/2-
57	40	97	604.1	604.4	-8.99	23.32	-1.01-30.33	9.35 .671			1.42	.165	.C56	3/2+	
57	41	98	624.2	625.5	-8.66	20.08	-1.24-26.74	10.41 .654			-.20	.156	.C51	1/2+	5/2-
57	42	99	646.7	647.0	-8.34	22.47	-1.44-28.72	12.43 .642			1.15	.147	.C45	1/2+	
57	43	100	666.0	667.5	-7.98	19.34	-1.46-25.24	13.75 .633			-.15	.140	.C45	1/2+	1/2-
57	44	101	687.6	687.5	-7.64	21.58	-1.64-27.14	15.35 .621			1.21	.126	.C41	1/2+	
57	45	102	706.2	707.1	-7.38	18.55	-1.65-23.77	17.36 .612			.14	.118	.C35	1/2+	5/2+
57	46	103	726.8	726.1	-7.00	20.68	-1.94-25.47	19.45 .600			1.52	.106	.C31	1/2+	
57	47	104	744.8	744.7	-6.75	17.97	-1.86-22.49	21.17 .551			.65	.C92	.C20	1/2-	7/2+
57	48	105	764.6	762.9	-6.63	19.78	-1.92-23.83	23.21 .575			1.96	.C60	.C10	5/2+	
57	49	106	782.2	780.6	-6.19	17.63	-1.64-21.34	25.38 .564			1.83	.050	.C07	5/2+	5/2+
57	50	107	801.5	797.8	-5.85	19.25	-1.77-22.56				3.65	C		C 7/2	
57	51	108	816.9	814.7	-5.43	15.43	-3.08-18.41				2.30	-.C24	.C07	1/2+	5/2+
57	52	109	833.9	831.1	-4.77	16.99	-4.64-19.54				3.34	.C64	.C31	1/2-	
57	53	110	848.5	847.1	-4.44	14.62	-4.59-16.79				2.02	.C71	.C31	1/2-	3/2+
57	54	111	864.7	862.7	-3.95	16.13	-4.43-17.90				2.82	.C87	.C38	1/2+	
57	55	112	878.4	878.0	-3.30	13.73	-4.36-15.10				1.96	.106	.C52	1/2+	1/2+
57	56	113	894.0	892.9	-2.82	15.64	-4.01-16.55				3.20	.122	.C55	1/2+	
57	57	114	907.3	907.4	-1.63	13.26	-3.56-13.80				2.46	.135	.C66	1/2+	3/2+
57	58	115	921.7	920.9	-1.22	14.37	-3.28-14.48				3.28	.140	.C63	1/2+	
57	59	116	933.8	934.1	-.61	12.15	-2.67-11.24				2.71	.152	.C65	3/2+	3/2-
57	60	117	947.4	947.0	-.28	13.63	-2.58-12.31				3.40	.153	.C66	3/2+	
57	61	118	958.7	959.5	.12	11.28	-2.44 -9.56				2.20	.155	.C64	3/2+	3/2+
57	62	119	971.7	971.8	.41	12.98	-2.39-10.80				2.78	.157	.C60	3/2+	
57	63	120	982.3	983.7	.79	10.62	-2.22 -8.10				1.25	.156	.C52	3/2+	5/2+
57	64	121	994.8	995.3	1.08	12.43	-2.12 -9.55				1.86	.153	.C46	1/2+	
57	65	122	1004.8	1006.6	1.45	10.05	-1.93 -6.78				.51	.158	.C41	1/2+	5/2-
57	66	123	1016.7	1017.6	1.80	11.94	-1.78 -8.34				1.26	.154	.C37	1/2+	
57	67	124	1026.3	1028.4	2.13	9.60	-1.45 -5.63				.09	.155	.C28	1/2+	1/2+
57	68	125	1037.8	1038.8	2.40	11.47	-1.25 -7.10				.90	.153	.C24	1/2+	
57	69	126	1047.0	1049.0	2.73	9.21	-.92 -4.51				-.13	.155	.C12	1/2-	5/2+
57	70	127	1058.0	1059.0	3.01	10.99	-.83 -5.91				.73	.146	.C08	1/2-	
57	71	128	1066.8	1068.6	3.35	8.81	-.51 -3.46				-.08	.146	-.C01	1/2-	7/2-
57	72	129	1077.2	1078.0	3.65	10.42	-.51 -4.63				.61	.132	-.C02	1/2-	
57	73	130	1085.6	1087.2	3.97	8.35	-.27 -2.37				-.24	.127	-.C05	5/2+	5/2-
57	74	131	1095.5	1096.1	3.97	9.90	-.23 -3.60				.35	.106	-.C06	1/2-	
57	75	132	1103.6	1104.7	4.28	8.11	.19 -1.53				-.25	-.C90	-.C21	3/2+	5/2-
57	76	133	1113.4	1113.2	4.58	9.85	.41 -3.00				1.00	-.080	-.C15	5/2+	
57	77	134	1121.3	1121.4	4.86	7.85	.78 -.67				.55	-.071	-.C23	5/2+	3/2-
57	78	135	1130.8	1129.3	5.08	9.49	.99 -2.04				1.46	C		C 7/2	
57	79	136	1138.4	1137.1	5.46	7.59	1.34 .09				1.36	.C05	.C13	1/2+	1/2-
57	80	137	1147.9	1144.6	5.73	9.57	1.84 -1.55				3.36	0		C 7/2	
57	81	138	1155.2	1151.9	5.91	7.23	2.19 1.08				3.29	C		C 7/2 D	3/2
57	82	139	1164.5	1159.0	6.36	9.29	2.48 -.52				5.48	C		C 7/2	
57	83	140	1169.8	1165.9	6.68	5.34	1.23 3.60				3.93	0		C 7/2 F	7/2
57	84	141	1176.5	1172.5	6.99	6.75	-.69 2.50				4.00	0		C 7/2	

Z	N	A	R.E.	RC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
57	85	142	1181.5	1179.0	7.31	4.94	-0.45	4.61			2.46	C		C 7/2	F 7/2
57	86	143	1187.9	1185.3	7.62	6.41	-0.16	3.45			2.56	C		C 7/2	
57	87	144	1192.7	1191.4	8.16	4.75	.28	5.41			2.05	.063	.037	1/2-	1/2-
57	88	145	1199.1	1197.3	8.59	6.45	.92	4.02			3.23	.086	.046	1/2+	
57	89	146	1204.0	1203.0	9.02	4.92	1.93	5.84			3.34	.104	.065	1/2+	3/2-
57	90	147	1210.3	1208.5	9.34	6.28	2.56	4.76			4.18	.105	.066	1/2+	
57	91	148	1215.3	1213.9	9.97	5.01	3.39	6.47			4.36	.121	.073	1/2+	3/2+
57	92	149	1221.2	1219.1	10.11	5.91	3.66	5.74			5.24	.126	.073	1/2+	
57	93	150	1225.4	1224.1	10.44	4.18	3.76	7.77			4.41	.134	.071	1/2+	3/2-
57	94	151	1230.8	1228.9	10.72	5.34	3.88	6.92			4.73	.136	.066	1/2+	
57	95	152	1234.5	1233.6	11.04	3.78	3.94	8.78			3.83	.142	.062	1/2+	5/2+
57	96	153	1239.5	1238.1	11.33	5.01	4.18	7.88			4.22	.146	.058	1/2+	
57	97	154	1243.0	1242.4	11.63	3.43	4.48	9.76			3.34	.149	.057	1/2+	5/2-
57	98	155	1247.7	1246.6	11.89	4.70	4.74	8.79			3.69	.149	.052	1/2+	
57	99	156	1250.7	1250.6	12.19	3.01	4.94	10.77			2.61	.155	.046	1/2+	1/2-
57	100	157	1255.3	1254.4	12.57	4.65	5.42	9.45			3.24	.156	.041	1/2+	
57	101	158	1258.2	1258.1	12.73	2.91	5.93	11.48			2.35	.161	.034	1/2+	7/2+
57	102	159	1262.5	1261.7	12.98	4.27	6.21	10.43			3.04	.163	.029	1/2+	
57	103	160	1265.3	1265.1	13.25	2.74	6.52	12.25			2.43	.170	.021	1/2+	5/2-
57	104	161	1269.2	1268.4	13.49	3.94	6.71	11.37			2.58	.166	.017	1/2+	
57	105	162	1271.6	1271.5	13.71	2.42	6.97	13.15			2.26	.170	.007	1/2+	5/2+
57	106	163	1275.4	1274.5	13.87	3.77	7.28	12.09			2.85	.162	.001	3/2-	
57	107	164	1277.7	1277.3	14.11	2.34	7.66	13.76			2.41	.163	-.006	3/2-	7/2-
57	108	165	1281.1	1280.0	14.34	3.38	7.82	13.02			2.98	.158	-.012	3/2-	
57	109	166	1283.1	1282.8	14.58	1.98	7.83	14.65			2.40	.156	-.016	3/2-	1/2-
57	110	167	1286.1	1285.4	14.82	3.06	7.96	13.82			2.93	.149	-.022	5/2+	
57	111	168	1287.9	1287.6	15.05	1.72	8.26	15.35			2.33	.144	-.025	5/2+	3/2-
57	112	169	1290.8	1290.2	15.27	2.96	8.57	14.34			3.00	.134	-.034	5/2+	
57	113	170	1292.4	1292.4	15.51	1.62	8.93	15.89			2.61	.130	-.040	5/2+	11/2+
57	114	171	1295.2	1294.5	15.73	2.75	9.17	14.99			3.32	.122	-.042	1/2+	
57	115	172	1296.7	1296.5	15.97	1.50	9.51	16.50			3.04	.116	-.047	1/2+	3/2-
57	116	173	1299.2	1298.4	16.17	2.50	9.70	15.68			3.60	.106	-.044	1/2+	
57	117	174	1301.8	1300.1	16.38	2.64	11.30	15.74			4.50	.098	-.042	1/2+	5/2-
57	118	175	1303.8	1301.7	16.61	1.95	11.16	16.65			4.62	.086	-.034	1/2+	
57	119	176	1304.8	1303.2	16.89	1.01	9.95	17.80			4.00	.067	-.029	3/2+	13/2+
57	120	177	1307.0	1304.6	16.85	2.23	10.61	16.78			4.76	-.068	-.004	5/2+	
57	121	178	1308.3	1305.9	17.07	1.26	11.14	17.98			4.82	-.057	-.006	5/2+	1/2-
57	122	179	1310.5	1307.0	17.24	2.21	11.59	17.26			5.86	-.030	-.006	1/2+	
57	123	180	1311.6	1308.1	17.47	1.15	12.02	18.53			6.14	-.030	-.011	1/2+	3/2-
57	124	181	1313.7	1309.1	17.72	2.02	12.03	17.90			7.28	C		C 7/2	
57	125	182	1314.7	1309.9	17.95	1.07	12.42	19.01			7.67	C		C 7/2	P 1/2
57	126	183	1316.4	1310.6	18.18	1.69	12.54	18.61			8.75	C		C 7/2	
57	127	184	1315.0	1310.9	18.41	-1.47	10.45	22.00			6.84	C		C 7/2	G 9/2
57	128	185	1315.3	1311.1	18.63	.37	9.58	20.39			6.86	C		C 7/2	
57	129	186	1313.7	1311.2	18.86	-1.62	9.88	22.60			4.98	C		C 7/2	G 9/2
57	130	187	1313.9	1311.2	19.08	.24	10.20	20.95			5.06	C		C 7/2	

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAK	X	S	A2	A4	P	N
5E	41	99	617.2	617.7	-7.03	20.50	-1.26-29.49	8.19	.680	1.00	.17E	.C46			5/2+
5E	42	100	640.0	639.2	-6.68	22.82	-1.42-31.36	10.03	.668	2.22	.161	.C45			
5E	43	101	659.7	660.2	-6.34	19.68	-1.49-27.95	11.28	.653	.87	.151	.C42			1/2-
5E	44	102	681.6	680.6	-6.00	21.92	-1.72-29.81	13.30	.641	2.21	.140	.C39			
5E	45	103	700.6	700.6	-5.57	18.99	-1.71-26.59	14.80	.623	1.07	.125	.C36			5/2+
5E	46	104	721.5	720.0	-5.30	20.95	-2.00-28.24	16.77	.622	2.33	.113	.C27			
5E	47	105	742.0	739.0	-4.83	18.45	-1.85-25.31	18.59	.613	1.54	.095	.C17			7/2+
5E	48	106	760.1	757.6	-4.50	20.12	-2.04-26.79	20.58	.604	2.77	.065	.C07			
5E	49	107	778.1	775.7	-4.09	18.03	-1.73-24.51	22.79	.593	2.61	.050	-.C02			5/2+
5E	50	108	797.7	793.3	-3.77	19.58	-1.81-25.89	25.05	.580	4.38	C				
5E	51	109	813.6	810.6	-3.33	15.87	-3.13-21.92	25.85	.571	3.08	-.031	.C04			5/2+
5E	52	110	830.9	827.4	-2.95	17.37	-4.67-22.68	26.56	.561	4.04	.063	.C29			
5E	53	111	846.0	843.2	-2.55	15.02	-4.67-19.83			2.74	.073	.C29			3/2+
5E	54	112	862.5	859.6	-2.15	16.53	-4.47-20.98			3.57	.091	.C36			
5E	55	113	876.7	875.5	-1.69	14.19	-4.57-18.09			2.83	.118	.C50			1/2+
5E	56	114	892.7	890.7	-1.32	16.01	-4.19-19.33			3.91	.129	.C54			
5E	57	115	906.4	905.6	-.90	13.69	-3.59-16.55			3.27	.145	.C62			3/2+
5E	58	116	921.8	920.1	.13	15.39	-3.35-17.69			4.18	.153	.C59			
5E	59	117	934.3	933.7	.54	12.56	-2.86-14.47			3.59	.161	.C65			3/2-
5E	60	118	948.4	947.0	.94	14.03	-2.79-14.96			4.34	.166	.C61			
5E	61	119	960.1	959.6	1.40	11.74	-2.60-12.27	33.02	.561	3.20	.185	.C50			3/2+
5E	62	120	973.4	972.5	1.74	13.32	-2.58-13.40			3.68	.166	.C53			
5E	63	121	984.4	984.8	2.11	10.99	-2.47-10.81			2.29	.166	.C49			5/2+
5E	64	122	997.2	996.7	2.49	12.82	-2.34-12.27			2.87	.151	.C43			
5E	65	123	1007.6	1008.4	2.81	10.37	-2.22-9.50			1.65	.170	.C37			5/2+
5E	66	124	1019.9	1019.8	3.18	12.31	-2.05-11.05			2.42	.167	.C31			
5E	67	125	1029.9	1030.5	3.60	10.01	-1.71-8.42			1.37	.174	.C21			1/2+
5E	68	126	1041.7	1041.7	3.91	11.79	-1.51-9.84			2.18	.167	.C18			
5E	69	127	1051.3	1052.2	4.29	9.59	-1.19-7.32			1.16	.167	.C07			5/2+
5E	70	128	1062.6	1062.5	4.57	11.26	-1.13-8.68			1.96	.157	.C04			
5E	71	129	1071.8	1072.5	5.01	9.25	-.76-6.38			1.23	.157	-.C04			5/2+
5E	72	130	1082.4	1082.3	5.19	10.60	-.86-7.45			1.76	.142	-.C04			
5E	73	131	1091.1	1091.7	5.52	8.66	-.66-5.26			.82	.132	-.C11			5/2-
5E	74	132	1101.3	1101.0	5.79	10.18	-.60-6.53			1.37	.114	-.C08			
5E	75	133	1109.7	1110.0	6.07	8.38	-.24-4.44			.62	-.C93	-.C21			5/2-
5E	76	134	1119.8	1118.7	6.39	10.18	.03-6.12			1.87	-.C63	-.C15			
5E	77	135	1128.0	1127.2	6.67	8.13	.36-3.79			1.43	-.C74	-.C24			3/2-
5E	78	136	1137.7	1135.5	6.90	9.71	.51-5.00			2.14	C				
5E	79	137	1145.6	1143.6	7.24	7.93	.88-3.13			2.05	.C22	-.C03			3/2+
5E	80	138	1155.5	1151.4	7.53	9.86	1.47-4.74			4.02	C				
5E	81	139	1163.2	1159.1	7.99	7.69	1.96-2.32			4.12	.C15	.C00			11/2-
5E	82	140	1172.6	1166.5	8.15	9.45	2.10-3.71			6.15	C				
5E	83	141	1178.3	1173.7	8.46	5.65	.70-.35			4.60	C				F 7/2
5E	84	142	1185.3	1180.6	8.77	7.05	-1.06-.59			4.66	C				
5E	85	143	1190.6	1187.4	9.08	5.25	-.85-1.37			3.13	C				F 7/2
5E	86	144	1197.3	1194.0	9.38	6.72	-.56-.32			3.26	C				
5E	87	145	1202.3	1200.4	9.68	5.06	-.13-2.41			2.40	.C55	.C32			1/2-

Z	N	A	R.E.	BC	SP	SN	SA	CE	BAR	X	S	A2	A4	P	N
58	88	146	1209.1	1206.6	9.97	6.73	.49	1.16			3.84	.088	.047		
58	89	147	1214.3	1212.6	10.26	5.20	1.48	3.08			3.93	.106	.063		3/2-
58	90	148	1221.0	1218.4	10.70	6.73	2.20	1.92			5.07	.115	.066		
58	91	149	1226.2	1224.1	10.86	5.18	2.88	3.87			4.95	.123	.071		3/2+
58	92	150	1232.4	1229.6	11.17	6.21	3.14	3.18			5.88	.131	.071		
58	93	151	1236.9	1234.8	11.49	4.50	3.25	5.23			5.05	.136	.066		3/2-
58	94	152	1242.5	1240.0	11.79	5.65	3.13	4.42			5.45	.140	.064		
58	95	153	1246.7	1244.9	12.11	4.11	3.38	6.25			4.62	.145	.060		5/2+
58	96	154	1252.0	1249.7	12.41	5.30	3.63	5.45			5.11	.145	.055		
58	97	155	1255.7	1254.3	12.71	3.73	3.90	7.27			4.16	.154	.055		5/2-
58	98	156	1260.7	1258.7	13.00	4.99	4.16	6.31			4.56	.155	.050		
58	99	157	1264.0	1263.0	13.32	3.33	4.36	8.21			3.55	.162	.043		1/2-
58	100	158	1268.9	1267.2	13.61	4.94	4.86	6.86			4.17	.160	.035		
58	101	159	1272.2	1271.1	13.92	3.22	5.36	8.90			3.36	.166	.031		7/2+
58	102	160	1276.7	1275.0	14.21	4.56	5.66	7.83			4.07	.166	.026		
58	103	161	1279.8	1278.6	14.53	3.06	5.97	9.60			3.54	.177	.017		5/2-
58	104	162	1284.0	1282.2	14.79	4.20	6.15	8.74			4.10	.174	.013		
58	105	163	1286.7	1285.6	15.08	2.72	5.40	10.46			3.22	.167	.004		5/2+
58	106	164	1290.7	1288.8	15.33	4.02	6.71	9.38			3.96	.165	-.001		
58	107	165	1293.3	1291.5	15.61	2.62	7.14	10.95			3.55	.167	-.005		7/2-
58	108	166	1296.9	1294.9	15.85	3.61	7.14	10.24			4.11	.162	-.013		
58	109	167	1299.2	1297.9	16.10	2.23	7.27	11.85			3.54	.160	-.015		1/2-
58	110	168	1302.4	1300.7	16.29	3.26	7.38	11.06			3.98	.153	-.022		
58	111	169	1304.4	1303.4	16.52	1.95	7.59	12.60			3.37	.148	-.030		3/2-
58	112	170	1307.6	1306.0	16.73	3.17	7.94	11.55			4.01	.135	-.034		
58	113	171	1309.4	1308.5	16.96	1.85	8.30	13.08			3.55	.134	-.040		11/2+
58	114	172	1312.4	1310.9	17.22	3.01	8.57	12.16			4.32	.125	-.043		
58	115	173	1314.1	1313.1	17.40	1.67	8.86	13.71			3.55	.115	-.047		3/2-
58	116	174	1316.8	1315.2	17.60	2.71	9.04	12.93			4.44	.105	-.044		
58	117	175	1319.7	1317.2	17.82	2.86	10.63	12.98			5.30	.100	-.042		5/2-
58	118	176	1321.8	1319.0	18.02	2.16	10.49	12.38			5.41	.088	-.034		
58	119	177	1323.0	1320.7	18.23	1.21	9.27	15.03			4.74	.065	-.030		13/2+
58	120	178	1325.5	1322.4	18.46	2.46	10.01	12.94			5.50	-.071	-.004		
58	121	179	1327.0	1323.5	18.68	1.48	10.57	15.10			5.51	-.057	-.007		1/2-
58	122	180	1329.4	1325.3	18.90	2.42	10.92	14.35			6.55	-.032	-.010		
58	123	181	1330.8	1326.6	19.13	1.38	11.26	15.57			6.84	-.031	-.014		3/2-
58	124	182	1333.0	1327.7	19.30	2.19	11.41	14.95			7.85	C			
58	125	183	1334.3	1328.6	19.52	1.25	11.79	16.15			8.26	C		P	1/2
58	126	184	1336.2	1329.6	19.75	1.92	11.94	15.64			9.40	C			
58	127	185	1334.9	1330.3	19.97	-1.24	9.86	15.03			7.47	C		G	9/2
58	128	186	1335.5	1330.7	20.19	.59	8.97	17.43			7.47	C			
58	129	187	1334.1	1331.0	20.41	-1.40	9.27	15.64			5.55	C		G	5/2
58	130	188	1334.6	1331.2	20.63	.46	9.59	18.01			5.67	C			
58	131	189	1333.0	1331.4	20.85	-1.55	9.88	20.24			3.83	C		G	5/2
58	132	190	1333.6	1331.4	21.04	.58	10.44	18.67			4.85	.061	.041		

Z	N	A	B.E.	BC	SP	SN	SA	CE	BAR	X	S	A2	A4	P	N
59	42	101	631.0	630.9	-9.05	23.10	-1.47-20.27	7.96	.652	1.56	.176	.046	1/2+		
59	43	102	651.0	652.3	-8.67	20.06	-1.49-26.84	8.95	.678	.08	.162	.044	1/2+	1/2-	
59	44	103	673.2	673.2	-8.38	22.21	-1.76-28.66	10.75	.666	1.44	.157	.043	3/2-		
59	45	104	692.5	693.5	-8.08	19.29	-1.81-25.37	12.16	.652	.24	.146	.035	3/2-	5/2+	
59	46	105	713.9	713.4	-7.64	21.36	-2.01-27.09	14.14	.642	1.62	.137	.036	3/2-		
59	47	106	732.5	732.8	-7.46	18.63	-1.93-24.01	15.75	.633	.57	.122	.025	3/2-	7/2+	
59	48	107	752.8	751.8	-7.27	20.31	-2.30-25.22	17.54	.625	1.65	.104	.017	5/2+		
59	49	108	771.0	770.3	-7.09	18.21	-2.07-22.73	19.55	.615	1.00	.064	.003	1/2-	9/2+	
59	50	109	790.9	788.3	-6.84	19.83	-2.02-23.95	21.68	.605	2.54	C		C	5/2	
59	51	110	807.5	806.0	-6.09	16.61	-3.03-20.35	22.86	.597	1.86	.055	.024	3/2-	1/2+	
59	52	111	825.4	823.2	-5.60	17.86	-4.42-21.25	23.80	.590	2.95	.090	.035	3/2-		
59	53	112	840.7	840.0	-5.23	15.35	-4.47-18.44	24.48	.575	1.77	.100	.035	3/2-	3/2+	
59	54	113	857.8	856.4	-4.69	17.08	-4.38-19.75	25.37	.567	2.93	.115	.045	3/2-		
59	55	114	872.6	872.4	-4.10	14.77	-4.23-17.08			2.54	.136	.065	3/2-	1/2+	
59	56	115	889.1	888.1	-3.64	16.47	-3.89-18.41			3.43	.146	.063	3/2-		
59	57	116	903.3	903.3	-3.08	14.25	-3.36-15.69			2.83	.154	.066	1/2+	3/2+	
59	58	117	919.1	918.2	-2.69	15.78	-3.22-16.89			3.73	.160	.065	1/2+		
59	59	118	932.6	932.8	-1.71	13.54	-2.94-14.23			2.50	.165	.065	1/2+	3/2-	
59	60	119	947.1	946.4	-1.31	14.43	-2.89-14.70			3.67	.177	.055	1/2+		
59	61	120	959.3	959.7	-.86	12.15	-2.85-11.51			2.52	.196	.044	1/2+	3/2+	
59	62	121	972.8	972.6	-.60	13.59	-2.89-12.59			3.05	.174	.055	1/2+		
59	63	122	984.2	985.3	-.23	11.36	-2.82 -9.90			1.77	.177	.051	1/2+	5/2+	
59	64	123	997.3	997.6	.09	13.14	-2.66-11.29			2.36	.173	.046	1/2+		
59	65	124	1008.1	1009.7	.48	10.76	-2.52 -8.61			1.02	.171	.031	3/2-	5/2+	
59	66	125	1020.7	1021.4	.81	12.64	-2.32 -9.96			1.75	.175	.032	3/2-		
59	67	126	1031.1	1032.8	1.17	10.37	-1.99 -7.41			.72	.182	.021	3/2-	1/2+	
59	68	127	1043.2	1044.0	1.48	12.10	-1.83 -8.77			1.54	.177	.015	3/2-		
59	69	128	1053.1	1054.5	1.80	9.90	-1.53 -6.25			.50	.176	.010	3/2-	5/2+	
59	70	129	1064.7	1065.5	2.08	11.55	-1.45 -7.52			1.26	.168	.006	3/2-		
59	71	130	1074.2	1075.8	2.37	9.53	-1.13 -5.19			.38	.164	-.001	1/2-	5/2+	
59	72	131	1085.1	1085.5	2.63	10.87	-1.25 -6.16			.94	.154	.000	3/2-		
59	73	132	1094.0	1095.7	2.87	8.91	-1.15 -3.86			-.12	.144	-.006	3/2-	9/2-	
59	74	133	1104.4	1105.3	3.16	10.47	-1.10 -5.12			.42	.128	-.005	3/2-		
59	75	134	1112.9	1114.6	3.27	8.50	-.94 -2.90			-.60	-.102	-.021	5/2-	5/2-	
59	76	135	1123.4	1123.7	3.56	10.46	-.38 -4.64			.55	-.090	-.020	5/2-		
59	77	136	1131.9	1132.6	3.93	8.50	.01 -2.38			.18	-.085	-.022	5/2-	3/2-	
59	78	137	1141.7	1141.2	4.02	9.80	-.04 -3.35			.62	.034	-.002	7/2+		
59	79	138	1149.9	1149.5	4.34	8.25	.36 -1.53			.48	.032	-.002	7/2+	3/2+	
59	80	139	1160.1	1157.7	4.58	10.11	.57 -3.07			2.35	C		C	5/2	
59	81	140	1168.1	1165.6	4.96	8.06	1.45 -.67			2.51	.022	.001	7/2+	11/2-	
59	82	141	1177.8	1173.4	5.21	9.71	1.59 -2.04			4.46	C		C	5/2	
59	83	142	1183.9	1180.5	5.68	6.12	.47 1.89			3.11	-.017	.006	5/2+	7/2-	
59	84	143	1191.2	1188.2	5.84	7.21	-1.60 1.07			2.95	C		C	5/2	
59	85	144	1196.8	1195.3	6.25	5.66	-1.28 2.97			1.65	.028	.013	7/2+	3/2-	
59	86	145	1204.0	1202.1	6.69	7.15	-.87 1.68			2.17	.044	.024	3/2-		
59	87	146	1209.4	1209.8	7.11	5.48	-.33 3.52			1.83	.084	.043	3/2-	1/2-	
59	88	147	1216.6	1215.3	7.50	7.12	.37 2.21			3.18	.104	.056	3/2-		

L	N	A	B.E.	HC	SP	SN	SA	CE	PAR	X	S	A2	A4	P	N
55	89	148	1222.1	1221.6	7.87	5.57	1.19	4.07			2.82	.111	.063	3/2-	3/2-
55	90	149	1229.3	1227.8	8.27	7.13	1.87	2.82			4.20	.122	.067	3/2-	
55	91	150	1234.8	1233.7	8.62	5.53	2.48	4.66			4.14	.125	.072	3/2-	3/2+
55	92	151	1241.3	1239.4	8.95	6.55	2.75	3.91			5.10	.137	.072	3/2-	
55	93	152	1246.2	1245.0	9.28	4.83	2.57	5.93			4.33	.144	.065	3/2-	3/2-
55	94	153	1252.1	1250.4	9.58	5.44	2.60	5.15			4.70	.147	.064	3/2-	
55	95	154	1256.6	1255.6	9.97	4.50	2.92	6.90			4.15	.152	.065	1/2+	3/2-
55	96	155	1262.2	1260.7	10.22	5.56	3.13	6.16			4.52	.155	.061	1/2+	
55	97	156	1266.2	1265.6	10.51	4.03	3.37	7.99			3.58	.155	.057	1/2+	5/2-
55	98	157	1271.4	1270.3	10.75	5.22	3.58	7.10			3.95	.160	.053	1/2+	
55	99	158	1275.0	1274.9	11.01	3.59	3.74	9.04			2.86	.166	.045	1/2+	1/2-
55	100	159	1280.3	1279.3	11.33	5.25	4.30	7.83			3.48	.164	.035	3/2-	
55	101	160	1283.8	1283.5	11.61	3.50	4.79	9.72			2.65	.165	.032	3/2-	7/2+
55	102	161	1288.6	1287.6	11.88	4.83	4.97	8.71			3.36	.172	.026	3/2-	
55	103	162	1291.9	1291.6	12.16	3.34	5.41	10.49			2.85	.180	.016	3/2-	5/2-
55	104	163	1296.4	1295.4	12.39	4.43	5.56	9.68			3.31	.174	.016	3/2-	
55	105	164	1299.3	1299.0	12.62	2.94	5.77	11.44			2.51	.172	.007	3/2-	5/2+
55	106	165	1303.5	1302.5	12.83	4.23	6.06	10.43			3.14	.166	.001	1/2-	
55	107	166	1306.4	1305.9	13.07	2.86	6.49	12.10			2.70	.165	-.008	1/2-	7/2-
55	108	167	1310.2	1309.1	13.30	3.84	6.56	11.38			3.24	.163	-.012	1/2-	
55	109	168	1312.7	1312.3	13.53	2.46	6.69	13.01			2.66	.164	-.016	1/2-	1/2-
55	110	169	1316.2	1315.5	13.77	3.50	6.81	12.24			3.06	.157	-.015	1/2-	
55	111	170	1318.3	1318.4	13.94	2.12	6.95	13.86			2.35	.152	-.026	3/2-	3/2-
55	112	171	1321.7	1321.3	14.15	3.38	7.27	12.86			3.00	.143	-.033	3/2-	
55	113	172	1323.8	1324.0	14.39	2.09	7.64	14.39			2.58	.137	-.041	3/2-	11/2+
55	114	173	1327.0	1326.6	14.60	3.22	7.90	13.48			2.25	.125	-.043	3/2-	
55	115	174	1328.9	1329.1	14.85	1.93	8.20	15.00			2.93	.122	-.046	3/2+	3/2-
55	116	175	1331.9	1331.4	15.05	2.91	8.36	14.27			2.36	.112	-.044	3/2+	
55	117	176	1333.4	1333.6	15.26	1.57	8.43	15.76			2.68	.103	-.043	3/2+	9/2-
55	118	177	1337.3	1335.7	15.46	3.85	9.78	13.69			4.28	.092	-.036	3/2+	
55	119	178	1338.6	1337.7	15.61	1.37	8.51	16.37			3.55	.074	-.033	1/2+	13/2+
55	120	179	1341.3	1339.5	15.81	2.65	9.20	15.29			4.24	-.080	-.004	3/2+	
55	121	180	1343.0	1341.3	15.99	1.67	9.86	16.49			4.17	-.066	-.005	3/2+	1/2-
55	122	181	1345.6	1342.9	16.17	2.61	10.24	15.78			5.15	-.043	-.005	5/2+	
55	123	182	1347.2	1344.4	16.39	1.61	10.58	17.00			5.40	-.036	-.013	5/2+	3/2-
55	124	183	1349.7	1345.8	16.70	2.49	10.87	16.36			6.55	-.023	-.013	5/2+	
55	125	184	1351.0	1347.1	16.78	1.37	11.09	17.59			6.74	C		C 5/2 P	1/2
55	126	185	1353.2	1348.3	17.00	2.14	11.22	17.20			7.87	C		C 5/2	
55	127	186	1352.2	1349.1	17.23	-1.01	9.14	20.57			5.54	C		C 5/2 G	9/2
55	128	187	1353.0	1349.7	17.46	.81	8.25	18.97			5.94	C		C 5/2	
55	129	188	1351.8	1350.2	17.68	-1.17	8.55	21.18			4.07	C		C 5/2 G	9/2
55	130	189	1352.5	1350.7	17.90	.68	8.86	19.55			4.14	C		C 5/2	
55	131	190	1351.5	1351.0	18.47	-.98	9.50	21.43			3.03	-.052	.027	1/2+	11/2+
55	132	191	1352.2	1351.2	18.59	.70	9.95	19.89			4.72	.096	.066	3/2-	
55	133	192	1351.8	1351.4	18.90	-.41	11.32	21.13			3.77	.091	.063	3/2-	3/2+

Z	N	A	R.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
60	44	104	666.4	665.3	-6.85	22.58	-1.93-31.26	8.60	.689	2.45	.168	.035			
60	45	105	686.0	686.0	-6.49	19.65	-1.96-27.94	9.79	.677	1.21	.156	.035			1/2-
60	46	106	707.7	706.3	-6.17	21.71	-2.17-29.71	11.63	.665	2.47	.143	.029			
60	47	107	726.8	726.1	-5.70	19.10	-2.06-26.76	13.28	.653	1.52	.126	.021			7/2+
60	48	108	747.5	745.5	-5.30	20.70	-2.30-26.14	15.07	.643	2.65	.108	.011			
60	49	109	766.1	764.4	-4.90	18.61	-2.14-25.72	17.09	.635	2.00	.066	.001			9/2+
60	50	110	786.4	782.8	-4.52	20.22	-2.04-27.25	19.24	.629	2.53	C				
60	51	111	803.3	800.8	-4.17	16.96	-3.11-23.80	20.40	.618	2.78	.055	.023			1/2+
60	52	112	821.5	818.5	-3.84	18.19	-4.50-24.50	21.32	.612	3.77	.087	.032			
60	53	113	837.3	835.6	-3.46	15.77	-4.60-21.56	22.01	.602	2.50	.100	.033			3/2+
60	54	114	854.7	852.4	-3.09	17.44	-4.52-22.67	22.42	.593	3.60	.120	.042			
60	55	115	869.9	868.8	-2.72	15.14	-4.40-19.94	23.70	.583	3.09	.141	.057			1/2+
60	56	116	886.8	884.9	-2.72	16.97	-3.96-21.15	24.83	.573	4.10	.153	.052			
60	57	117	901.4	900.5	-1.89	14.58	-3.56-18.39	25.72	.565	3.60	.164	.062			2/2+
60	58	118	917.6	915.8	-1.47	16.20	-3.37-19.57			4.56	.172	.058			
60	59	119	931.6	930.7	-1.05	13.96	-3.10-16.92			3.75	.180	.057			3/2-
60	60	120	947.0	945.3	-.10	15.38	-3.12-17.95			4.64	.179	.058			
60	61	121	959.5	958.9	.21	12.50	-3.18-14.55			3.59	.185	.057			3/2+
60	62	122	973.5	972.3	.67	14.05	-3.16-15.08			4.15	.182	.052			
60	63	123	985.3	985.3	1.07	11.76	-3.14-12.45			2.93	.188	.047			5/2+
60	64	124	998.7	998.0	1.37	13.44	-3.03-13.73			3.51	.186	.042			
60	65	125	1010.0	1010.3	1.90	11.29	-2.73-11.28			2.37	.190	.034			5/2+
60	66	126	1022.9	1022.4	2.18	12.92	-2.62-12.58			3.07	.187	.028			
60	67	127	1033.7	1034.2	2.55	10.74	-2.25-10.05			2.01	.189	.021			1/2+
60	68	128	1046.1	1045.7	2.87	12.42	-2.15-11.39			2.75	.183	.017			
60	69	129	1056.4	1057.0	3.25	10.28	-1.88 -8.94			1.75	.182	.006			5/2+
60	70	130	1068.2	1067.9	3.56	11.86	-1.80-10.23			2.51	.174	.002			
60	71	131	1078.1	1078.6	3.92	9.89	-1.49 -7.97			1.63	.166	-.005			5/2+
60	72	132	1089.3	1089.0	4.27	11.21	-1.55 -9.00			2.19	.158	-.003			
60	73	133	1098.5	1099.2	4.57	9.21	-1.58 -6.75			1.11	.148	-.011			9/2-
60	74	134	1109.3	1109.1	4.82	10.72	-1.47 -7.98			1.58	.132	-.005			
60	75	135	1118.0	1118.7	5.04	8.71	-1.43 -5.70			.37	-.103	-.022			5/2-
60	76	136	1128.7	1128.1	5.34	10.77	-.83 -7.41			1.51	-.091	-.021			
60	77	137	1137.6	1137.3	5.66	8.82	-.39 -5.46			1.13	-.086	-.023			3/2-
60	78	138	1147.6	1146.2	5.94	10.07	-.50 -6.40			1.45	.032	-.003			
60	79	139	1156.2	1154.9	6.25	8.56	-.06 -4.45			1.34	.031	-.003			3/2+
60	80	140	1166.7	1163.4	6.61	10.47	.69 -6.17			3.26	C				
60	81	141	1175.0	1171.7	6.88	8.33	1.10 -3.91			3.38	.021	.000			11/2-
60	82	142	1185.0	1179.7	7.23	10.05	1.29 -5.31			5.26	C				
60	83	143	1191.4	1187.5	7.50	6.39	-.01 -1.35			3.97	-.015	.005			7/2-
60	84	144	1199.0	1195.1	7.84	7.56	-1.91 -2.20			3.89	C				
60	85	145	1204.9	1202.5	8.05	5.67	-1.69 -.20			2.37	C				F 7/2
60	86	146	1212.2	1209.7	8.22	7.32	-1.42 -1.27			2.50	C				
60	87	147	1218.0	1216.7	8.55	5.81	-.86 .73			2.45	.078	.043			1/2-
60	88	148	1225.4	1223.5	8.86	7.43	-.14 -.59			3.61	.099	.051			
60	89	149	1231.3	1230.1	9.17	5.87	.67 1.26			3.63	.116	.063			3/2-
60	90	150	1238.7	1236.5	9.41	7.37	1.31 .18			4.77	.124	.064			

Z	N	A	B.F.	BO	SP	SN	SA	CE	PAR	X	S	A2	A4	P	N
60	91	151	1244.5	1242.7	9.68	5.80	1.91	2.01			4.66	.130	.069		3/2+
60	92	152	1251.3	1248.8	9.98	6.85	2.03	1.26			5.65	.139	.069		
60	93	153	1256.5	1254.6	10.31	5.16	2.01	3.30			4.95	.146	.065		7/2-
60	94	154	1262.7	1260.3	10.62	6.26	2.05	2.66			5.38	.152	.060		
60	95	155	1267.6	1265.8	10.93	4.81	2.37	4.39			4.89	.157	.062		3/2-
60	96	156	1273.4	1271.1	11.24	5.66	2.58	3.62			5.20	.159	.058		
60	97	157	1277.7	1276.3	11.55	4.34	2.80	5.48			4.38	.163	.054		5/2-
60	98	158	1283.3	1281.3	11.85	5.53	3.03	4.59			4.78	.165	.049		
60	99	159	1287.3	1286.1	12.30	4.04	3.34	6.40			3.78	.166	.042		1/2-
60	100	160	1292.7	1290.8	12.44	5.39	3.74	5.31			4.40	.168	.036		
60	101	161	1296.5	1295.3	12.75	3.81	4.22	7.18			3.67	.174	.029		7/2+
60	102	162	1301.6	1299.7	13.04	5.12	4.41	6.21			4.41	.177	.023		
60	103	163	1305.3	1303.9	13.33	3.63	4.82	7.96			3.87	.181	.020		5/2-
60	104	164	1310.0	1308.0	13.60	4.70	4.96	7.16			4.26	.177	.014		
60	105	165	1313.2	1311.9	13.88	3.23	5.12	8.87			3.58	.174	.005		9/2+
60	106	166	1317.7	1315.6	14.17	4.52	5.44	7.82			4.39	.177	-.001		
60	107	167	1320.8	1319.3	14.44	3.13	5.85	9.45			3.82	.171	-.010		7/2-
60	108	168	1324.9	1322.7	14.69	4.09	5.92	8.72			4.36	.167	-.014		
60	109	169	1327.7	1326.2	14.96	2.73	6.04	10.30			3.75	.166	-.020		1/2-
60	110	170	1331.4	1329.6	15.20	3.73	6.16	9.54			4.19	.159	-.021		
60	111	171	1333.8	1332.8	15.46	2.39	6.32	11.11			3.53	.154	-.029		3/2-
60	112	172	1337.4	1335.9	15.69	3.61	6.67	10.19			4.12	.145	-.034		
60	113	173	1339.7	1338.9	15.92	2.32	7.04	11.62			3.68	.140	-.040		11/2+
60	114	174	1343.2	1341.7	16.15	3.44	7.31	10.72			4.35	.131	-.043		
60	115	175	1345.3	1344.4	16.40	2.18	7.64	12.19			4.00	.125	-.048		7/2-
60	116	176	1348.4	1347.0	16.54	3.05	7.68	11.55			4.23	.114	-.044		
60	117	177	1350.2	1349.5	16.76	1.78	7.79	13.01			3.62	.105	-.043		9/2-
60	118	178	1354.2	1351.8	16.96	4.06	9.14	10.94			5.20	.095	-.037		
60	119	179	1355.8	1354.0	17.16	1.57	7.85	13.62			4.40	.075	-.034		13/2+
60	120	180	1358.7	1356.1	17.37	2.86	8.56	12.47			5.05	-.081	-.005		
60	121	181	1360.6	1358.1	17.60	1.90	9.24	13.73			4.98	-.066	-.006		1/2-
60	122	182	1363.4	1359.9	17.83	2.83	9.61	12.91			5.93	-.041	-.010		
60	123	183	1365.2	1361.7	18.06	1.84	9.97	14.20			6.19	-.035	-.014		3/2-
60	124	184	1367.8	1363.3	18.18	2.61	10.15	13.51			7.18	C			
60	125	185	1369.6	1364.8	18.55	1.75	10.52	14.58			7.57	C			P 1/2
60	126	186	1372.0	1366.3	18.78	2.36	10.69	14.19			8.69	C			
60	127	187	1371.2	1367.2	19.00	-.79	8.61	17.57			6.77	C			G 9/2
60	128	188	1372.2	1368.1	19.22	1.03	7.73	15.98			6.77	C			
60	129	189	1371.2	1368.9	19.44	-.95	8.02	18.19			4.89	C			G 9/2
60	130	190	1372.1	1369.5	19.66	.90	8.33	16.57			4.97	C			
60	131	191	1371.3	1370.1	19.80	-.84	8.89	18.53			3.75	-.050	.026		11/2+
60	132	192	1372.1	1370.5	19.94	.84	9.27	17.16			4.53	.070	.047		
60	133	193	1371.9	1370.9	20.10	-.25	10.57	18.53			4.16	.084	.057		1/2-
60	134	194	1371.5	1371.1	20.28	-.37	9.61	18.89			3.81	.102	.065		
60	135	195	1371.5	1371.3	20.48	.03	10.36	18.72			3.68	.106	.069		7/2-

Z	N	A	B.E.	B0	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
61	46	107	699.3	698.7	-8.44	22.05	-2.23-28.63	9.42	.668	1.79	.163	.C33	5/2-		
61	47	108	718.6	718.9	-8.22	19.32	-2.20-25.52	10.77	.677	.67	.147	.C24	5/2+	7/2+	
61	48	109	739.6	738.7	-7.90	21.03	-2.56-26.79	12.41	.666	1.87	.138	.C20	5/2+		
61	49	110	758.3	758.0	-7.81	18.69	-2.50-24.06	14.09	.654	.73	.089	.C03	3/2-	5/2+	
61	50	111	778.7	776.8	-7.62	20.41	-2.40-25.38	16.03	.646	1.91	C		C 5/2		
61	51	112	796.2	795.2	-7.09	17.49	-3.11-22.10	17.34	.636	1.42	.C70	.C25	7/2+	1/2+	
61	52	113	814.9	813.2	-6.58	18.71	-4.24-23.06	18.40	.631	2.55	.104	.C35	5/2+		
61	53	114	831.3	830.8	-6.01	16.34	-4.51-20.24	19.29	.621	1.52	.116	.C35	5/2-	1/2-	
61	54	115	849.1	848.0	-5.58	17.87	-4.50-21.54	20.27	.614	2.71	.139	.C44	5/2-		
61	55	116	864.9	864.8	-4.96	15.76	-4.13-19.00	21.31	.609	2.14	.155	.C50	5/2-	1/2+	
61	56	117	882.2	881.2	-4.59	17.34	-3.87-20.42	22.47	.598	3.35	.164	.C52	5/2-		
61	57	118	897.3	897.2	-4.15	15.03	-3.61-17.68	23.45	.592	2.67	.172	.C57	5/2-	3/2+	
61	58	119	913.9	912.8	-3.74	16.61	-3.47-18.94	24.55	.581	3.76	.178	.C57	5/2-		
61	59	120	928.2	928.1	-3.35	14.35	-3.37-16.32	25.50	.573	3.05	.184	.C55	5/2-	3/2-	
61	60	121	944.1	943.1	-2.83	15.90	-3.26-17.52	26.53	.566	3.97	.189	.C53	5/2-		
61	61	122	957.6	957.6	-1.82	13.51	-3.29-14.75			2.97	.193	.C52	5/2-	3/2+	
61	62	123	972.0	971.3	-1.48	14.39	-3.33-15.24			3.61	.193	.C48	5/2-		
61	63	124	984.2	984.7	-1.08	12.16	-3.36-12.05			2.42	.197	.C44	5/2-	5/2-	
61	64	125	997.9	997.7	-.77	13.74	-3.20-13.24			3.04	.196	.C40	5/2-		
61	65	126	1009.5	1010.5	-.44	11.62	-2.94-10.62			1.88	.198	.C33	5/2-	5/2+	
61	66	127	1022.8	1022.9	-.09	13.28	-2.80-11.88			2.65	.196	.C30	5/2-		
61	67	128	1033.9	1035.1	.25	11.08	-2.48 -9.30			1.54	.197	.C21	5/2-	1/2+	
61	68	129	1046.6	1046.9	.55	12.72	-2.40-10.53			2.29	.193	.C17	5/2-		
61	69	130	1057.2	1058.5	.86	10.58	-2.19 -8.02			1.27	.192	.C08	5/2-	7/2-	
61	70	131	1069.4	1069.8	1.14	12.15	-2.14 -9.18			2.00	.189	.C06	5/2-		
61	71	132	1079.5	1080.8	1.43	10.18	-1.86 -6.86			1.09	.181	-.C02	5/2+	5/2+	
61	72	133	1091.0	1091.6	1.68	11.46	-1.95 -7.78			1.65	.174	.C00	5/2+		
61	73	134	1100.5	1102.0	1.96	9.50	-1.99 -5.52			.29	.156	-.C07	5/2+	5/2-	
61	74	135	1111.5	1112.3	2.23	10.99	-1.87 -6.69			.86	.147	-.C05	3/2+		
61	75	136	1120.5	1122.3	2.57	9.06	-1.72 -4.47			-.41	.126	-.C13	3/2+	7/2+	
61	76	137	1131.3	1132.0	2.58	10.77	-1.41 -5.88			.35	-.C96	-.C22	11/2-		
61	77	138	1140.4	1141.5	2.89	9.13	-.78 -3.98			-.07	-.C91	-.C25	11/2-	3/2-	
61	78	139	1151.0	1150.7	3.33	10.52	-.72 -5.06			.94	-.C81	-.C18	11/2-		
61	79	140	1159.7	1159.8	3.52	8.75	-.48 -2.98			.44	-.C63	-.C18	1/2+	1/2-	
61	80	141	1170.3	1168.5	3.64	10.58	.31 -4.49			1.76	C		C 5/2		
61	81	142	1179.0	1177.1	3.97	8.66	.72 -2.29			1.90	.C23	-.C00	3/2+	11/2-	
61	82	143	1189.3	1185.4	4.26	10.35	.96 -3.66			3.87	C		C 5/2		
61	83	144	1196.0	1193.6	4.57	6.70	-.40 .28			2.48	-.C16	.C05	11/2-	7/2-	
61	84	145	1203.9	1201.5	4.88	7.87	-2.24 -.56			2.41	C		C 5/2		
61	85	146	1210.1	1209.2	5.27	6.25	-2.10 1.34			1.14	.C31	.C17	3/2+	3/2-	
61	86	147	1217.9	1216.7	5.76	7.81	-1.50 .08			1.73	.C52	.C26	7/2+		
61	87	148	1224.1	1224.0	6.06	6.11	-1.05 2.05			1.28	.C85	.C42	5/2+	1/2-	
61	88	149	1231.8	1231.0	6.35	7.72	-.48 .69			2.65	.107	.C54	5/2+		
61	89	150	1238.1	1237.9	6.77	6.29	.33 2.35			2.51	.117	.C62	5/2-	3/2-	
61	90	151	1245.7	1244.6	7.03	7.63	.84 1.22			3.64	.130	.C61	5/2-		
61	91	152	1251.8	1251.2	7.33	6.11	1.37 3.01			3.50	.135	.C65	5/2-	3/2+	
61	92	153	1259.0	1257.5	7.67	7.19	1.44 2.17			4.52	.146	.C64	5/2-		

Z	N	A	R.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
61	93	154	1264.6	1263.6	8.14	5.63	1.53	3.99			4.22	.153	.066	5/2-	5/2+
61	94	155	1271.2	1269.6	8.42	6.54	1.52	3.25			4.71	.158	.062	5/2-	
61	95	156	1276.3	1275.4	8.70	5.10	1.78	5.02			4.04	.164	.060	5/2-	3/2-
61	96	157	1282.4	1281.0	9.03	6.19	2.04	4.22			4.45	.165	.055	5/2-	
61	97	158	1287.1	1286.5	9.34	4.64	2.18	6.05			3.55	.166	.052	5/2-	5/2-
61	98	159	1292.9	1291.7	9.65	5.84	2.46	5.16			3.55	.167	.046	5/2-	
61	99	160	1297.2	1296.8	9.92	4.30	2.74	7.04			3.07	.171	.040	5/2-	1/2-
61	100	161	1302.9	1301.8	10.21	5.68	3.19	6.01			3.73	.174	.034	5/2-	
61	101	162	1307.1	1306.6	10.55	4.15	3.76	7.86			3.18	.181	.030	5/2-	7/2+
61	102	163	1312.5	1311.2	10.81	5.38	3.89	6.93			3.87	.182	.025	5/2-	
61	103	164	1316.4	1315.7	11.08	3.90	4.28	8.72			3.30	.185	.020	5/2-	5/2-
61	104	165	1321.3	1320.0	11.32	4.94	4.39	7.98			3.78	.182	.016	5/2-	
61	105	166	1324.8	1324.2	11.56	3.47	4.52	9.74			2.98	.180	.007	5/2-	9/2+
61	106	167	1329.5	1328.2	11.79	4.75	4.84	8.77			3.70	.180	.001	5/2+	
61	107	168	1332.9	1332.1	12.03	3.37	5.27	10.45			3.20	.178	-.008	5/2+	7/2-
61	108	169	1337.2	1335.8	12.25	4.31	5.34	9.81			3.61	.170	-.013	5/2+	
61	109	170	1340.2	1339.6	12.49	2.97	5.46	11.40			3.03	.168	-.015	5/2+	1/2-
61	110	171	1344.1	1343.2	12.72	3.96	5.58	10.68			3.41	.162	-.021	5/2+	
61	111	172	1346.8	1346.7	12.98	2.65	5.76	12.24			2.78	.157	-.025	5/2+	3/2-
61	112	173	1350.6	1350.0	13.15	3.79	6.06	11.35			3.28	.145	-.033	3/2+	
61	113	174	1353.1	1353.2	13.38	2.54	6.48	12.82			2.83	.143	-.040	3/2+	11/2+
61	114	175	1356.8	1356.3	13.59	3.66	6.75	11.94			3.48	.134	-.044	3/2+	
61	115	176	1359.2	1359.2	13.82	2.41	7.07	13.41			3.11	.128	-.046	3/2+	7/2-
61	116	177	1362.4	1362.1	14.01	3.24	7.09	12.80			3.38	.117	-.045	5/2-	
61	117	178	1364.4	1364.8	14.21	1.98	7.15	14.28			2.63	.108	-.044	5/2-	9/2-
61	118	179	1368.6	1367.3	14.41	4.25	8.49	12.22			4.22	.100	-.035	5/2-	
61	119	180	1370.4	1369.8	14.55	1.71	8.64	13.33			3.35	.082	-.037	5/2-	13/2+
61	120	181	1373.5	1372.1	14.84	3.16	7.94	13.77			3.99	-.086	-.007	1/2+	
61	121	182	1375.5	1374.3	14.96	2.01	8.58	15.03			3.76	-.071	-.006	1/2+	1/2-
61	122	183	1378.7	1376.4	15.26	3.14	9.07	14.22			4.82	-.050	-.013	1/2+	
61	123	184	1380.6	1378.4	15.34	1.92	9.32	15.68			4.87	-.038	-.015	11/2-	3/2-
61	124	185	1383.4	1380.2	15.55	2.81	9.53	15.02			5.81	C		C 5/2	
61	125	186	1385.4	1382.0	15.77	1.98	9.90	16.07			6.21	C		C 5/2	P 1/2
61	126	187	1388.0	1383.6	16.00	2.59	10.00	15.68			7.33	C		C 5/2	
61	127	188	1387.4	1384.8	16.23	-.56	8.07	19.05			5.41	C		C 5/2	G 9/2
61	128	189	1388.7	1385.9	16.45	1.26	7.18	17.46			5.41	C		C 5/2	
61	129	190	1387.9	1386.9	16.68	-.72	7.47	15.66			3.54	C		C 5/2	G 9/2
61	130	191	1389.0	1387.8	16.90	1.12	7.78	18.04			3.62	C		C 5/2	
61	131	192	1388.5	1388.5	17.21	-.53	8.42	15.91			2.58	-.055	.026	1/2+	11/2+
61	132	193	1389.6	1389.2	17.49	1.12	8.85	18.44			3.70	.082	.055	7/2+	
61	133	194	1389.6	1389.8	17.74	-.01	9.83	15.71			3.19	.090	.060	5/2+	3/2+
61	134	195	1389.5	1390.2	17.97	-.14	8.99	20.01			2.76	.107	.066	5/2+	
61	135	196	1389.7	1390.6	18.19	.25	9.65	15.76			2.60	.109	.065	5/2+	3/2-
61	136	197	1390.8	1390.9	18.03	1.09	11.30	19.11			3.11	.136	.056	5/2-	
61	137	198	1391.3	1391.0	18.74	.45	11.91	20.31			3.37	.106	.071	5/2-	5/2-

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
62	48	110	733.5	731.4	-6.15	21.42	-2.55-29.60	10.32	.688	2.86	.127	.C13			
62	49	111	752.6	751.1	-5.75	19.09	-2.55-26.88	11.90	.677	1.80	.C85	-.C01			5/2+
62	50	112	773.3	770.3	-5.39	20.78	-2.48-28.46	13.75	.668	3.01	C				
62	51	113	791.1	789.1	-5.13	17.75	-3.34-25.37	14.90	.656	2.32	.C68	.C22			1/2+
62	52	114	810.2	807.5	-4.69	19.15	-4.41-26.20	16.01	.645	3.51	.102	.C32			
62	53	115	826.8	825.5	-4.45	16.57	-4.79-23.25	16.78	.639	2.20	.112	.C28			3/2+
62	54	116	845.1	843.0	-4.02	18.30	-4.68-24.37	17.84	.633	3.28	.150	.C34			
62	55	117	861.0	860.2	-3.87	15.91	-4.54-21.58	18.57	.627	2.43	.145	.C42			1/2+
62	56	118	878.8	877.0	-3.44	17.77	-4.21-22.98	19.91	.618	3.76	.155	.C45			
62	57	119	894.2	893.3	-3.11	15.36	-4.00-20.27	20.38	.612	3.08	.170	.C51			3/2+
62	58	120	911.1	909.4	-2.75	16.97	-4.00-21.45	22.00	.606	4.15	.175	.C50			
62	59	121	925.8	925.0	-2.41	14.70	-3.88-18.78	22.97	.597	3.47	.183	.C53			3/2-
62	60	122	942.1	940.3	-2.01	16.29	-3.80-19.97	24.06	.592	4.47	.190	.C46			
62	61	123	956.0	955.3	-1.64	13.89	-3.87-17.19	24.94	.581	3.50	.194	.C47			3/2+
62	62	124	971.4	969.9	-1.68	15.34	-3.91-18.25	25.82	.574	4.16	.194	.C42			
62	63	125	983.9	983.6	-.28	12.56	-3.85-15.08	26.21	.568	3.04	.195	.C36			5/2-
62	64	126	998.1	997.0	.21	14.24	-3.66-15.71	27.03	.561	3.80	.198	.C31			
62	65	127	1010.2	1010.1	.62	12.03	-3.39-13.12			2.75	.201	.C26			5/2+
62	66	128	1023.8	1022.9	1.00	13.66	-3.17-14.37			3.55	.199	.C20			
62	67	129	1035.3	1035.4	1.41	11.49	-2.97-11.85			2.54	.199	.C14			1/2+
62	68	130	1048.4	1047.6	1.78	13.09	-2.81-13.08			3.35	.194	.C09			
62	69	131	1059.4	1059.5	2.19	10.99	-2.56-10.65			2.50	.195	-.C01			7/2-
62	70	132	1071.9	1071.1	2.54	12.50	-2.47-11.81			3.26	.190	-.C02			
62	71	133	1082.4	1082.5	2.90	10.54	-2.21 -9.54			2.35	.183	-.C07			5/2+
62	72	134	1094.2	1093.6	3.20	11.76	-2.32-10.50			2.86	.175	-.C06			
62	73	135	1104.0	1104.4	3.52	9.82	-2.39 -8.26			1.55	.155	-.C11			5/2-
62	74	136	1115.3	1114.9	3.80	11.27	-2.33 -9.46			2.05	.145	-.C11			
62	75	137	1124.6	1125.2	4.11	9.37	-2.18 -7.31			.75	.125	-.C16			7/2+
62	76	138	1135.7	1135.3	4.36	11.03	-1.87 -6.68			1.42	-.C98	-.C23			
62	77	139	1145.1	1145.1	4.68	9.45	-1.13 -7.04			.95	-.C91	-.C25			3/2-
62	78	140	1156.0	1154.7	4.99	10.83	-1.08 -8.12			1.95	-.C81	-.C15			
62	79	141	1165.0	1164.0	5.31	9.07	-.83 -6.08			1.50	-.C63	-.C15			1/2-
62	80	142	1175.9	1173.1	5.59	10.86	-.04 -7.51			2.78	C				
62	81	143	1184.9	1182.0	5.90	8.97	.37 -5.50			2.92	.C23	-.C00			11/2-
62	82	144	1195.5	1190.6	6.20	10.65	.55 -6.86			4.88	C				
62	83	145	1202.5	1199.1	6.52	7.02	-.76 -2.93			3.50	-.C16	.C05			7/2-
62	84	146	1210.7	1207.3	6.81	8.16	-2.65 -3.75			3.41	C				
62	85	147	1217.2	1215.3	7.11	6.55	-2.49 -1.84			2.08	.C26	.C13			3/2-
62	86	148	1225.3	1223.1	7.39	8.09	-1.96 -3.06			2.64	.C45	.C24			
62	87	149	1231.7	1230.7	7.63	6.36	-1.47 -.96			2.04	.C82	.C38			1/2-
62	88	150	1239.6	1238.1	7.86	7.95	-.84 -2.18			3.10	.C95	.C47			
62	89	151	1246.1	1245.2	8.07	6.50	-.15 -.42			3.12	.115	.C55			3/2-
62	90	152	1254.0	1252.2	8.33	7.89	.30 -1.49			4.21	.127	.C55			
62	91	153	1260.4	1259.0	8.58	6.36	.79 .37			4.06	.133	.C63			3/2+
62	92	154	1267.8	1265.7	8.84	7.44	.86 -.43			5.02	.142	.C62			
62	93	155	1273.6	1272.1	9.00	5.79	.85 1.54			4.44	.153	.C58			3/2-
62	94	156	1280.5	1278.3	9.33	6.87	.87 .75			5.13	.155	.C55			

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
62	95	157	1285.9	1284.4	9.63	5.39	1.11	2.58			4.41	.160	.C55		3/2-
62	96	158	1292.4	1290.3	9.91	6.47	1.32	1.80			4.90	.164	.C51		
62	97	159	1297.3	1296.0	10.21	4.95	1.46	3.65			3.97	.164	.C47		5/2-
62	98	160	1303.5	1301.6	10.56	6.18	1.78	2.70			4.52	.167	.C41		
62	99	161	1308.1	1307.0	10.91	4.66	2.10	4.59			3.75	.172	.C35		1/2-
62	100	162	1314.1	1312.2	11.23	6.00	2.57	3.58			4.45	.176	.C28		
62	101	163	1318.6	1317.2	11.53	4.46	2.99	5.44			3.97	.181	.C25		7/2+
62	102	164	1324.3	1322.1	11.63	5.68	3.28	4.51			4.72	.182	.C21		
62	103	165	1328.5	1326.9	12.13	4.20	3.66	6.28			4.21	.185	.C17		5/2-
62	104	166	1333.7	1331.5	12.43	5.23	3.77	5.61			4.71	.182	.C11		
62	105	167	1337.5	1335.9	12.74	3.78	3.93	7.25			4.00	.180	.C03		5/2+
62	106	168	1342.5	1340.2	13.04	5.05	4.28	6.24			4.80	.181	-.C03		
62	107	169	1346.2	1344.3	13.34	3.67	4.72	7.85			4.35	.175	-.C11		7/2-
62	108	170	1350.8	1348.3	13.59	4.56	4.77	7.21			4.80	.172	-.C16		
62	109	171	1354.0	1352.3	13.86	3.74	4.88	8.77			4.25	.171	-.C22		1/2-
62	110	172	1358.2	1356.2	14.10	4.20	4.98	8.06			4.61	.165	-.C23		
62	111	173	1361.1	1359.9	14.36	2.90	5.16	9.58			3.97	.155	-.C30		3/2-
62	112	174	1365.1	1363.5	14.58	4.01	5.44	8.71			4.44	.151	-.C34		
62	113	175	1367.9	1366.9	14.82	2.78	5.83	10.15			3.97	.145	-.C41		11/2+
62	114	176	1371.8	1370.3	15.04	3.88	6.10	9.28			4.55	.137	-.C43		
62	115	177	1374.4	1373.5	15.26	2.63	6.41	10.74			4.19	.125	-.C48		7/2-
62	116	178	1377.9	1376.5	15.48	3.45	6.42	10.14			4.42	.115	-.C44		
62	117	179	1380.1	1379.5	15.70	2.20	6.44	11.64			3.65	.105	-.C43		5/2-
62	118	180	1382.9	1382.3	14.76	2.81	6.21	11.17			3.56	.101	-.C35		
62	119	181	1386.5	1385.0	16.14	3.60	8.02	10.60			4.33	.C03	-.C37		13/2+
62	120	182	1389.8	1387.5	16.26	3.27	7.24	11.07			4.87	-.C85	-.C07		
62	121	183	1392.1	1390.0	16.57	2.32	7.99	12.29			4.65	-.C70	-.C07		1/2-
62	122	184	1395.5	1392.3	16.81	3.37	8.50	11.35			5.76	-.C50	-.C13		
62	123	185	1397.6	1394.5	17.05	2.16	8.77	12.76			5.82	-.C35	-.C15		3/2-
62	124	186	1400.7	1396.6	17.26	3.03	8.96	12.10			6.74	C			
62	125	187	1402.9	1398.6	17.49	2.20	9.32	13.13			7.13	C			P 1/2
62	126	188	1405.7	1400.4	17.71	2.81	9.53	12.74			6.25	C			
62	127	189	1405.3	1401.8	17.94	-.33	7.45	16.11			6.33	C			G 5/2
62	128	190	1406.8	1403.1	18.16	1.48	6.56	14.53			6.33	C			
62	129	191	1406.3	1404.3	18.38	-.50	6.85	16.74			4.46	C			G 5/2
62	130	192	1407.6	1405.4	18.60	1.34	7.15	15.13			4.54	C			
62	131	193	1407.3	1406.4	18.77	-.36	7.74	17.04			3.41	-.C52	.C26		11/2+
62	132	194	1408.5	1407.3	18.91	1.26	8.11	15.72			4.05	.C67	.C43		
62	133	195	1408.7	1408.1	19.09	.16	9.11	17.05			3.75	.C83	.C57		3/2+
62	134	196	1408.7	1408.8	19.23	.01	8.28	17.41			3.28	.101	.C62		
62	135	197	1409.2	1409.4	19.42	.44	8.97	17.20			3.14	.105	.C65		3/2-
62	136	198	1410.8	1409.8	19.97	1.65	10.99	16.20			4.30	.113	.C68		
62	137	199	1411.1	1410.2	19.81	.28	11.24	17.77			3.96	.106	.C65		5/2-
62	138	200	1412.3	1410.5	20.02	1.20	11.19	17.06			4.65	.118	.C65		
62	139	201	1412.3	1410.7	20.21	.02	11.47	18.49			4.32	.123	.C64		3/2+

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
62	49	112	744.1	743.8	-8.47	19.19	-2.80-25.49	9.57	.655	1.05	.135	.CC5		5/2-	1/2+
63	50	113	764.9	763.4	-8.41	20.84	-2.99-26.68	10.98	.665	1.56	C			C 5/2	
63	51	114	783.3	782.6	-7.84	18.32	-3.36-23.73	12.21	.678	1.10	.C77	.C22		3/2+	1/2+
63	52	115	802.8	801.3	-7.46	19.53	-4.24-24.62	13.27	.671	2.28	.113	.C26		5/2-	
63	53	116	820.0	819.7	-6.85	17.18	-4.55-21.98	14.15	.658	1.28	.125	.C26		5/2-	3/2+
63	54	117	838.7	837.6	-6.45	18.71	-4.56-23.15	15.28	.652	2.32	.146	.C25		5/2-	
63	55	118	855.0	855.1	-5.95	16.37	-4.52-20.48	16.18	.642	1.44	.154	.C36		5/2+	3/2+
63	56	119	873.1	872.3	-5.69	18.07	-4.33-21.86	17.37	.636	2.62	.166	.C35		5/2+	
63	57	120	888.9	889.0	-5.26	15.79	-4.30-19.26	18.42	.631	1.96	.173	.C45		5/2+	3/2+
63	58	121	905.3	905.4	-4.87	17.37	-4.27-20.62	19.58	.623	3.13	.182	.C45		5/2+	
63	59	122	921.4	921.4	-4.47	15.10	-4.20-17.98	20.63	.616	2.41	.190	.C46		5/2+	3/2+
63	60	123	938.0	937.1	-4.08	16.67	-4.14-15.26	21.75	.612	3.50	.195	.C44		5/2+	
63	61	124	952.3	952.4	-3.69	14.28	-4.21-16.51	22.57	.605	2.56	.195	.C42		5/2+	3/2+
63	62	125	968.0	967.4	-3.30	15.73	-4.38-17.55	23.42	.597	3.30	.201	.C36		5/2+	
63	63	126	981.7	982.0	-2.25	13.61	-4.28-14.94	24.17	.592	2.32	.204	.C32		5/2+	5/2-
63	64	127	996.3	995.7	-1.88	14.61	-4.06-15.57	25.04	.583	3.14	.204	.C27		5/2+	
63	65	128	1008.7	1009.2	-1.49	12.41	-3.81-12.43	25.72	.575	2.16	.206	.C22		5/2+	5/2+
63	66	129	1022.7	1022.3	-1.14	14.01	-3.54-13.64	26.55	.571	2.58	.203	.C18		5/2+	
63	67	130	1034.5	1035.2	-.78	11.85	-3.30-11.10	27.20	.564	2.01	.203	.C12		5/2+	1/2+
63	68	131	1048.0	1047.7	-.44	13.42	-3.16-12.28			2.84	.200	.C08		5/2+	
63	69	132	1059.3	1059.5	-.09	11.34	-2.90 -9.82			2.01	.201	-.C00		5/2+	7/2-
63	70	133	1072.1	1071.5	.22	12.81	-2.81-10.75			2.75	.196	-.C03		5/2+	
63	71	134	1082.9	1083.6	.47	10.80	-2.59 -8.45			1.75	.186	-.C07		5/2-	5/2+
63	72	135	1095.0	1095.0	.78	12.06	-2.68 -9.37			2.26	.182	-.C04		5/2-	
63	73	136	1105.0	1106.2	1.03	10.07	-2.80 -7.08			1.04	.172	-.C11		5/2-	5/2-
63	74	137	1116.6	1117.1	1.28	11.52	-2.73 -8.19			1.53	.166	-.C05		5/2-	
63	75	138	1126.2	1127.7	1.56	9.65	-2.58 -6.00			.13	.143	-.C14		5/2-	7/2+
63	76	139	1137.3	1138.1	1.83	11.10	-2.47 -7.19			.40	-.105	-.C23		1/2+	
63	77	140	1147.1	1148.2	1.93	9.75	-1.78 -5.44			-.07	-.C96	-.C27		1/2+	3/2-
63	78	141	1158.2	1158.1	2.21	11.11	-1.45 -6.63			.88	-.C86	-.C20		1/2+	
63	79	142	1167.6	1167.7	2.57	9.43	-1.14 -4.54			.55	-.C80	-.C21		1/2+	1/2-
63	80	143	1178.6	1177.1	2.69	10.98	-.68 -5.88			1.44	C			C 5/2	
63	81	144	1187.9	1186.3	3.00	9.25	-.14 -3.67			1.55	.024	-.C01		1/2-	11/2-
63	82	145	1198.6	1195.3	3.31	10.46	.23 -5.22			2.54	C			C 5/2	
63	83	146	1206.2	1204.0	3.63	7.34	-1.09 -1.32			2.18	-.C17	.C05		3/2+	7/2-
63	84	147	1214.6	1212.5	3.93	8.46	-2.98 -2.14			2.05	C			C 5/2	
63	85	148	1221.5	1220.8	4.25	6.87	-2.81 -.25			.88	.C34	.C16		1/2-	3/2-
63	86	149	1229.9	1228.5	4.62	8.45	-2.23 -1.53			1.46	.C54	.C26		5/2+	
63	87	150	1236.7	1236.8	4.98	6.73	-1.75 .45			.50	.C85	.C37		5/2-	1/2-
63	88	151	1244.9	1244.5	5.30	8.26	-1.30 -.98			1.55	.102	.C45		5/2-	
63	89	152	1251.8	1252.0	5.62	6.81	-.60 .80			1.94	.120	.C56		5/2+	3/2-
63	90	153	1260.0	1259.3	5.94	8.22	-.10 -.48			2.06	.132	.C55		5/2+	
63	91	154	1266.6	1266.4	6.23	6.64	.25 1.36			2.86	.136	.C60		5/2+	3/2+
63	92	155	1274.4	1273.3	6.55	7.76	.38 .49			3.85	.146	.C58		5/2+	
63	93	156	1280.5	1280.0	6.88	6.12	.40 2.38			3.52	.154	.C61		5/2+	5/2+
63	94	157	1287.7	1286.5	7.19	7.19	.40 1.56			3.97	.158	.C53		5/2+	
63	95	158	1293.4	1292.9	7.48	5.68	.45 2.34			3.32	.163	.C52		5/2+	3/2-

Z	V	A	B.E.	BC	SP	SN	SA	CP	PAR	X	S	A2	A4	P	N
63	96	159	1300.2	1259.0	7.82	6.80	.72	2.51			3.01	.164	.C47	5/2+	
63	97	160	1305.4	1305.0	8.11	5.24	.86	4.40			3.01	.167	.C43	5/2+	5/2-
63	98	161	1312.0	1310.9	8.47	6.55	1.21	3.41			3.68	.171	.C36	5/2+	
63	99	162	1316.9	1316.5	8.80	4.99	1.56	5.30			3.00	.177	.C30	5/2+	1/2-
63	100	163	1323.3	1322.0	9.11	6.32	2.03	4.28			3.83	.181	.C24	5/2+	
63	101	164	1328.0	1327.3	9.41	4.76	2.49	6.16			3.23	.185	.C23	5/2+	7/2+
63	102	165	1334.0	1332.5	9.70	5.97	2.77	5.21			4.12	.186	.C16	5/2+	
63	103	166	1338.5	1337.5	10.06	4.56	3.18	6.92			3.70	.186	.C14	5/2+	5/2-
63	104	167	1344.0	1342.3	10.24	5.42	3.21	6.36			4.16	.185	.C11	5/2+	
63	105	168	1348.0	1347.0	10.51	4.05	3.36	6.03			3.45	.194	.C03	5/2+	5/2+
63	106	169	1353.3	1351.6	10.74	5.28	3.70	7.26			4.16	.183	-.C02	5/2-	
63	107	170	1357.2	1356.0	10.99	3.92	4.15	8.82			3.73	.182	-.C11	5/2-	7/2-
63	108	171	1362.0	1360.2	11.23	4.80	4.21	6.24			4.23	.177	-.C15	5/2-	
63	109	172	1365.5	1364.5	11.47	3.40	4.32	5.83			3.63	.174	-.C22	5/2-	1/2-
63	110	173	1369.9	1368.6	11.70	4.43	4.44	5.16			3.98	.166	-.C23	5/2-	
63	111	174	1373.1	1372.6	11.94	3.14	4.61	10.70			3.31	.163	-.C30	5/2-	3/2-
63	112	175	1377.5	1376.4	12.15	4.23	4.87	5.85			3.76	.155	-.C34	5/2-	
63	113	176	1380.3	1380.1	12.38	3.01	5.23	11.31			3.27	.146	-.C41	5/2-	11/2+
63	114	177	1384.4	1383.7	12.59	4.09	5.53	10.45			3.86	.140	-.C43	5/2-	
63	115	178	1387.2	1387.1	12.81	2.85	5.84	11.92			3.41	.133	-.C46	5/2-	7/2-
63	116	179	1390.9	1390.4	13.06	3.71	5.89	11.28			3.69	.123	-.C45	5/2-	
63	117	180	1393.3	1393.6	13.20	2.35	5.83	12.87			2.78	.112	-.C43	3/2-	5/2-
63	118	181	1396.3	1396.6	13.41	3.02	5.61	12.40			2.70	.106	-.C40	3/2-	
63	119	182	1400.1	1399.6	13.56	3.75	7.38	11.89			3.26	.086	-.C34	3/2-	13/2+
63	120	183	1403.6	1402.4	13.83	3.54	6.66	12.33			3.67	-.C85	-.C05	5/2-	
63	121	184	1406.0	1405.0	13.94	2.43	7.38	13.65			3.60	-.C74	-.C06	5/2-	1/2-
63	122	185	1409.6	1407.6	14.13	3.57	7.80	12.76			4.61	-.C53	-.C13	5/2-	
63	123	186	1412.0	1410.0	14.34	2.37	8.16	14.21			4.65	-.C43	-.C15	3/2+	3/2-
63	124	187	1415.2	1412.3	14.55	3.23	8.25	13.58			5.52	C		C 5/2	
63	125	188	1417.6	1414.5	14.77	2.43	8.76	14.60			5.91	C		C 5/2 P 1/2	
63	126	189	1420.7	1416.6	15.00	3.04	8.98	14.22			7.03	C		C 5/2	
63	127	190	1420.6	1418.3	15.23	-.10	6.90	17.58			5.12	C		C 5/2 G 9/2	
63	128	191	1422.3	1419.8	15.45	1.70	6.02	16.00			5.12	0		C 5/2	
63	129	192	1422.0	1421.2	15.68	-.28	6.30	18.20			3.26	C		C 5/2 G 9/2	
63	130	193	1423.5	1422.5	15.90	1.56	6.60	16.59			3.33	C		C 5/2	
63	131	194	1423.5	1423.8	16.20	-.06	7.26	18.42			2.33	-.C55	.C26	5/2+	11/2+
63	132	195	1425.0	1424.9	16.43	1.49	7.64	17.03			3.03	.C71	.C45	5/2+	
63	133	196	1425.4	1425.8	16.64	.37	8.54	18.31			2.66	.C83	.C56	5/2-	3/2+
63	134	197	1425.6	1426.7	16.86	.22	7.65	18.61			2.12	.103	.C55	5/2-	
63	135	198	1426.2	1427.5	17.06	.64	8.30	20.00			1.96	.107	.C63	5/2-	3/2-
63	136	199	1428.1	1428.2	17.27	1.85	10.29	17.30			3.09	.114	.C65	5/2-	
63	137	200	1428.6	1428.8	17.48	.49	10.53	18.83			2.80	.110	.C66	5/2+	5/2-
63	138	201	1430.0	1429.3	17.73	1.45	10.99	18.05			3.54	.121	.C62	5/2+	
63	139	202	1430.3	1429.7	17.95	.24	10.68	19.45	28.49	.560	3.23	.125	.C62	5/2+	3/2+
63	140	203	1431.5	1430.0	18.18	1.25	10.94	18.62			3.96	.130	.C59	5/2+	

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	V
64	51	115	777.4	775.5	-5.87	18.64	-3.48-26.70	10.38	.659	2.18	.066	.020			1/2+
64	52	116	797.2	794.6	-5.58	19.82	-4.44-27.67	11.23	.650	3.19	.102	.025			
64	53	117	814.7	813.4	-5.22	17.54	-4.04-24.83	12.06	.660	2.15	.123	.018			3/2+
64	54	118	833.8	831.7	-4.69	19.04	-4.76-25.92	13.04	.673	3.14	.142	.018			
64	55	119	850.5	849.6	-4.58	16.68	-4.65-23.11	13.33	.662	2.08	.150	.022			1/2+
64	56	120	868.9	867.1	-4.26	18.39	-4.56-24.44	14.37	.654	3.26	.164	.028			
64	57	121	884.9	884.2	-4.04	16.01	-4.47-21.63	15.85	.648	2.48	.175	.035			1/2-
64	58	122	902.6	900.9	-3.67	17.74	-4.50-23.00	17.06	.635	3.62	.183	.035			
64	59	123	918.0	917.3	-3.37	15.39	-4.47-20.26	18.03	.634	2.90	.190	.040			3/2-
64	60	124	935.0	933.3	-3.01	17.03	-4.40-21.55	19.21	.630	4.03	.197	.036			
64	61	125	949.7	949.0	-2.60	14.69	-4.41-18.83	20.11	.621	3.17	.201	.035			3/2+
64	62	126	965.9	964.3	-2.12	16.21	-4.48-15.98	21.11	.616	4.02	.202	.025			
64	63	127	979.9	979.3	-1.74	13.99	-4.38-17.35	21.93	.612	3.10	.205	.025			5/2-
64	64	128	995.5	994.0	-1.60	15.55	-4.18-16.53	22.36	.605	3.96	.205	.020			
64	65	129	1008.3	1007.8	-1.41	12.80	-3.93-15.40	23.61	.598	3.03	.206	.016			5/2+
64	66	130	1022.7	1021.2	-1.03	14.39	-3.78-16.07	24.51	.593	3.90	.203	.011			
64	67	131	1034.9	1034.4	-.36	12.24	-3.56-13.57	25.25	.586	3.03	.203	.005			1/2+
64	68	132	1046.7	1047.3	.74	13.80	-3.42-14.74	26.35	.579	3.94	.201	-.000			
64	69	133	1060.5	1059.9	1.24	11.85	-3.07-12.46	26.95	.573	3.30	.200	-.008			7/2-
64	70	134	1073.7	1072.2	1.56	13.13	-3.02-13.37	27.65	.569	4.12	.197	-.010			
64	71	135	1084.8	1084.2	1.90	11.14	-2.87-11.05	28.39	.563	3.05	.168	-.013			5/2+
64	72	136	1097.2	1095.9	2.20	12.36	-3.02-12.03			3.55	.182	-.012			
64	73	137	1107.6	1107.4	2.55	10.41	-3.15 -5.73			2.35	.172	-.017			9/2-
64	74	138	1119.4	1118.6	2.87	11.84	-3.06-10.87			2.65	.160	-.014			
64	75	139	1129.3	1129.6	3.13	9.91	-2.97 -6.68			1.40	.144	-.015			7/2+
64	76	140	1140.8	1140.3	3.53	11.50	-2.74-10.11			1.83	.126	-.016			
64	77	141	1150.8	1150.7	3.70	9.92	-2.19 -6.27			1.08	-.096	-.027			3/2-
64	78	142	1162.2	1160.9	4.01	11.42	-1.80 -5.62			2.02	-.086	-.021			
64	79	143	1171.9	1170.9	4.32	9.75	-1.50 -7.67			1.73	-.080	-.021			1/2-
64	80	144	1183.2	1180.6	4.63	11.29	-1.04 -6.92			2.55	C				
64	81	145	1192.8	1190.1	4.96	9.61	-.50 -7.09			2.76	.023	-.004			11/2-
64	82	146	1204.1	1199.4	5.24	11.24	-.13 -8.36			4.68	C				
64	83	147	1211.7	1208.4	5.54	7.64	-1.45 -4.51			3.32	-.017	.005			7/2-
64	84	148	1220.5	1217.2	5.84	8.76	-3.34 -5.28			2.22	C				
64	85	149	1227.6	1225.8	6.14	7.17	-3.19 -3.42			1.92	.028	.013			3/2-
64	86	150	1236.3	1234.2	6.39	8.70	-2.65 -4.59			2.47	.050	.023			
64	87	151	1243.2	1242.4	6.50	6.83	-2.36 -2.39			1.60	.073	.035			1/2-
64	88	152	1251.8	1250.4	6.83	8.60	-1.85 -3.84			2.59	.094	.040			
64	89	153	1258.7	1258.2	6.95	6.93	-1.28 -1.85			2.45	.115	.053			3/2-
64	90	154	1267.2	1265.7	7.22	8.49	-.74 -3.12			3.61	.127	.053			
64	91	155	1274.1	1273.1	7.47	6.89	-.35 -1.22			3.41	.133	.057			3/2+
64	92	156	1282.1	1280.3	7.72	8.02	-.23 -2.08			4.36	.143	.056			
64	93	157	1288.5	1287.3	7.96	6.36	-.22 -.12			3.88	.151	.056			3/2-
64	94	158	1295.9	1294.1	8.24	7.46	-.20 -.92			4.41	.155	.051			
64	95	159	1301.9	1300.8	8.53	5.98	-.02 .90			3.87	.162	.050			3/2-
64	96	160	1309.0	1307.2	8.86	7.13	.24 .06			4.30	.162	.042			
64	97	161	1314.6	1313.5	9.17	5.55	.40 1.94			3.65	.168	.035			5/2-

Z	N	A	B.F.	BC	SP	SN	SA	CP	BAR	X	S	A2	A4	P	N
64	98	162	1321.5	1319.6	9.50	6.68	.81	1.00			4.36	.172	.C32		
64	99	163	1326.8	1325.5	9.61	5.30	1.16	2.92			3.76	.178	.C26		1/2-
64	100	164	1333.4	1331.3	10.13	6.63	1.61	1.92			4.67	.184	.C19		
64	101	165	1338.4	1336.5	10.40	5.02	1.97	3.81			4.12	.184	.C19		7/2+
64	102	166	1344.7	1342.3	10.69	6.26	2.23	2.88			4.95	.186	.C15		
64	103	167	1349.5	1347.5	11.00	4.86	2.64	4.56			4.55	.189	.C09		5/2-
64	104	168	1355.2	1352.7	11.29	5.71	2.67	4.02			5.08	.184	.C09		
64	105	169	1359.8	1357.6	11.76	4.52	2.99	5.55			4.68	.186	-.C02		5/2+
64	106	170	1365.2	1362.4	11.96	5.48	3.23	4.80			5.22	.183	-.C07		
64	107	171	1369.5	1367.1	12.26	4.22	3.67	6.32			4.93	.182	-.C14		7/2-
64	108	172	1374.5	1371.6	12.53	5.07	3.69	5.74			5.45	.177	-.C18		
64	109	173	1378.3	1376.1	12.81	3.76	3.79	7.29			4.94	.176	-.C25		1/2-
64	110	174	1383.0	1380.4	13.05	4.68	3.90	6.61			5.25	.169	-.C26		
64	111	175	1386.4	1384.7	13.30	3.35	4.05	8.14			4.57	.164	-.C31		3/2-
64	112	176	1390.8	1388.8	13.53	4.46	4.31	7.30			5.00	.157	-.C34		
64	113	177	1394.1	1392.7	13.76	3.23	4.64	8.74			4.48	.150	-.C41		11/2+
64	114	178	1398.4	1396.5	13.98	4.32	4.94	7.83			5.04	.142	-.C42		
64	115	179	1401.4	1400.2	14.21	3.08	5.23	9.27			4.56	.134	-.C48		7/2-
64	116	180	1405.4	1403.7	14.43	3.93	5.28	8.64			4.82	.124	-.C45		
64	117	181	1407.9	1407.2	14.63	2.55	5.20	10.21			3.87	.113	-.C42		9/2-
64	118	182	1411.2	1410.4	14.86	3.25	5.00	9.73			3.78	.107	-.C40		
64	119	183	1415.1	1413.6	15.08	3.97	6.76	9.23			4.30	.086	-.C33		13/2+
64	120	184	1418.9	1416.6	15.31	3.76	7.71	9.61			4.90	-.068	-.C10		
64	121	185	1421.6	1419.5	15.55	2.68	6.79	10.85			4.63	-.073	-.C09		1/2-
64	122	186	1425.4	1422.3	15.79	3.81	7.33	9.92			5.66	-.052	-.C14		
64	123	187	1428.0	1425.0	16.02	2.60	7.60	11.34			5.70	-.042	-.C16		3/2-
64	124	188	1431.4	1427.5	16.25	3.45	7.68	10.70			6.56	0			
64	125	189	1434.1	1430.0	16.47	2.66	8.18	11.86			6.96	C		P	1/2
64	126	190	1437.4	1432.3	16.70	3.26	8.42	11.29			6.07	C			
64	127	191	1437.5	1434.2	16.92	.12	6.34	14.65			6.16	C		G	9/2
64	128	192	1439.4	1435.9	17.14	1.92	5.45	13.08			6.16	C			
64	129	193	1439.4	1437.6	17.36	-.05	5.72	15.28			4.30	C		G	9/2
64	130	194	1441.1	1439.1	17.58	1.78	6.02	13.68			4.37	C			
64	131	195	1441.2	1440.5	17.74	.10	6.62	15.58			3.25	-.051	.C25		11/2+
64	132	196	1442.9	1441.8	17.91	1.66	6.94	14.31			3.67	.060	.C36		
64	133	197	1443.4	1443.0	18.05	.52	7.82	15.67			3.31	.081	.C45		1/2-
64	134	198	1445.4	1444.1	19.85	2.03	8.59	13.55			4.45	.096	.C57		
64	135	199	1444.6	1445.2	18.37	-.85	7.58	17.45			2.62	.102	.C61		3/2-
64	136	200	1446.6	1446.1	18.54	2.02	9.60	14.78			3.70	.110	.C62		
64	137	201	1447.3	1446.5	18.71	.67	9.82	16.34			3.49	.113	.C65		3/2+
64	138	202	1448.9	1447.6	18.90	1.64	9.82	15.57			4.13	.117	.C61		
64	139	203	1449.3	1448.2	19.09	.43	9.97	17.00			3.81	.122	.C60		3/2+
64	140	204	1450.8	1448.7	19.28	1.44	10.21	16.20			4.53	.128	.C57		
64	141	205	1451.0	1449.1	19.48	.26	10.45	17.61			4.21	.130	.C57		5/2+
64	142	206	1452.1	1449.4	19.68	1.07	10.50	17.01			4.73	.134	.C54		

Z	N	A	B.E.	RC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
65	53	118	807.1	806.6	-7.67	17.95	-4.47-23.64	10.01	.701	1.37	.142	.C13	3/2+	7/2+	
65	54	119	826.6	825.2	-7.21	19.50	-4.51-24.83	10.95	.692	2.43	.156	.C14	3/2+		
65	55	120	843.6	843.5	-6.83	17.05	-4.63-22.06	11.66	.683	1.34	.162	.C16	3/2+	7/2+	
65	56	121	862.5	861.4	-6.40	18.82	-4.52-23.48	12.80	.675	2.53	.177	.C16	3/2+		
65	57	122	878.8	878.9	-6.05	16.36	-4.53-20.72	13.60	.666	1.59	.181	.C25	3/2+	1/2-	
65	58	123	896.9	896.0	-5.65	18.13	-4.46-22.19	14.83	.657	2.78	.189	.C24	3/2+		
65	59	124	912.7	912.7	-5.30	15.75	-4.51-19.47	15.79	.652	2.04	.196	.C30	3/2+	7/2-	
65	60	125	930.1	929.1	-4.92	17.41	-4.46-20.83	16.97	.644	3.17	.201	.C26	3/2+		
65	61	126	945.2	945.1	-4.55	15.07	-4.49-18.11	17.91	.637	2.34	.204	.C26	3/2+	7/2+	
65	62	127	961.8	960.8	-4.15	16.61	-4.55-15.31	18.98	.632	3.30	.206	.C22	3/2+		
65	63	128	976.2	976.1	-3.76	14.37	-4.45-16.68	19.83	.630	2.42	.206	.C20	3/2+	5/2-	
65	64	129	992.1	991.1	-3.38	15.93	-4.26-17.88	20.83	.621	3.34	.207	.C15	3/2+		
65	65	130	1005.8	1005.8	-2.47	13.72	-4.15-15.28	21.63	.616	2.45	.208	.C11	3/2+	5/2+	
65	66	131	1020.6	1019.6	-2.10	14.75	-4.01-15.95	22.58	.612	2.37	.206	.C07	3/2+		
65	67	132	1033.2	1033.1	-1.73	12.62	-3.80-12.90	23.36	.606	2.55	.207	.C02	3/2+	1/2+	
65	68	133	1047.3	1046.4	-1.40	14.13	-3.68-14.02	24.23	.600	3.49	.204	-.C04	3/2+		
65	69	134	1059.5	1059.3	-1.02	12.22	-3.31-11.67	25.15	.595	2.90	.204	-.C10	3/2+	7/2-	
65	70	135	1073.0	1071.9	-.69	13.46	-3.27-12.52	25.88	.592	2.75	.202	-.C13	3/2+		
65	71	136	1084.4	1084.3	-.46	11.37	-3.24-10.09	26.45	.584	2.70	.196	-.C16	3/2+	5/2+	
65	72	137	1097.1	1096.3	-.10	12.72	-3.34-11.09	26.94	.577	3.14	.186	-.C13	3/2+		
65	73	138	1107.8	1108.1	.19	10.70	-3.43 -8.77	27.33	.573	1.93	.180	-.C16	3/2+	5/2-	
65	74	139	1119.9	1119.7	.45	12.11	-3.39 -9.84	27.69	.570	2.40	.176	-.C14	3/2+		
65	75	140	1129.9	1131.0	.61	10.07	-3.39 -7.49	27.91	.564	.79	.155	-.C17	3/2+	1/2-	
65	76	141	1141.7	1142.0	.87	11.76	-3.15 -8.80	28.40	.561	1.31	.144	-.C16	1/2-		
65	77	142	1151.8	1152.7	1.01	10.06	-2.74 -6.83			.16	-.100	-.C26	7/2-	7/2-	
65	78	143	1163.5	1163.3	1.29	11.70	-2.14 -8.22			1.07	-.C90	-.C22	7/2-		
65	79	144	1173.5	1173.5	1.59	10.05	-1.84 -6.25			.75	-.C83	-.C22	7/2-	1/2-	
65	80	145	1185.0	1183.6	1.74	11.44	-1.51 -7.33			1.38	C		7/2-	11/2	
65	81	146	1194.9	1193.4	2.09	9.97	-.97 -5.46			1.61	.C26	-.C04	3/2-	11/2-	
65	82	147	1206.4	1202.9	2.36	11.50	-.46 -6.72			2.47	C		7/2-	11/2	
65	83	148	1214.4	1212.3	2.70	7.98	-1.76 -2.88			2.15	-.C15	.C05	1/2+	7/2-	
65	84	149	1223.4	1221.4	2.97	9.04	-3.68 -3.66			2.03	C		7/2-	11/2	
65	85	150	1231.0	1230.3	3.33	7.53	-3.49 -1.92			.84	.C35	.C16	3/2-	7/2-	
65	86	151	1240.0	1239.0	3.66	9.04	-2.92 -3.08			1.40	.C52	.C23	3/2+		
65	87	152	1247.2	1247.5	3.98	7.15	-2.63 -1.16			.54	.C76	.C35	3/2+	1/2-	
65	88	153	1256.1	1255.7	4.30	8.92	-2.16 -2.49			1.50	.C95	.C36	7/2+		
65	89	154	1263.3	1263.8	4.58	7.21	-1.68 -.59			1.29	.116	.C45	7/2+	7/2-	
65	90	155	1272.1	1271.7	4.89	8.79	-1.15 -2.00			2.44	.130	.C46	3/2+		
65	91	156	1279.2	1279.3	5.16	7.15	-.81 -.11			2.20	.136	.C53	3/2+	7/2+	
65	92	157	1297.6	1286.8	5.46	8.32	-.71 -1.07			3.16	.145	.C52	3/2+		
65	93	158	1294.2	1294.1	5.76	6.66	-.69 .83			2.71	.153	.C52	3/2+	7/2-	
65	94	159	1302.0	1301.2	6.09	7.80	-.66 -.05			2.32	.156	.C46	3/2+		
65	95	160	1308.3	1308.1	6.40	6.29	-.49 1.74			2.73	.163	.C44	3/2+	7/2-	
65	96	161	1315.7	1314.8	6.71	7.43	-.25 .76			3.39	.166	.C37	3/2+		
65	97	162	1321.7	1321.4	7.09	5.94	.01 2.65			2.79	.172	.C34	3/2+	5/2-	
65	98	163	1328.9	1327.7	7.44	7.22	.43 1.65			3.62	.176	.C26	3/2+		
65	99	164	1334.5	1333.9	7.77	5.63	.82 3.55			3.12	.184	.C20	3/2+	1/2-	

Z	N	A	R.E.	BC	SP	SN	SA	CP	RA	X	S	A2	A4	D	A
65	100	165	1341.4	1340.0	8.05	6.91	1.19	2.55			4.02	.184	.019	3/2+	
65	101	166	1346.8	1345.8	8.36	5.33	1.53	4.43			3.53	.187	.016	3/2+	7/2+
65	102	167	1353.3	1351.5	8.65	6.55	1.77	3.49			4.35	.189	.012	3/2+	
65	103	168	1358.5	1357.1	8.95	5.17	2.18	5.17			4.05	.191	.007	3/2+	5/2-
65	104	169	1364.5	1362.4	9.29	6.05	2.26	4.59			4.67	.189	.002	3/2+	
65	105	170	1369.3	1367.6	9.50	4.73	2.42	6.22			4.20	.188	-.003	3/2+	5/2+
65	106	171	1375.0	1372.7	9.76	5.74	2.75	5.57			4.86	.186	-.006	3/2+	
65	107	172	1379.5	1377.6	10.03	4.49	3.19	7.12			4.48	.185	-.015	3/2+	7/2-
65	108	173	1384.8	1382.3	10.27	5.31	3.22	6.59			4.99	.181	-.018	3/2+	
65	109	174	1388.8	1387.1	10.50	4.00	3.30	8.17	27.14	.560	4.37	.176	-.024	3/2+	1/2-
65	110	175	1393.7	1391.7	10.74	4.91	3.41	7.55			4.78	.173	-.026	3/2+	
65	111	176	1397.3	1396.2	10.97	3.62	3.55	6.09			4.05	.166	-.031	3/2+	3/2-
65	112	177	1402.0	1400.6	11.19	4.68	3.79	6.30			4.51	.162	-.034	3/2+	
65	113	178	1405.4	1404.8	11.36	3.40	4.06	5.81			3.90	.155	-.041	1/2-	11/2+
65	114	179	1409.9	1408.8	11.57	4.52	4.35	8.97			4.42	.146	-.044	1/2-	
65	115	180	1413.2	1412.7	11.78	3.29	4.64	10.44			3.52	.138	-.046	3/2-	7/2-
65	116	181	1417.3	1416.5	11.98	4.12	4.67	9.83			4.10	.136	-.045	1/2-	
65	117	182	1420.1	1420.2	12.20	2.77	4.59	11.41			3.12	.116	-.044	1/2-	5/2-
65	118	183	1423.6	1423.7	12.42	3.47	4.35	10.89	34.71	.561	3.04	.111	-.041	1/2-	
65	119	184	1427.7	1427.1	12.58	4.14	6.14	10.45			3.49	.090	-.034	1/2-	13/2+
65	120	185	1431.6	1430.4	12.74	3.92	7.04	10.40			4.00	-.093	-.010	3/2+	
65	121	186	1434.5	1433.5	12.95	2.89	6.16	12.01			3.66	-.077	-.010	3/2+	1/2-
65	122	187	1438.5	1436.5	13.15	4.01	6.65	11.25			4.65	-.054	-.014	3/2+	
65	123	188	1441.4	1439.4	13.37	2.82	7.04	12.73			4.65	-.045	-.016	1/2+	3/2-
65	124	189	1445.2	1442.2	13.73	3.81	7.28	11.98			5.80	-.025	-.016	1/2+	
65	125	190	1447.9	1444.8	13.77	2.69	7.60	13.18			5.85	C		11/2 P	1/2
65	126	191	1451.4	1447.4	13.99	3.49	7.86	12.80			6.97	C		11/2	
65	127	192	1451.7	1449.5	14.22	.35	5.78	16.16			5.06	C		11/2 G	5/2
65	128	193	1453.9	1451.5	14.44	2.15	4.89	14.59			5.06	C		11/2	
65	129	194	1454.0	1453.3	14.67	.17	5.17	16.78			3.21	C		11/2 G	5/2
65	130	195	1456.0	1455.1	14.89	2.00	5.46	15.18			3.28	C		11/2	
65	131	196	1456.4	1456.7	15.18	.35	6.13	17.01			2.25	-.053	.026	5/2-	11/2+
65	132	197	1458.3	1458.2	15.40	1.88	6.45	15.65			2.65	.060	.036	3/2+	
65	133	198	1458.2	1459.7	14.80	-.09	6.42	17.87			.97	.034	.042	5/2+	1/2-
65	134	199	1461.3	1461.0	15.62	3.05	7.98	15.60			3.37	.096	.055	7/2+	
65	135	200	1460.6	1462.2	16.02	-.64	6.96	18.58			1.53	.102	.055	7/2+	3/2-
65	136	201	1462.8	1463.3	16.23	2.23	8.97	17.37			2.55	.105	.060	7/2+	
65	137	202	1463.7	1464.3	16.43	.87	9.20	17.41			2.37	.112	.062	7/2+	3/2+
65	138	203	1465.5	1465.3	16.65	1.86	9.20	16.50			3.05	.116	.058	3/2+	
65	139	204	1466.2	1466.1	16.86	.64	9.35	16.00			2.73	.122	.056	3/2+	3/2+
65	140	205	1467.9	1466.8	17.09	1.67	9.57	17.17			3.50	.127	.057	3/2+	
65	141	206	1468.3	1467.4	17.29	.47	9.80	18.57			3.16	.130	.056	3/2+	5/2+
65	142	207	1469.6	1467.9	17.52	1.29	9.84	17.93			3.65	.136	.051	1/2+	
65	143	208	1469.7	1468.4	17.73	.11	9.86	16.30			3.18	.135	.045	3/2+	7/2-
65	144	209	1470.8	1468.7	17.97	1.05	10.06	18.57			3.62	.144	.044	3/2+	

Z	N	A	R.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
66	55	121	838.2	837.0	-5.44	17.41	-4.85-24.51	9.84	.702	2.20	.155	.CC5			1/2+
66	56	122	857.3	855.2	-5.14	19.11	-4.77-25.85	10.75	.695	3.37	.174	.CC7			
66	57	123	874.0	873.1	-4.85	16.66	-4.79-22.96	11.45	.686	2.31	.176	.C15			1/2-
66	58	124	892.4	890.6	-4.51	18.47	-4.71-24.53	12.59	.678	3.53	.187	.C15			
66	59	125	908.5	907.7	-4.20	16.06	-4.66-21.70	13.45	.672	2.72	.197	.C21			3/2-
66	60	126	926.3	924.4	-3.83	17.78	-4.62-23.11	14.61	.662	3.87	.201	.C20			
66	61	127	941.7	940.8	-3.48	15.42	-4.59-20.38	15.55	.655	3.07	.205	.C21			3/2+
66	62	128	958.7	956.8	-3.09	17.00	-4.62-21.62	16.57	.651	4.05	.205	.C15			
66	63	129	973.4	972.5	-2.73	14.73	-4.59-18.96	17.53	.643	3.20	.207	.C14			5/2-
66	64	130	989.7	987.8	-2.35	16.31	-4.49-20.17	18.55	.637	4.16	.206	.CC5			
66	65	131	1003.8	1002.8	-1.98	14.09	-4.39-17.56	19.44	.633	3.35	.208	.CC6			5/2+
66	66	132	1019.5	1017.5	-1.06	15.67	-4.27-18.77	20.46	.620	4.34	.206	-.CCC			
66	67	133	1032.5	1031.4	-.68	13.00	-4.07-15.74	21.30	.622	3.63	.207	-.CC6			1/2+
66	68	134	1047.1	1044.9	-.23	14.58	-3.88-16.36	22.32	.617	4.65	.204	-.C11			
66	69	135	1059.7	1058.2	.16	12.61	-3.52-14.04	23.32	.613	4.17	.205	-.C16			7/2-
66	70	136	1073.5	1071.1	.50	13.81	-3.51-14.88	24.10	.611	5.05	.203	-.C16			
66	71	137	1085.2	1083.8	.85	11.72	-3.63-12.46	24.71	.604	4.00	.196	-.C21			5/2+
66	72	138	1098.2	1096.2	1.15	13.01	-3.75-13.44	25.20	.599	4.41	.188	-.C16			
66	73	139	1109.3	1108.4	1.48	11.04	-3.85-11.22	25.53	.594	3.18	.176	-.C21			5/2-
66	74	140	1121.7	1120.2	1.79	12.42	-3.80-12.27	26.02	.591	3.63	.177	-.C21			
66	75	141	1132.1	1131.8	2.18	10.45	-3.76-10.01	26.32	.585	2.16	.153	-.C24			7/2+
66	76	142	1144.2	1143.1	2.45	12.03	-3.57-11.39	26.80	.578	2.62	.143	-.C21			
66	77	143	1154.5	1154.2	2.69	10.31	-3.17 -9.38	27.42	.574	1.33	-.C96	-.C28			3/2-
66	78	144	1166.5	1165.1	3.01	12.02	-2.65-11.04	28.34	.571	2.24	-.C86	-.C22			
66	79	145	1176.8	1175.6	3.33	10.36	-2.21 -9.15	29.45	.567	1.53	-.C61	-.C22			1/2-
66	80	146	1188.7	1186.0	3.72	11.83	-1.79-10.36	30.62	.563	2.66	C				
66	81	147	1198.9	1196.1	3.99	10.24	-1.30 -8.56	32.02	.560	2.86	.C74	-.C05			11/2-
66	82	148	1210.7	1206.0	4.32	11.83	-.77 -9.93			4.76	C				
66	83	149	1219.0	1215.6	4.59	8.26	-2.13 -5.97			3.41	-.C17	.CC4			7/2-
66	84	150	1228.4	1225.0	4.92	9.36	-4.00 -6.77			3.32	C				
66	85	151	1236.1	1234.2	5.17	7.78	-3.86 -4.88			1.99	.C25	.C11			3/2-
66	86	152	1245.2	1243.2	5.21	9.08	-3.55 -5.86			2.12	.C32	.C12			
66	87	153	1252.8	1252.0	5.65	7.59	-3.13 -4.08			1.38	.C63	.C26			1/2-
66	88	154	1261.9	1260.6	5.84	9.12	-2.71 -5.28			2.31	.C86	.C32			
66	89	155	1269.3	1268.5	6.01	7.38	-2.17 -3.25			1.95	.105	.C45			3/2-
66	90	156	1278.3	1277.1	6.26	9.04	-1.73 -4.64			2.58	.122	.C43			
66	91	157	1285.7	1285.0	6.46	7.35	-1.30 -2.71			2.85	.132	.C52			3/2+
66	92	158	1294.3	1292.8	6.71	8.57	-1.22 -3.63			3.75	.141	.C50			
66	93	159	1301.2	1300.3	6.97	6.92	-1.19 -1.68			3.26	.150	.C45			3/2-
66	94	160	1309.3	1307.7	7.25	8.08	-1.13 -2.56			3.87	.155	.C43			
66	95	161	1315.7	1314.9	7.41	6.45	-1.05 -.68			3.26	.161	.C43			5/2+
66	96	162	1323.5	1321.5	7.61	7.83	-.68 -1.67			4.00	.166	.C34			
66	97	163	1329.8	1328.7	8.09	6.22	-.43 .32			3.43	.172	.C30			5/2-
66	98	164	1337.3	1335.4	8.40	7.53	-.02 -.67			4.34	.175	.C21			
66	99	165	1343.2	1341.8	8.68	5.91	.33 1.29			3.83	.182	.C20			1/2-
66	100	166	1350.4	1348.1	8.97	7.21	.66 .30			4.75	.184	.C15			
66	101	167	1356.0	1354.3	9.26	5.62	.98 2.20			4.30	.187	.C12			7/2+

Z N A 9.E. BC SP SN SA CP P/R X S A2 A4 P N

66	102	168	1362.9	1360.2	9.56	6.84	1.19	1.27	5.15	1.86	.006	5/2-	
66	103	169	1368.3	1366.0	9.65	5.47	1.63	1.03	4.51	1.90	.003	5/2-	
66	104	170	1374.7	1371.6	10.16	6.35	1.72	2.38	5.55	1.96	-.002	5/2-	
66	105	171	1379.8	1377.1	10.53	5.10	1.96	3.95	5.25	1.86	-.006	5/2+	
66	106	172	1385.8	1382.4	10.82	6.03	2.28	3.30	5.56	1.85	-.012	5/2+	
66	107	173	1390.6	1387.6	11.12	4.76	2.55	4.83	5.63	1.84	-.016	7/2-	
66	108	174	1396.2	1392.6	11.35	5.55	2.65	4.30	6.16	1.80	-.021	7/2-	
66	109	175	1400.5	1397.6	11.68	4.25	2.72	5.84	5.63	1.76	-.027	1/2-	
66	110	176	1405.6	1402.5	11.93	5.16	2.81	5.20	6.00	1.73	-.029	1/2-	
66	111	177	1409.5	1407.2	12.15	3.86	2.93	6.74	5.32	1.65	-.033	7/2-	
66	112	178	1414.4	1411.6	12.44	4.92	3.16	5.93	5.74	1.62	-.035	7/2-	
66	113	179	1418.1	1416.2	12.71	3.66	3.47	7.40	5.15	1.55	-.042	11/2+	
66	114	180	1422.9	1420.5	12.95	4.76	3.77	6.51	5.65	1.47	-.044	11/2+	
66	115	181	1426.4	1424.7	13.17	3.52	4.05	7.95	5.05	1.36	-.047	7/2-	
66	116	182	1430.6	1428.7	13.40	4.36	4.09	7.30	5.25	1.25	-.044	7/2-	
66	117	183	1433.7	1432.6	13.58	2.95	3.96	8.41	4.24	1.17	-.043	9/2-	
66	118	184	1437.4	1436.4	13.81	3.70	3.73	8.25	4.17	1.12	-.040	9/2-	
66	119	185	1441.8	1440.0	14.03	4.36	3.54	7.84	4.56	0.90	-.034	13/2+	
66	120	186	1445.8	1443.5	14.12	4.00	6.30	8.35	4.84	0.70	-.026	13/2+	
66	121	187	1449.1	1446.9	14.52	3.29	5.61	5.27	4.77	0.74	-.010	1/2-	
66	122	188	1453.3	1450.2	14.77	4.27	6.12	8.51	5.78	0.52	-.014	1/2-	
66	123	189	1456.4	1453.3	15.00	3.05	6.49	5.93	5.82	0.43	-.016	7/2-	
66	124	190	1460.3	1456.3	15.09	3.64	6.58	5.31	6.65	0		7/2-	
66	125	191	1463.4	1459.2	15.51	3.11	7.09	10.47	7.04	0		9/2	
66	126	192	1467.1	1461.5	15.73	3.71	7.34	5.93	6.15	0		9/2	
66	127	193	1471.7	1464.2	15.95	5.56	5.26	13.26	6.25	0		9/2	
66	128	194	1470.0	1466.4	16.17	2.57	4.37	11.72	6.25	0		9/2	
66	129	195	1470.4	1468.5	16.39	3.39	4.64	13.92	6.25	0		9/2	
66	130	196	1472.6	1470.5	16.61	2.21	4.93	12.33	4.44	0		9/2	
66	131	197	1473.2	1472.4	16.74	0.52	5.50	14.24	3.25	-.045	.023	11/2+	
66	132	198	1475.3	1474.1	17.00	2.14	5.86	12.88	3.58	-.054	.026	11/2+	
66	133	199	1476.1	1475.8	17.87	0.78	4.55	14.45	3.42	0.81	.053	1/2-	
66	134	200	1478.4	1477.3	17.15	2.34	7.23	13.07	4.11	0.90	.053	1/2-	
66	135	201	1479.4	1478.7	18.42	1.02	7.73	14.58	3.75	0.97	.057	7/2-	
66	136	202	1480.3	1480.0	17.44	0.90	8.60	14.89	3.26	1.05	.058	7/2-	
66	137	203	1481.4	1481.3	17.68	1.05	8.50	14.94	3.03	1.10	.060	7/2+	
66	138	204	1483.4	1482.4	17.85	2.04	8.52	14.16	3.68	1.16	.056	7/2+	
66	139	205	1484.3	1483.4	18.06	0.84	8.69	15.55	3.35	1.15	.057	7/2+	
66	140	206	1486.1	1484.3	18.25	1.86	8.92	14.76	4.18	1.23	.056	7/2+	
66	141	207	1486.8	1485.2	18.44	0.66	9.14	16.18	3.64	1.26	.055	5/2+	
66	142	208	1488.3	1485.5	18.63	1.45	9.19	15.55	4.33	1.34	.050	5/2+	
66	143	209	1488.6	1486.5	18.83	0.31	9.24	16.96	3.80	1.37	.046	7/2-	
66	144	210	1489.8	1487.1	19.03	1.25	9.41	16.23	4.24	1.42	.042	7/2-	
66	145	211	1489.4	1487.7	19.24	0.03	9.55	17.65	3.60	1.46	.038	5/2+	
66	146	212	1491.1	1488.2	19.44	1.21	9.95	16.72	4.22	1.45	.033	5/2+	

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
67	56	123	850.2	848.6	-7.09	19.54	-4.65-25.13	9.34	.713	2.94	.182	-.001	7/2-		
67	57	124	867.1	866.8	-6.84	16.90	-4.80-22.12	9.79	.705	1.66	.181	.005	7/2-	1/2-	
67	58	125	886.0	884.7	-6.43	18.89	-4.74-23.79	10.87	.657	2.91	.191	.005	7/2-		
67	59	126	902.4	902.1	-6.11	16.37	-4.73-20.98	11.59	.650	2.03	.200	.011	7/2-	3/2-	
67	60	127	920.5	919.2	-5.74	18.15	-4.71-22.56	12.72	.662	3.15	.202	.010	7/2-		
67	61	128	936.3	935.9	-5.40	15.76	-4.70-19.81	13.58	.675	2.36	.206	.013	7/2-	3/2+	
67	62	129	953.7	952.3	-5.01	17.40	-4.71-21.13	14.70	.670	3.44	.206	.006	7/2-		
67	63	130	968.8	968.3	-4.65	15.09	-4.68-18.45	15.54	.660	2.61	.208	.008	7/2-	5/2-	
67	64	131	985.5	984.0	-4.26	16.70	-4.60-19.71	16.65	.654	3.68	.208	.002	7/2-		
67	65	132	999.9	999.4	-3.88	14.46	-4.51-17.09	17.53	.650	2.89	.210	-.000	7/2-	5/2+	
67	66	133	1016.0	1014.4	-3.52	16.03	-4.40-18.30	18.56	.643	3.97	.208	-.006	7/2-		
67	67	134	1029.9	1029.1	-2.57	13.96	-4.17-15.77	19.53	.637	3.34	.210	-.011	7/2-	1/2+	
67	68	135	1044.9	1043.0	-2.22	14.93	-3.99-16.38	20.58	.634	4.45	.208	-.015	7/2-		
67	69	136	1057.8	1056.6	-1.86	12.96	-3.65-13.53	21.62	.631	3.55	.208	-.015	7/2-	7/2-	
67	70	137	1072.0	1069.9	-1.53	14.14	-3.64-14.35	22.40	.625	4.85	.206	-.022	7/2-		
67	71	138	1084.0	1082.9	-1.21	12.04	-3.82-11.90	23.03	.619	3.83	.201	-.023	7/2-	5/2+	
67	72	139	1097.3	1095.6	-.96	13.26	-4.02-12.80	23.48	.615	4.21	.194	-.022	7/2-		
67	73	140	1103.6	1108.1	-.64	11.37	-4.03-10.60	23.93	.612	2.95	.184	-.022	7/2-	5/2-	
67	74	141	1121.3	1120.2	-.34	12.71	-4.03-11.62	24.32	.610	3.42	.181	-.022	7/2-		
67	75	142	1132.0	1132.1	-.14	10.65	-4.09	-9.25	24.52	.603	2.08	.174	-.024	7/2-	1/2-
67	76	143	1144.3	1143.8	.14	12.32	-3.88-10.58	24.99	.598	2.50	.164	-.021	7/2-		
67	77	144	1154.6	1155.2	.14	10.31	-3.64	-8.26	25.32	.595	.75	.125	-.021	7/2-	1/2+
67	78	145	1166.9	1166.3	.39	12.26	-3.14	-9.79	26.20	.592	1.40	-.092	-.023	3/2+	
67	79	146	1177.5	1177.2	.68	10.66	-2.54	-7.83	27.32	.588	1.07	-.085	-.022	3/2+	1/2-
67	80	147	1189.6	1187.9	.90	12.04	-2.19	-8.89	28.42	.581	1.68	C		11/2	
67	81	148	1200.1	1198.3	1.22	10.56	-1.68	-7.02	29.87	.577	1.88	.025	-.005	5/2+	11/2-
67	82	149	1212.2	1209.5	1.51	12.11	-1.00	-8.28	31.47	.573	3.76	C		11/2	
67	83	150	1220.8	1218.4	1.82	8.57	-2.41	-4.43	31.33	.571	2.42	-.018	.004	5/2-	7/2-
67	84	151	1230.5	1228.1	2.11	9.56	-4.24	-5.23	30.90	.568	2.32	C		11/2	
67	85	152	1238.6	1237.6	2.43	8.09	-4.13	-3.36	30.65	.564	1.03	.028	.012	5/2+	3/2-
67	86	153	1247.9	1246.9	2.73	9.38	-3.79	-4.38	30.37	.561	1.20	.038	.013	5/2+	
67	87	154	1255.9	1256.0	3.05	7.91	-3.40	-2.62			.42	.063	.027	5/2-	1/2-
67	88	155	1265.3	1264.8	3.35	9.42	-3.02	-3.92			1.33	.085	.031	3/2+	
67	89	156	1272.9	1273.5	3.62	7.65	-2.53	-2.08			.86	.105	.041	3/2+	3/2-
67	90	157	1282.2	1281.9	3.86	9.28	-2.17	-3.44			2.03	.127	.043	7/2+	
67	91	158	1289.3	1290.2	4.16	7.65	-1.73	-1.65			1.72	.133	.046	7/2+	3/2+
67	92	159	1296.7	1298.2	4.46	8.86	-1.65	-2.62			2.60	.142	.044	7/2+	
67	93	160	1305.9	1306.0	4.74	7.20	-1.61	-.71			2.10	.150	.044	7/2+	3/2-
67	94	161	1314.2	1313.7	4.98	8.33	-1.60	-1.59			2.75	.158	.036	7/2-	
67	95	162	1321.1	1321.2	5.38	6.84	-1.42	.12			2.23	.165	.035	7/2-	5/2+
67	96	163	1329.3	1328.4	5.76	8.21	-1.01	-1.00			3.17	.174	.025	7/2-	
67	97	164	1335.8	1335.5	6.08	6.54	-.76	.93			2.68	.175	.022	7/2-	5/2-
67	98	165	1343.7	1342.5	6.42	7.87	-.32	-.13			3.66	.182	.018	7/2-	
67	99	166	1349.9	1349.2	6.72	6.21	-.04	1.81			3.15	.185	.015	7/2-	1/2-
67	100	167	1357.4	1355.8	7.03	7.52	.26	.77			4.15	.187	.011	7/2-	
67	101	168	1363.4	1362.1	7.33	5.92	.54	2.66			3.75	.190	.008	7/2-	7/2+
67	102	169	1370.6	1368.4	7.71	7.22	.85	1.64			4.78	.191	.002	7/2-	

Z	N	A	R.E.	RC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
67	103	170	1376.3	1374.4	7.95	5.70	1.22	3.41			4.47	.192	-.0001	7/2-	5/2-
67	104	171	1383.0	1380.3	8.26	6.67	1.34	2.74			5.23	.190	-.0005	7/2-	
67	105	172	1388.3	1386.1	8.56	5.39	1.56	4.41			4.93	.190	-.0010	7/2-	5/2+
67	106	173	1394.7	1391.6	8.83	6.31	1.82	3.78			5.66	.188	-.0015	7/2-	
67	107	174	1399.7	1397.0	9.10	5.05	2.15	5.31			5.35	.187	-.0015	7/2-	7/2-
67	108	175	1405.5	1402.3	9.35	5.83	2.24	4.82			5.87	.183	-.0022	7/2-	
67	109	176	1410.1	1407.6	9.58	4.52	2.28	6.39			5.26	.178	-.0027	7/2-	1/2-
67	110	177	1415.5	1412.7	9.84	5.41	2.38	5.78			5.71	.176	-.0025	7/2-	
67	111	178	1419.6	1417.7	10.07	4.12	2.50	7.35			5.02	.172	-.0033	7/2-	3/2-
67	112	179	1424.7	1422.5	10.29	5.14	2.73	6.59			5.43	.167	-.0035	7/2-	
67	113	180	1428.6	1427.2	10.48	3.87	2.98	8.12			4.77	.160	-.0040	7/2-	11/2+
67	114	181	1433.6	1431.7	10.68	4.96	3.26	7.29			5.23	.152	-.0043	7/2-	
67	115	182	1437.3	1436.1	10.88	3.71	3.57	8.81			4.60	.142	-.0047	7/2-	7/2-
67	116	183	1441.8	1440.4	11.07	4.55	3.59	8.22			4.77	.134	-.0044	7/2-	
67	117	184	1444.9	1444.5	11.21	3.08	3.39	9.92			3.62	.122	-.0043	7/2-	5/2-
67	118	185	1448.8	1448.5	11.43	3.91	3.18	9.39			3.58	.119	-.0041	7/2-	
67	119	186	1453.3	1452.4	11.57	4.51	4.91	9.03			3.75	.093	-.0033	7/2-	13/2+
67	120	187	1457.5	1456.1	11.78	4.21	5.66	9.61			4.06	.073	-.0028	1/2-	
67	121	188	1461.0	1459.8	12.00	3.50	5.03	10.56			3.95	-.077	-.0010	1/2+	1/2-
67	122	189	1465.5	1463.2	12.20	4.47	5.58	9.81			4.90	-.053	-.0014	1/2+	
67	123	190	1468.8	1466.6	12.42	3.27	5.96	11.28			4.93	-.044	-.0016	5/2-	3/2-
67	124	191	1473.1	1469.8	12.79	4.27	6.22	10.53			6.04	-.027	-.0016	5/2-	
67	125	192	1476.2	1472.9	12.85	3.17	6.56	11.71			6.12	C		F11/2 P	1/2
67	126	193	1480.2	1475.5	13.08	3.93	6.69	11.33			7.23	C		F11/2	
67	127	194	1481.0	1478.5	13.31	.81	4.80	14.68			5.23	C		F11/2 G	5/2
67	128	195	1483.6	1480.9	13.53	2.59	3.91	12.12			5.23	C		F11/2	
67	129	196	1484.2	1483.2	13.76	.62	4.18	15.31			3.48	C		F11/2 G	5/2
67	130	197	1486.6	1485.4	13.98	2.43	4.46	13.72			3.56	C		F11/2	
67	131	198	1487.4	1487.5	14.23	.77	5.06	15.60			2.42	-.045	.0023	3/2+	11/2+
67	132	199	1489.7	1489.4	14.45	2.35	5.42	13.90			2.71	-.055	.0026	3/2+	
67	133	200	1490.7	1491.3	14.63	.96	5.99	15.76			2.35	.078	.0000	5/2-	1/2-
67	134	201	1493.2	1493.0	14.82	2.53	6.64	14.26			3.12	.085	.0051	3/2+	
67	135	202	1494.4	1494.7	15.01	1.22	7.95	15.75			2.74	.097	.0055	3/2+	3/2-
67	136	203	1495.5	1496.2	15.22	1.10	8.00	16.01			2.22	.104	.0055	3/2+	
67	137	204	1496.8	1497.7	15.41	1.25	7.89	16.03			1.98	.105	.0058	3/2+	3/2+
67	138	205	1499.1	1499.0	15.64	2.26	7.93	15.20			2.65	.116	.0054	3/2+	
67	139	206	1500.1	1500.2	15.84	1.05	8.11	16.60			2.38	.115	.0055	7/2+	3/2+
67	140	207	1502.2	1501.3	16.05	2.07	8.32	15.74			3.18	.123	.0055	7/2+	
67	141	208	1503.0	1502.4	16.26	.86	8.54	17.14			2.85	.128	.0053	7/2+	5/2+
67	142	209	1504.8	1503.3	16.48	1.71	8.58	16.47			3.34	.134	.0047	7/2+	
67	143	210	1505.3	1504.1	16.70	.52	8.64	17.85			2.83	.138	.0045	7/2+	7/2-
67	144	211	1506.8	1504.5	16.94	1.49	8.83	17.08			3.30	.144	.0038	7/2+	
67	145	212	1507.0	1505.7	17.15	.74	8.96	18.52			2.64	.141	.0036	7/2-	5/2+
67	146	213	1508.5	1506.4	17.42	1.49	9.41	17.48			3.41	.151	.0028	7/2-	
67	147	214	1508.7	1507.0	17.65	.23	9.81	18.93			3.00	.155	.0025	7/2-	1/2+

Z	N	A	B.E.	B0	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
68	58	126	880.6	878.3	-5.39	19.18	-4.99-26.04	9.17	.715	3.78	.186	-.004			
68	59	127	897.2	896.1	-5.19	16.58	-5.07-23.07	9.64	.707	2.71	.197	.003			3/2-
68	60	128	915.7	913.5	-4.84	18.50	-5.03-24.65	10.69	.701	3.89	.200	.002			
68	61	129	931.8	930.6	-4.52	16.08	-5.01-21.87	11.42	.694	3.02	.205	.007			3/2+
68	62	130	949.5	947.3	-4.14	17.77	-5.02-23.32	12.49	.686	4.18	.206	.001			
68	63	131	965.0	963.7	-3.80	15.43	-5.00-20.56	13.31	.679	3.34	.206	.002			5/2-
68	64	132	982.1	979.7	-3.41	17.08	-4.92-21.91	14.41	.674	4.52	.206	-.005			
68	65	133	998.9	995.4	-3.05	14.83	-4.83-19.20	15.25	.668	3.77	.211	-.007			5/2+
68	66	134	1013.4	1010.8	-2.60	16.49	-4.65-20.50	16.42	.659	4.98	.209	-.013			
68	67	135	1027.7	1025.8	-2.23	14.32	-4.42-17.96	17.42	.654	4.39	.210	-.016			1/2+
68	68	136	1043.5	1040.6	-1.35	15.80	-4.28-19.08	18.51	.650	5.54	.209	-.020			
68	69	137	1056.8	1054.5	-.99	13.32	-3.97-16.24	19.56	.644	5.05	.208	-.023			7/2-
68	70	138	1071.3	1068.1	-.65	14.48	-4.06-16.54	20.41	.638	5.98	.206	-.026			
68	71	139	1083.7	1081.4	-.32	12.37	-4.30-14.08	21.06	.635	4.99	.202	-.027			5/2+
68	72	140	1097.2	1094.5	-.01	13.57	-4.54-14.96	21.52	.622	5.35	.194	-.027			
68	73	141	1108.9	1107.3	.31	11.68	-4.57-12.78	21.97	.629	4.09	.184	-.027			5/2-
68	74	142	1121.9	1119.8	.61	13.02	-4.57-13.85	22.38	.623	4.52	.179	-.027			
68	75	143	1132.9	1132.0	.96	10.99	-4.61-11.52	22.64	.618	3.00	.160	-.031			1/2-
68	76	144	1145.6	1143.9	1.27	12.63	-4.40-12.88	23.14	.615	3.52	.156	-.027			
68	77	145	1156.3	1155.7	1.68	10.72	-4.13-10.69	23.60	.612	1.71	-.098	-.028			3/2-
68	78	146	1168.9	1167.1	2.05	12.63	-3.53-12.50	24.57	.610	2.61	-.088	-.023			
68	79	147	1179.9	1178.3	2.37	10.98	-2.86-10.68	25.72	.605	2.30	-.081	-.022			1/2-
68	80	148	1192.3	1189.3	2.76	12.43	-2.45-11.82	26.94	.600	2.06	C				
68	81	149	1203.2	1200.0	3.05	10.85	-1.96-10.01	28.39	.596	2.24	.024	-.005			11/2-
68	82	150	1215.6	1210.5	3.35	12.42	-1.37-11.30	30.04	.594	5.13	C				
68	83	151	1224.5	1220.7	3.65	8.86	-2.75 -7.42	29.92	.591	3.77	-.017	.004			7/2-
68	84	152	1234.4	1230.7	3.95	9.96	-4.61 -6.21	29.52	.588	3.68	C				
68	85	153	1242.8	1240.5	4.22	8.36	-4.50 -6.32	29.31	.582	2.33	.026	.008			3/2-
68	86	154	1252.5	1250.1	4.51	9.67	-4.20 -7.35	29.02	.578	2.42	.023	.008			
68	87	155	1260.6	1259.5	4.71	8.11	-3.86 -5.51	28.95	.575	1.50	.055	.022			1/2-
68	88	156	1270.1	1268.6	4.78	9.48	-3.45 -6.71	28.87	.572	2.13	.077	.027			
68	89	157	1278.0	1277.5	5.06	7.93	-3.12 -4.84	28.98	.571	1.70	.102	.038			3/2-
68	90	158	1287.4	1286.3	5.23	9.45	-2.79 -5.97	29.24	.568	2.61	.114	.039			
68	91	159	1295.3	1294.8	5.46	7.89	-2.28 -4.13	29.68	.565	2.45	.128	.047			3/2+
68	92	160	1304.4	1303.1	5.71	9.11	-2.21 -5.16	29.96	.562	3.29	.138	.044			
68	93	161	1311.9	1311.2	5.96	7.44	-2.12 -3.22	30.40	.561	2.77	.146	.044			3/2-
68	94	162	1320.4	1319.2	6.18	8.55	-2.14 -4.06			3.34	.152	.038			
68	95	163	1327.5	1326.9	6.43	7.10	-1.96 -2.33			2.82	.162	.039			5/2+
68	96	164	1336.0	1334.5	6.65	8.47	-1.57 -3.43			3.74	.171	.025			
68	97	165	1342.8	1341.8	6.90	6.81	-1.21 -1.42			3.25	.176	.021			5/2-
68	98	166	1351.0	1349.0	7.24	8.15	-.88 -2.47			4.24	.180	.015			
68	99	167	1357.4	1356.0	7.51	6.49	-.62 -.47			3.80	.183	.013			1/2-
68	100	168	1365.2	1362.8	7.80	7.81	-.35 -1.49			4.82	.186	.007			
68	101	169	1371.4	1369.5	8.08	6.20	-.06 .45			4.46	.190	.005			7/2+
68	102	170	1378.9	1376.0	8.33	7.47	.21 -.47			5.45	.190	-.001			
68	103	171	1384.9	1382.3	8.63	6.00	.59 1.38			5.22	.192	-.005			5/2-
68	104	172	1392.0	1388.5	9.01	7.05	.80 .61			6.10	.190	-.009			

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
68	105	173	1397.6	1394.5	9.30	5.68	1.01	2.30			5.83	.190	-.013		5/2+
68	106	174	1404.2	1400.3	9.58	6.59	1.25	1.68			6.60	.187	-.016		
68	107	175	1409.6	1406.0	9.87	5.34	1.49	3.19			6.32	.186	-.022		7/2-
68	108	176	1415.7	1411.5	10.13	6.10	1.55	2.69			6.84	.182	-.025		
68	109	177	1420.5	1417.0	10.42	4.80	1.58	4.25			6.28	.177	-.025		1/2-
68	110	178	1426.2	1422.4	10.68	5.68	1.67	3.64			6.76	.177	-.032		
68	111	179	1430.5	1427.6	10.95	4.39	1.77	5.17			6.12	.173	-.036		3/2-
68	112	180	1435.9	1432.7	11.20	5.40	2.00	4.44			6.53	.167	-.038		
68	113	181	1440.1	1437.6	11.46	4.13	2.25	5.94			5.87	.160	-.042		11/2+
68	114	182	1445.3	1442.4	11.74	5.23	2.56	5.07			6.35	.151	-.045		
68	115	183	1449.3	1447.0	11.99	3.96	2.85	6.45			5.71	.141	-.047		7/2-
68	116	184	1454.0	1451.6	12.22	4.78	2.86	5.91			5.89	.136	-.043		
68	117	185	1457.4	1455.9	12.52	3.38	2.73	7.51			4.74	.120	-.043		5/2-
68	118	186	1461.6	1460.2	12.76	4.15	2.53	6.92			4.66	.116	-.041		
68	119	187	1466.4	1464.3	13.04	4.79	4.38	6.50			4.91	.090	-.032		13/2+
68	120	188	1470.8	1468.2	13.28	4.45	5.13	7.00			5.21	.071	-.026		
68	121	189	1474.5	1472.1	13.50	3.73	4.49	7.90			5.09	-.073	-.011		1/2-
68	122	190	1479.3	1475.8	13.77	4.74	5.23	7.10			6.12	-.052	-.015		
68	123	191	1482.8	1479.4	14.02	3.52	5.46	8.55			6.16	-.042	-.016		3/2-
68	124	192	1487.1	1482.8	14.09	4.35	5.54	7.94			6.95	C			
68	125	193	1490.7	1486.2	14.48	3.56	6.04	8.94			7.38	C		P 1/2	
68	126	194	1494.9	1489.4	14.71	4.15	6.31	8.57			6.48	C			
68	127	195	1495.9	1492.1	14.93	1.03	4.23	11.92			6.58	C		G 5/2	
68	128	196	1498.7	1494.8	15.15	2.81	3.33	10.37			6.58	C			
68	129	197	1499.5	1497.3	15.37	.64	3.60	12.56			4.73	C		G 5/2	
68	130	198	1502.2	1499.7	15.59	2.65	3.88	10.98			4.81	C			
68	131	199	1502.9	1502.0	15.47	.66	4.14	13.19			3.00	C		G 5/2	
68	132	200	1505.7	1504.2	15.93	2.81	4.74	11.26			3.81	-.051	.023		
68	133	201	1506.7	1506.3	16.01	1.03	5.26	13.26			3.11	.069	.042		1/2-
68	134	202	1509.4	1508.2	16.18	2.71	5.83	11.75			4.37	.092	.057		
68	135	203	1510.8	1510.1	16.33	1.36	6.41	13.25			3.57	.092	.054		3/2-
68	136	204	1512.0	1511.9	16.50	1.28	5.35	13.56			3.01	.100	.054		
68	137	205	1513.5	1513.5	16.68	1.43	5.76	14.94			2.75	.106	.056		3/2+
68	138	206	1515.9	1515.0	16.87	2.45	7.30	12.78			3.43	.112	.053		
68	139	207	1517.1	1516.5	17.03	1.21	7.46	14.23			3.11	.116	.054		5/2-
68	140	208	1519.4	1517.8	17.22	2.26	7.68	13.37			3.91	.119	.055		
68	141	209	1520.4	1519.0	17.40	1.05	7.89	14.76			3.56	.125	.053		5/2+
68	142	210	1522.3	1520.2	17.59	1.90	7.92	14.10			4.04	.131	.047		
68	143	211	1523.1	1521.2	17.78	.71	7.98	15.51			3.51	.135	.045		7/2-
68	144	212	1524.7	1522.1	17.98	1.68	8.18	14.75	23.35	.560	3.97	.140	.038		
68	145	213	1525.2	1523.2	18.19	.46	8.32	16.20	23.51	.562	3.35	.145	.032		5/2+
68	146	214	1526.9	1524.1	18.38	1.68	8.75	15.23	23.15	.565	4.07	.149	.026		
68	147	215	1527.3	1524.5	18.56	.41	9.14	16.70	22.94	.569	3.61	.151	.022		7/2+
68	148	216	1528.8	1525.6	18.73	1.51	9.44	15.83	22.59	.571	4.40	.152	.022		
68	149	217	1529.1	1526.3	18.91	.27	9.70	17.31	22.40	.573	4.03	.156	.018		7/2+

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
69	60	129	909.1	907.4	-6.57	18.86	-5.18-24.38	9.36	.718	3.48	.202	-.010	1/2+		
69	61	130	925.4	924.8	-6.33	16.32	-5.23-21.50	9.89	.710	2.46	.206	-.006	1/2+	1/2-	
69	62	131	943.6	941.9	-5.91	18.19	-5.19-23.05	10.97	.704	3.74	.208	-.010	1/2+		
69	63	132	959.4	958.6	-5.61	15.73	-5.22-20.25	11.63	.698	2.84	.210	-.009	1/2+	5/2-	
69	64	133	976.9	974.9	-5.16	17.53	-5.08-21.73	12.77	.692	4.15	.211	-.014	1/2+		
69	65	134	992.1	991.0	-4.80	15.19	-4.98-19.04	13.58	.684	3.44	.213	-.015	1/2+	5/2+	
69	66	135	1009.0	1006.7	-4.42	16.86	-4.82-20.38	14.74	.678	4.69	.211	-.019	1/2+		
69	67	136	1023.6	1022.1	-4.06	14.69	-4.59-17.86	15.72	.673	4.12	.213	-.021	1/2+	1/2+	
69	68	137	1039.8	1037.1	-3.70	16.16	-4.47-18.99	16.77	.668	5.29	.210	-.025	1/2+		
69	69	138	1054.0	1051.9	-2.84	14.18	-4.24-16.66	17.86	.660	4.82	.210	-.027	1/2+	7/2-	
69	70	139	1068.8	1065.8	-2.50	14.82	-4.34-16.97	18.72	.655	5.80	.209	-.030	1/2+		
69	71	140	1081.5	1079.5	-2.17	12.69	-4.61-13.99	19.38	.651	4.86	.206	-.031	1/2+	5/2+	
69	72	141	1095.4	1092.9	-1.88	13.86	-4.89-14.82	19.79	.646	5.23	.200	-.031	1/2+		
69	73	142	1107.3	1105.9	-1.62	11.95	-4.98-12.58	20.22	.640	3.94	.190	-.031	1/2+	1/2-	
69	74	143	1120.6	1118.8	-1.31	13.33	-4.91-13.58	20.64	.637	4.39	.187	-.030	1/2+		
69	75	144	1131.9	1131.3	-1.03	11.27	-5.01-11.20	20.88	.634	2.98	.177	-.032	1/2+	1/2-	
69	76	145	1144.8	1143.6	-.75	12.91	-4.81-12.42	21.37	.631	3.43	.167	-.032	1/2+		
69	77	146	1155.6	1155.6	-.65	10.82	-4.64-10.03	21.62	.628	1.56	.137	-.027	1/2+	1/2+	
69	78	147	1168.4	1167.4	-.48	12.80	-4.15-11.41	22.47	.622	1.91	-.090	-.023	1/2+		
69	79	148	1179.7	1178.9	-.18	11.28	-3.18 -9.44	23.64	.618	1.58	-.083	-.023	1/2+	1/2-	
69	80	149	1192.4	1190.1	.06	12.66	-2.78-10.50	24.81	.615	2.24	0		1/2+		
69	81	150	1203.5	1201.2	.34	11.13	-2.31 -8.52	26.27	.613	2.40	.024	-.009	5/2-	11/2-	
69	82	151	1216.3	1211.9	.66	12.74	-1.61 -9.82	27.96	.611	4.31	0		1/2+		
69	83	152	1225.4	1222.5	.97	9.17	-3.00 -5.97	27.86	.608	2.96	-.016	-.003	7/2-	7/2-	
69	84	153	1235.7	1232.8	1.26	10.26	-4.86 -6.77	27.49	.604	2.87	0		1/2+		
69	85	154	1244.3	1242.9	1.54	8.64	-4.78 -4.85	27.28	.600	1.50	.027	.006	5/2-	3/2-	
69	86	155	1254.3	1252.8	1.82	9.95	-4.49 -5.86	27.01	.597	1.59	.034	.001	5/2-		
69	87	156	1262.6	1262.4	1.99	8.28	-4.30 -3.91	26.84	.594	.50	.057	.018	7/2-	5/2-	
69	88	157	1272.4	1271.8	2.31	9.80	-3.88 -5.25	26.81	.592	1.10	.075	.022	7/2-		
69	89	158	1280.7	1281.1	2.70	8.32	-3.47 -3.53	27.05	.591	.76	.101	.035	5/2+	3/2-	
69	90	159	1290.4	1290.1	2.97	9.72	-3.16 -4.81	27.33	.586	1.61	.112	.035	5/2+		
69	91	160	1298.5	1298.9	3.17	8.09	-2.73 -3.00	27.70	.582	1.35	.127	.044	7/2-	3/2+	
69	92	161	1307.9	1307.5	3.45	9.39	-2.62 -4.15	28.01	.578	2.18	.136	.040	7/2-		
69	93	162	1315.6	1315.9	3.70	7.70	-2.57 -2.18	28.35	.576	1.65	.144	.040	7/2-	3/2-	
69	94	163	1324.4	1324.1	3.98	8.82	-2.61 -3.06	28.46	.574	2.17	.150	.033	1/2+		
69	95	164	1331.8	1332.1	4.26	7.37	-2.44 -1.33	28.81	.572	1.73	.163	.029	1/2+	5/2+	
69	96	165	1340.6	1339.9	4.61	8.82	-1.94 -2.56	29.26	.571	2.79	.174	.017	1/2+		
69	97	166	1347.7	1347.6	4.89	7.10	-1.69 -.62	29.67	.569	2.34	.178	.016	1/2+	5/2-	
69	98	167	1356.2	1355.0	5.23	8.49	-1.41 -1.77	30.12	.567	3.46	.183	.006	1/2+		
69	99	168	1363.0	1362.3	5.53	6.79	-1.17 .17	30.55	.565	3.06	.187	.006	1/2+	1/2-	
69	100	169	1371.2	1369.4	5.91	8.18	-.86 -.98	31.02	.563	4.25	.190	-.001	1/2+		
69	101	170	1377.7	1376.3	6.22	6.51	-.56 .89	31.48	.562	3.94	.194	-.003	1/2+	11/2-	
69	102	171	1385.5	1383.1	6.60	7.85	-.23 -.22	31.94	.561	5.06	.193	-.007	1/2+		
69	103	172	1391.8	1389.7	6.88	6.28	.13 1.59			4.81	.194	-.010	1/2+	5/2-	
69	104	173	1399.2	1396.1	7.20	7.37	.28 .78			5.77	.192	-.014	1/2+		
69	105	174	1405.1	1402.3	7.49	5.97	.55 2.43			5.53	.192	-.017	1/2+	5/2+	
69	106	175	1412.0	1408.4	7.74	6.84	.72 1.82			6.31	.190	-.021	1/2+		

L	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	A
69	107	176	1417.6	1414.3	8.01	5.60	.94	3.37			5.99	.18E	-.C23	1/2+	7/2-
69	108	177	1423.9	1420.1	8.27	6.37	1.00	2.88			6.56	.184	-.C27	1/2+	
69	109	178	1429.0	1425.9	8.54	5.07	1.01	4.47			6.01	.179	-.C31	1/2+	1/2-
69	110	179	1434.9	1431.5	8.78	5.92	1.10	3.91			6.40	.174	-.C34	1/2+	
69	111	180	1439.6	1437.0	9.05	4.66	1.24	5.45			5.93	.177	-.C3E	1/2+	3/2-
69	112	181	1445.2	1442.3	9.29	5.63	1.45	4.74			6.35	.172	-.C4C	1/2+	
69	113	182	1449.6	1447.5	9.52	4.36	1.70	6.28			5.65	.166	-.C44	1/2+	11/2+
69	114	183	1454.9	1452.5	9.63	5.35	1.90	5.59			5.94	.155	-.C45	1/2+	
69	115	184	1459.2	1457.4	9.90	4.24	2.27	7.01			5.35	.145	-.C4E	1/2+	7/2-
69	116	185	1464.2	1462.2	10.12	4.99	2.30	6.58			5.52	.140	-.C45	1/2+	
69	117	186	1467.7	1466.8	10.29	3.56	2.14	8.26			4.26	.123	-.C44	7/2+	9/2-
69	118	187	1472.1	1471.2	10.51	4.38	1.97	7.75			4.23	.121	-.C42	7/2+	
69	119	188	1477.0	1475.6	10.66	4.94	3.63	7.44			4.42	.097	-.C35	7/2+	13/2+
69	120	189	1481.7	1479.8	10.84	4.62	4.54	8.11			4.57	.076	-.C27	7/2+	
69	121	190	1485.6	1483.8	11.05	3.94	3.97	9.10			4.35	-.C75	-.C12	7/2-	1/2-
69	122	191	1490.6	1487.8	11.28	4.97	4.73	8.30			5.35	-.C52	-.C15	7/2-	
69	123	192	1494.3	1491.6	11.50	3.74	4.96	9.65			5.43	-.C43	-.C17	7/2-	3/2-
69	124	193	1498.9	1495.3	11.72	4.56	5.05	9.22			6.24	C		7/11/2	
69	125	194	1502.7	1498.9	11.94	3.79	5.57	10.26			6.63	C		7/11/2 P	1/2
69	126	195	1507.0	1502.3	12.17	4.38	5.68	9.90			7.73	C		7/11/2	
69	127	196	1508.3	1505.3	12.40	1.26	3.77	13.24			5.84	C		7/11/2 G	5/2
69	128	197	1511.3	1508.2	12.62	3.03	2.87	11.69			5.84	C		7/11/2	
69	129	198	1512.4	1510.9	12.84	1.07	3.13	13.87			3.95	C		7/11/2 G	5/2
69	130	199	1515.3	1513.5	13.07	2.87	3.41	12.25			4.07	C		7/11/2	
69	131	200	1516.1	1516.0	13.25	.88	3.67	14.50			2.26	C		7/11/2 G	5/2
69	132	201	1519.2	1518.4	13.51	3.04	4.28	12.56			3.07	-.C50	.C23	1/2-	
69	133	202	1520.4	1520.7	13.67	1.15	4.70	14.29			2.23	.C66	.C35	5/2+	1/2-
69	134	203	1523.2	1522.9	13.83	2.86	5.21	12.95			3.23	.C85	.C50	5/2+	
69	135	204	1524.8	1525.0	14.06	1.59	5.84	14.38			2.66	.C91	.C52	5/2+	3/2-
69	136	205	1527.6	1526.9	15.59	2.81	6.12	13.28			3.42	.C95	.C51	5/2+	
69	137	206	1527.9	1528.8	14.45	.29	5.19	15.97	25.06	.561	1.81	.104	.C54	5/2+	3/2+
69	138	207	1530.6	1530.5	14.66	2.66	6.75	13.78	24.76	.562	2.49	.110	.C50	5/2+	
69	139	208	1532.0	1532.2	14.85	1.41	6.90	15.22	24.65	.563	2.15	.114	.C51	5/2+	5/2-
69	140	209	1534.4	1533.7	15.03	2.43	7.07	14.38	24.32	.565	2.55	.118	.C52	7/2-	
69	141	210	1535.7	1535.2	15.22	1.24	7.26	15.75	24.23	.568	2.60	.124	.C51	7/2-	5/2+
69	142	211	1537.8	1536.5	15.44	2.12	7.32	15.06	23.77	.571	3.08	.130	.C45	7/2-	
69	143	212	1538.7	1537.7	15.65	.92	7.37	16.44	23.54	.572	2.56	.135	.C42	7/2-	7/2-
69	144	213	1540.6	1538.9	15.88	1.91	7.57	15.64	23.05	.573	3.04	.135	.C35	7/2-	
69	145	214	1541.3	1540.1	16.12	.70	7.75	17.04	22.78	.575	2.45	.142	.C30	7/2+	5/2+
69	146	215	1543.2	1541.2	16.33	1.89	8.15	16.04	22.44	.577	3.18	.147	.C21	7/2+	
69	147	216	1543.9	1542.2	16.56	.64	8.35	17.48	22.29	.580	2.75	.150	.C1E	7/2+	7/2+
69	148	217	1545.6	1543.2	16.80	1.75	8.81	16.55	21.95	.584	3.62	.154	.C12	7/2+	
69	149	218	1546.1	1544.0	17.02	.49	9.07	17.99	21.84	.590	3.28	.158	.C10	7/2+	5/2-
69	150	219	1547.7	1544.7	17.24	1.56	9.29	17.10	21.53	.591	4.11	.155	.C0E	7/2+	
69	151	220	1548.0	1545.4	17.36	.30	9.50	18.54	21.35	.593	3.76	.162	.C05	1/2+	5/2-

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
7C	62	132	938.3	936.0	-5.30	18.53	-5.66-25.14	9.03	.721	4.21	.205	-.013			
7C	63	133	954.4	953.0	-4.97	16.06	-5.67-22.29	9.60	.714	3.31	.206	-.011			5/2-
7C	64	134	972.3	969.7	-4.63	17.88	-5.57-23.80	10.68	.706	4.63	.206	-.016			
7C	65	135	987.8	986.1	-4.30	15.52	-5.48-21.05	11.42	.702	3.92	.211	-.016			5/2+
7C	66	136	1005.0	1002.1	-3.95	17.21	-5.35-22.40	12.51	.696	5.20	.206	-.022			
7C	67	137	1020.0	1017.8	-3.61	15.03	-5.15-19.84	13.43	.690	4.64	.209	-.025			1/2+
7C	68	138	1036.5	1033.2	-3.26	16.51	-5.13-20.97	14.47	.684	5.85	.207	-.025			
7C	69	139	1051.1	1048.3	-2.93	14.52	-4.94-18.62	15.53	.678	5.41	.207	-.031			7/2-
7C	70	140	1066.7	1063.1	-2.08	15.67	-5.07-19.43	16.38	.674	6.42	.206	-.034			
7C	71	141	1079.8	1077.1	-1.74	13.03	-5.36-16.42	16.98	.670	5.47	.202	-.035			5/2+
7C	72	142	1093.9	1090.7	-1.41	14.19	-5.65-16.76	17.43	.661	5.83	.194	-.035			
7C	73	143	1106.3	1104.2	-1.03	12.33	-5.69-14.57	17.92	.656	4.55	.182	-.035			5/2-
7C	74	144	1119.9	1117.3	-.71	13.65	-5.61-15.58	18.36	.653	4.95	.174	-.035			
7C	75	145	1131.6	1130.1	-.29	11.69	-5.61-13.30	18.69	.650	3.53	.155	-.036			7/2+
7C	76	146	1144.8	1142.7	.01	13.21	-5.41-14.51	19.15	.644	3.95	.153	-.033			
7C	77	147	1156.2	1155.1	.61	11.42	-4.99-12.43	19.76	.635	2.17	-.096	-.028			3/2-
7C	78	148	1169.5	1167.1	1.06	13.25	-4.36-14.05	20.78	.626	3.10	-.085	-.022			
7C	79	149	1181.1	1178.6	1.38	11.60	-3.46-12.18	21.99	.633	2.81	-.075	-.022			1/2-
7C	80	150	1194.2	1190.5	1.83	13.11	-3.00-13.37	23.33	.621	3.65	C				
7C	81	151	1205.7	1201.8	2.14	11.44	-2.54-11.47	24.31	.625	3.86	.023	-.005			11/2-
7C	82	152	1218.7	1212.9	2.42	13.02	-1.95-12.74	26.50	.624	5.75	C				
7C	83	153	1228.1	1223.8	2.71	9.46	-3.34	-8.89	26.43	.620	4.35	-.016	-.004		7/2-
7C	84	154	1238.7	1234.4	3.01	10.56	-5.20	-9.67	26.09	.617	4.31	C			
7C	85	155	1247.6	1244.8	3.31	8.94	-5.12	-7.77	25.91	.615	2.90	.021	.003		3/2-
7C	86	156	1257.9	1254.9	3.59	10.23	-4.85	-6.78	25.07	.613	2.94	C			
7C	87	157	1266.3	1264.9	3.77	8.46	-4.75	-6.71	25.40	.611	1.54	.030	.001		5/2-
7C	88	158	1276.4	1274.6	4.01	10.04	-4.38	-8.00	25.36	.610	2.12	.055	.015		
7C	89	159	1284.8	1284.1	4.13	8.44	-4.05	-6.08	25.45	.605	1.58	.086	.031		3/2-
7C	90	160	1294.7	1293.4	4.31	9.90	-3.64	-7.41	25.66	.602	2.43	.103	.033		
7C	91	161	1302.9	1302.5	4.45	8.23	-3.34	-5.36	25.91	.595	2.03	.115	.042		3/2+
7C	92	162	1312.6	1311.3	4.74	9.67	-3.11	-6.62	26.26	.597	2.95	.131	.040		
7C	93	163	1320.6	1320.0	4.98	7.95	-3.06	-4.62	26.59	.595	2.38	.140	.041		3/2-
7C	94	164	1329.7	1328.5	5.26	9.10	-3.06	-5.58	26.73	.593	2.85	.140	.034		
7C	95	165	1337.3	1336.8	5.48	7.59	-2.91	-3.78	27.06	.591	2.36	.155	.031		5/2+
7C	96	166	1346.3	1344.9	5.69	9.03	-2.43	-4.94	27.47	.590	3.34	.166	.020		
7C	97	167	1353.6	1352.8	5.93	7.34	-2.19	-2.95	27.88	.586	2.87	.172	.018		5/2-
7C	98	168	1362.4	1360.5	6.17	8.73	-1.93	-4.08	28.33	.583	3.92	.176	.010		
7C	99	169	1369.4	1368.1	6.42	7.03	-1.71	-2.07	28.76	.580	3.52	.181	.007		1/2-
7C	100	170	1377.8	1375.5	6.62	8.38	-1.47	-3.16	29.20	.578	4.62	.184	.001		
7C	101	171	1384.5	1382.6	6.85	6.74	-1.22	-1.28	29.65	.576	4.31	.186	-.003		11/2-
7C	102	172	1392.6	1389.7	7.09	8.09	-.93	-2.26	30.12	.575	5.43	.185	-.006		
7C	103	173	1399.2	1396.5	7.37	6.56	-.57	-.43	30.65	.574	5.23	.191	-.010		5/2-
7C	104	174	1406.6	1403.2	7.62	7.62	-.42	-1.23	31.00	.573	6.15	.186	-.015		
7C	105	175	1413.0	1409.7	7.88	6.23	-.20	.48	31.54	.572	5.97	.185	-.016		5/2+
7C	106	176	1420.2	1416.0	8.18	7.15	-.10	-.16	31.67	.571	6.77	.186	-.022		
7C	107	177	1426.0	1422.2	8.46	5.86	.10	1.40	32.16	.570	6.52	.184	-.025		7/2-
7C	108	178	1432.7	1428.2	8.75	6.66	.17	.91	32.10	.569	7.14	.175	-.030		

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
7C	109	179	1438.1	1434.2	9.05	5.36	.19	2.51	32.34	.568	6.64	.175	-.034		1/2-
7C	110	180	1444.3	1440.1	9.33	6.21	.30	1.95	32.11	.567	7.28	.176	-.037		
7C	111	181	1449.2	1445.8	9.59	4.92	.41	3.54	32.18	.566	6.67	.174	-.040		3/2-
7C	112	182	1455.1	1451.4	9.86	5.90	.63	2.82	31.93	.565	7.10	.169	-.042		
7C	113	183	1459.7	1456.8	10.15	4.65	.90	4.32	32.00	.564	6.49	.162	-.046		11/2+
7C	114	184	1465.4	1462.1	10.46	5.66	1.16	3.57	31.76	.564	6.60	.141	-.047		
7C	115	185	1470.0	1467.2	10.79	4.56	1.59	4.77	32.01	.563	6.30	.142	-.050		7/2-
7C	116	186	1475.2	1472.2	11.03	5.23	1.59	4.44	31.61	.563	6.43	.136	-.045		
7C	117	187	1479.1	1477.1	11.35	3.88	1.50	6.00	31.42	.563	5.25	.115	-.044		5/2-
7C	118	188	1483.7	1481.8	11.60	4.62	1.35	5.47	30.67	.563	5.18	.115	-.042		
7C	119	189	1489.0	1486.4	11.95	5.30	3.27	5.02	32.15	.563	5.32	.085	-.030		13/2+
7C	120	190	1493.9	1490.8	12.26	4.93	4.04	5.57	31.96	.563	5.70	.068	-.025		
7C	121	191	1498.1	1495.1	12.43	4.17	3.42	6.52	32.54	.563	5.57	-.070	-.011		1/2-
7C	122	192	1503.2	1499.3	12.61	5.09	4.06	5.82	32.75	.563	6.47	-.048	-.013		
7C	123	193	1507.3	1503.3	13.00	4.13	4.47	7.01	33.52	.563	6.65	-.035	-.016		3/2-
7C	124	194	1512.1	1507.2	13.27	4.63	4.55	6.54	33.71	.563	7.57	C			
7C	125	195	1516.1	1511.0	13.49	4.01	5.05	7.55	34.55	.563	7.96	C		P 1/2	
7C	126	196	1520.7	1514.7	13.71	4.60	5.30	7.19	34.76	.564	9.06	C			
7C	127	197	1522.2	1517.5	13.94	1.48	3.22	10.53	33.35	.564	7.16	C		G 5/2	
7C	128	198	1525.5	1521.0	14.16	3.25	2.32	8.95	32.41	.565	7.16	C			
7C	129	199	1526.8	1524.0	14.38	1.29	2.58	11.18	31.01	.566	5.32	C		G 5/2	
7C	130	200	1529.9	1526.8	14.60	3.09	2.86	9.60	30.12	.567	5.35	C			
7C	131	201	1531.0	1529.5	14.82	1.10	3.12	11.81	28.74	.568	3.55	C		G 5/2	
7C	132	202	1533.9	1532.2	14.70	2.92	3.39	10.21	27.90	.569	3.72	C			
7C	133	203	1535.4	1534.7	15.07	1.56	4.29	11.79	27.18	.570	3.21	.055	.034		1/2-
7C	134	204	1538.4	1537.1	15.19	2.96	4.46	10.55	26.51	.571	3.90	.072	.041		
7C	135	205	1540.1	1539.3	15.31	1.71	5.14	12.04	26.24	.572	3.56	.086	.051		3/2-
7C	136	206	1543.1	1541.5	15.48	2.98	5.41	10.85	25.38	.573	4.26	.094	.050		
7C	137	207	1543.6	1543.6	15.66	.47	4.52	13.63	24.46	.574	2.64	.101	.052		3/2+
7C	138	208	1546.4	1545.5	15.85	2.85	6.09	12.50	24.16	.575	3.29	.106	.045		
7C	139	209	1548.0	1547.4	16.03	1.59	6.25	12.88	24.05	.576	2.54	.111	.050		5/2-
7C	140	210	1550.6	1549.1	16.21	2.61	6.41	12.05	23.71	.578	2.58	.117	.047		
7C	141	211	1552.1	1550.8	16.40	1.43	6.63	13.43	23.62	.580	3.35	.121	.052		5/2+
7C	142	212	1554.4	1552.3	16.58	2.31	6.68	12.70	23.16	.583	2.84	.127	.045		
7C	143	213	1555.5	1553.8	16.77	1.11	6.74	14.14	22.94	.586	3.30	.132	.042		7/2-
7C	144	214	1557.6	1555.1	16.96	2.10	6.93	13.33	22.46	.590	3.76	.136	.035		
7C	145	215	1558.5	1556.5	17.14	.89	7.11	14.70	22.15	.591	3.18	.135	.030		5/2+
7C	146	216	1560.6	1557.8	17.34	2.09	7.52	13.75	21.88	.593	3.68	.143	.023		
7C	147	217	1561.4	1559.0	17.52	.62	7.38	15.28	21.72	.594	3.45	.145	.015		7/2+
7C	148	218	1563.3	1560.2	17.70	1.53	6.13	14.38	21.43	.596	4.26	.145	.013		
7C	149	219	1564.0	1561.2	17.88	.67	6.39	15.85	21.28	.598	3.51	.152	.010		5/2-
7C	150	220	1565.7	1562.1	18.06	1.74	8.61	14.99	20.98	.600	4.71	.154	.006		
7C	151	221	1566.2	1563.0	18.28	.52	8.86	16.42	20.85	.603	4.40	.156	.003		1/2+
7C	152	222	1567.7	1563.7	18.45	1.49	9.01	15.65	20.46	.606	5.13	.157	-.001		
7C	153	223	1568.0	1564.4	18.59	.28	9.12	17.02	20.26	.610	4.72	.156	-.003		11/2-

Z	N	A	R.E.	BQ	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
71	64	135	966.0	964.0	-6.31	18.27	-5.97	-23.50	9.28	.724	4.04	.202	-.026	5/2-	
71	65	136	981.8	980.7	-5.98	15.86	-5.84	-20.77	9.93	.718	3.32	.205	-.026	5/2-	5/2+
71	66	137	999.4	997.1	-5.60	17.59	-5.79	-22.19	11.00	.712	4.65	.202	-.032	5/2-	
71	67	138	1014.8	1013.1	-5.25	15.37	-5.61	-19.64	11.87	.706	4.11	.205	-.033	5/2-	1/2+
71	68	139	1031.7	1028.8	-4.88	16.87	-5.59	-20.82	12.89	.701	5.38	.204	-.036	5/2-	
71	69	140	1046.5	1044.2	-4.54	14.86	-5.42	-18.48	13.88	.695	4.95	.205	-.037	5/2-	7/2-
71	70	141	1062.6	1059.3	-4.18	16.03	-5.55	-19.33	14.70	.690	6.04	.204	-.041	5/2-	
71	71	142	1076.4	1074.1	-3.35	13.86	-5.87	-16.83	15.29	.684	5.11	.201	-.041	5/2-	5/2+
71	72	143	1090.9	1088.1	-3.03	14.51	-6.18	-17.14	15.70	.679	5.50	.192	-.041	5/2-	
71	73	144	1103.6	1101.9	-2.72	12.64	-6.24	-14.37	16.14	.675	4.21	.180	-.041	5/2-	5/2+
71	74	145	1117.5	1115.3	-2.39	13.97	-6.12	-15.26	16.56	.671	4.62	.171	-.043	5/2-	
71	75	146	1129.5	1128.5	-2.08	12.00	-6.07	-12.89	16.86	.664	3.38	.166	-.042	5/2-	7/2+
71	76	147	1143.0	1141.4	-1.79	13.50	-5.90	-14.04	17.34	.659	4.01	.167	-.042	5/2-	
71	77	148	1154.7	1154.0	-1.58	11.63	-5.54	-11.81	17.81	.655	1.78	.116	-.026	5/2-	1/2+
71	78	149	1168.1	1166.4	-1.35	13.48	-4.97	-13.04	18.77	.652	2.47	-.086	-.022	5/2-	
71	79	150	1180.1	1178.5	-1.05	11.91	-3.88	-11.05	19.96	.645	2.18	-.075	-.022	5/2-	1/2-
71	80	151	1193.4	1190.4	-.81	13.35	-3.34	-12.22	21.26	.643	3.00	C		11/2	
71	81	152	1205.1	1202.0	-.51	11.75	-2.87	-10.05	22.76	.639	3.17	.023	-.006	7/2-	11/2-
71	82	153	1218.5	1213.4	-.21	13.31	-2.22	-11.34	24.47	.637	5.06	C		11/2	
71	83	154	1228.2	1224.5	.11	9.78	-3.57	-7.50	24.45	.634	3.73	-.017	-.005	5/2-	7/2-
71	84	155	1239.1	1235.4	.38	10.83	-5.48	-8.39	24.11	.632	3.63	0		11/2	
71	85	156	1248.3	1246.1	.67	9.23	-5.41	-6.36	23.95	.631	2.21	.021	.002	7/2-	7/2-
71	86	157	1258.8	1256.6	.97	10.53	-5.14	-7.42	23.71	.627	2.27	C		11/2	
71	87	158	1267.6	1266.8	1.27	8.76	-5.02	-5.31	23.47	.623	.90	.035	-.001	7/2-	5/2-
71	88	159	1278.0	1276.8	1.58	10.36	-4.62	-6.65	23.48	.620	1.46	.061	.012	5/2+	
71	89	160	1286.5	1286.6	1.71	8.57	-4.34	-4.72	23.44	.618	.70	.087	.026	11/2-	1/2+
71	90	161	1296.8	1296.2	2.09	10.28	-3.86	-6.44	23.77	.616	1.48	.094	.026	7/2-	
71	91	162	1305.2	1305.5	2.27	8.41	-3.77	-4.40	23.94	.614	1.00	.114	.037	7/2-	7/2+
71	92	163	1315.2	1314.7	2.55	9.95	-3.54	-5.61	24.31	.612	1.83	.122	.034	5/2+	
71	93	164	1323.3	1323.7	2.74	8.14	-3.49	-3.66	24.58	.611	1.32	.137	.037	5/2+	7/2-
71	94	165	1332.7	1332.4	3.04	9.40	-3.48	-4.55	24.76	.610	1.85	.142	.027	1/2+	
71	95	166	1340.6	1341.0	3.31	7.87	-3.31	-2.82	25.10	.606	1.31	.152	.027	7/2+	5/2+
71	96	167	1349.9	1349.4	3.61	9.33	-2.80	-4.09	25.37	.603	2.32	.162	.016	7/2+	
71	97	168	1357.5	1357.5	3.87	7.59	-2.58	-2.12	25.99	.601	1.88	.165	.015	7/2+	5/2-
71	98	169	1366.5	1365.5	4.17	9.04	-2.36	-3.35	26.50	.599	3.00	.174	.005	7/2+	
71	99	170	1373.8	1373.4	4.45	7.30	-2.16	-1.39	26.95	.597	2.61	.175	.003	7/2+	1/2-
71	100	171	1382.5	1381.0	4.68	8.62	-2.03	-2.47	27.39	.596	3.76	.182	-.007	5/2-	
71	101	172	1389.6	1388.4	5.05	7.11	-1.70	-.75	27.97	.594	3.52	.187	-.007	5/2-	11/2-
71	102	173	1398.0	1395.7	5.35	8.39	-1.49	-1.87	28.45	.593	4.73	.186	-.014	5/2-	
71	103	174	1404.8	1402.8	5.60	6.82	-1.19	.01	29.09	.592	4.52	.189	-.015	5/2-	5/2-
71	104	175	1412.7	1409.7	5.93	7.95	-1.10	-.88	29.48	.591	5.58	.186	-.020	5/2-	
71	105	176	1419.2	1416.5	6.21	6.51	-.87	.83	30.07	.591	5.34	.187	-.021	5/2-	9/2+
71	106	177	1426.7	1423.1	6.50	7.44	-.80	.18	30.26	.589	6.21	.184	-.026	5/2-	
71	107	178	1432.8	1429.5	6.79	6.17	-.60	1.70	30.79	.587	6.00	.182	-.025	5/2-	7/2-
71	108	179	1439.8	1435.8	7.09	6.96	-.49	1.17	30.80	.585	6.65	.178	-.034	5/2-	
71	109	180	1445.4	1442.1	7.38	5.65	-.44	2.78	31.11	.582	6.23	.172	-.036	5/2-	1/2-
71	110	181	1451.9	1448.2	7.67	6.50	-.30	2.21	30.95	.581	6.72	.165	-.043	5/2-	

Z	N	A	R.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
71	111	182	1457.1	1454.2	7.94	5.18	-.19	3.72	31.06	.580	6.54	.175	-.046	5/2-	3/2-
71	112	183	1463.3	1460.0	8.19	6.15	.04	3.04	30.82	.575	7.05	.175	-.046	5/2-	
71	113	184	1468.2	1465.7	8.45	4.91	.29	4.57	30.94	.578	6.56	.172	-.052	5/2-	11/2+
71	114	185	1473.9	1471.2	8.55	5.76	.42	4.01	30.59	.578	7.44	.175	-.061	5/2-	
71	115	186	1478.8	1476.5	8.89	4.90	.96	5.45	30.95	.577	6.00	.145	-.052	5/2-	7/2-
71	116	187	1484.3	1481.8	9.10	5.44	1.06	4.99	30.55	.577	6.05	.135	-.047	5/2-	
71	117	188	1488.4	1486.9	9.31	4.09	.91	6.61	30.35	.576	4.83	.121	-.045	5/2-	9/2-
71	118	189	1493.2	1491.8	9.54	4.85	.77	6.20	29.61	.576	4.77	.118	-.043	5/2-	
71	119	190	1498.7	1496.6	9.72	5.48	2.70	5.82	31.05	.576	4.86	.089	-.032	5/2-	13/2+
71	120	191	1503.8	1501.3	9.90	5.12	3.43	6.62	30.83	.576	5.16	.072	-.026	5/2-	
71	121	192	1508.2	1505.8	10.13	4.40	2.89	7.63	31.43	.576	4.98	-.070	-.011	5/2-	1/2-
71	122	193	1513.5	1510.2	10.36	5.32	3.58	6.91	31.66	.576	5.90	-.051	-.012	5/2-	
71	123	194	1517.9	1514.5	10.58	4.36	3.99	8.18	32.45	.576	6.10	-.040	-.016	5/2-	3/2-
71	124	195	1522.9	1518.6	10.78	5.03	4.05	7.75	32.63	.576	6.94	C		+11/2	
71	125	196	1527.2	1522.7	11.01	4.24	4.55	8.84	33.53	.577	7.32	C		+11/2 P	1/2
71	126	197	1532.0	1526.6	11.23	4.83	4.82	8.48	33.73	.577	8.43	C		+11/2	
71	127	198	1533.7	1530.0	11.46	1.71	2.74	11.81	32.33	.577	6.54	C		+11/2 G	9/2
71	128	199	1537.2	1533.3	11.68	3.48	1.84	10.27	31.41	.578	6.53	C		+11/2	
71	129	200	1538.7	1536.5	11.91	1.51	2.09	12.45	30.03	.579	4.65	C		+11/2 G	9/2
71	130	201	1542.0	1539.6	12.13	3.31	2.37	10.88	29.17	.580	4.76	C		+11/2	
71	131	202	1543.3	1542.5	12.35	1.32	2.62	13.08	27.80	.581	2.97	C		+11/2 G	9/2
71	132	203	1546.4	1545.3	12.57	3.14	2.89	11.48	26.99	.582	3.11	C		+11/2	
71	133	204	1548.2	1548.1	12.78	1.78	3.79	13.06	26.39	.583	2.53	.058	.032	11/2-	1/2-
71	134	205	1551.4	1550.7	12.97	3.17	3.92	11.67	25.71	.585	3.11	.067	.037	11/2-	
71	135	206	1553.2	1553.2	13.09	1.83	4.56	13.17	25.26	.587	2.76	.085	.045	11/2-	3/2-
71	136	207	1556.4	1555.5	13.31	3.20	4.90	11.89	24.93	.590	3.33	.091	.044	7/2-	
71	137	208	1558.2	1557.8	14.65	1.80	5.11	13.46	24.66	.591	2.55	.095	.051	7/2-	3/2+
71	138	209	1560.1	1560.0	13.69	1.89	4.19	13.54	23.21	.591	2.44	.104	.047	7/2-	
71	139	210	1561.9	1562.0	13.88	1.78	5.68	13.84	23.10	.592	2.07	.105	.046	7/2-	5/2-
71	140	211	1564.7	1564.0	14.08	2.82	5.83	12.98	22.77	.593	2.70	.114	.045	7/2-	
71	141	212	1566.3	1565.8	14.23	1.58	6.01	14.41	22.65	.594	2.33	.115	.046	7/2-	5/2+
71	142	213	1568.8	1567.6	14.46	2.54	6.11	13.63	22.24	.596	2.86	.123	.041	7/2-	
71	143	214	1570.1	1569.2	14.65	1.29	6.16	15.07	22.01	.597	2.41	.130	.041	5/2+	7/2-
71	144	215	1572.4	1570.8	14.81	2.26	6.30	14.34	21.51	.599	2.80	.133	.032	1/2+	
71	145	216	1573.6	1572.4	15.09	1.17	6.55	15.57	21.34	.600	2.32	.137	.027	1/2+	5/2+
71	146	217	1575.9	1573.9	15.32	2.31	6.95	14.61	21.08	.603	3.05	.140	.020	1/2+	
71	147	218	1576.9	1575.3	15.53	1.03	7.28	16.07	20.94	.605	2.66	.143	.016	1/2+	7/2+
71	148	219	1579.0	1576.6	15.74	2.14	7.54	15.15	20.69	.608	3.48	.147	.010	1/2+	
71	149	220	1579.9	1577.9	15.95	.88	7.77	16.59	20.58	.610	3.15	.150	.008	1/2+	5/2-
71	150	221	1581.9	1579.0	16.16	1.96	7.97	15.69	20.31	.611	3.98	.152	.003	1/2+	
71	151	222	1582.6	1580.0	16.36	.72	8.21	17.10	20.21	.612	3.68	.154	.000	1/2+	1/2+
71	152	223	1584.2	1581.0	16.51	1.64	8.29	16.36	19.90	.614	4.37	.155	-.003	5/2-	
71	153	224	1584.8	1581.8	16.78	.54	8.54	17.70	19.68	.615	4.06	.155	-.006	5/2-	11/2-
71	154	225	1586.3	1582.6	17.00	1.53	8.74	16.68	19.33	.617	4.85	.154	-.011	5/2-	
71	155	226	1586.7	1583.3	17.21	.35	8.96	18.10	19.18	.619	4.53	.154	-.014	5/2-	7/2+

Z	N	A	R.F.	BC	SP	SN	SA	CP	PAR	X	S	A2	A4	P	N
72	65	137	976.4	974.9	-5.39	16.17	-6.26-22.71	8.04	.734	3.58	.199	-.C30			5/2+
72	66	138	974.4	991.6	-5.05	17.93	-6.21-24.27	9.07	.728	4.94	.197	-.C34			
72	67	139	1010.0	1008.0	-4.73	15.69	-6.04-21.68	9.84	.722	4.41	.200	-.C35			1/2+
72	68	140	1027.3	1024.0	-4.40	17.21	-6.05-22.90	10.30	.717	5.70	.199	-.C38			
72	69	141	1042.4	1039.7	-4.08	15.18	-5.89-20.58	11.71	.711	5.26	.201	-.C39			7/2-
72	70	142	1058.8	1055.1	-3.75	16.37	-6.03-21.51	12.50	.706	6.40	.200	-.C43			
72	71	143	1073.0	1070.3	-3.41	14.20	-6.36-18.96	13.05	.701	5.40	.193	-.C43			9/2-
72	72	144	1088.4	1085.1	-2.51	15.41	-6.61-19.64	13.49	.696	5.78	.181	-.C42			
72	73	145	1101.5	1099.1	-2.07	13.08	-6.56-16.93	14.01	.691	4.61	.165	-.C44			5/2+
72	74	146	1115.9	1112.9	-1.67	14.37	-6.38-17.44	14.46	.685	5.01	.147	-.C48			
72	75	147	1128.2	1126.4	-1.32	12.35	-6.36-15.16	14.80	.680	3.81	.151	-.C41			7/2+
72	76	148	1142.1	1139.6	-.96	13.86	-6.15-16.15	15.31	.676	4.03	.134	-.C35			
72	77	149	1154.3	1152.5	-.34	12.25	-5.59-14.21	16.07	.673	2.67	-.C91	-.C27			3/2-
72	78	150	1168.2	1165.2	.08	13.90	-4.90-15.57	17.09	.669	3.64	-.C79	-.C21			
72	79	151	1180.4	1177.6	.34	12.17	-4.15-13.57	18.26	.662	3.20	-.C61	-.C20			1/2-
72	80	152	1194.3	1189.8	.92	13.92	-3.48-15.00	19.84	.658	4.53	C				
72	81	153	1206.3	1201.7	1.19	12.02	-3.06-12.91	21.33	.654	4.67	.C21	-.C05			11/2-
72	82	154	1220.0	1213.4	1.50	13.62	-2.55-14.15	23.07	.652	6.58	C				
72	83	155	1229.9	1224.8	1.66	9.94	-4.05-10.23	22.89	.650	5.08	C				F 7/2
72	84	156	1241.2	1236.0	2.09	11.26	-5.81-11.10	22.71	.645	5.14	C				
72	85	157	1250.6	1247.0	2.33	9.48	-5.79 -9.18	22.52	.641	3.65	C				F 7/2
72	86	158	1261.5	1257.7	2.66	10.86	-5.48-10.19	22.37	.638	3.78	C				
72	87	159	1270.5	1268.2	2.93	9.02	-5.40 -8.09	22.13	.636	2.31	.C18	-.C00			5/2-
72	88	160	1281.0	1278.5	3.07	10.49	-5.14 -9.26	22.02	.634	2.53	.C25	.C00			
72	89	161	1299.6	1288.6	3.06	8.56	-5.04 -7.03	21.71	.632	1.55	.C72	.C26			1/2-
72	90	162	1300.0	1298.5	3.23	10.45	-4.63 -8.65	21.95	.631	2.23	.C86	.C22			
72	91	163	1308.8	1308.1	3.56	8.74	-4.34 -6.75	22.18	.629	1.83	.107	.C36			3/2+
72	92	164	1318.9	1317.6	3.70	10.09	-4.15 -7.90	22.43	.625	2.54	.116	.C33			
72	93	165	1327.3	1326.8	4.02	8.47	-3.91 -6.14	22.77	.622	2.02	.128	.C36			7/2-
72	94	166	1337.0	1335.8	4.27	9.64	-3.95 -7.16	22.95	.620	2.55	.135	.C28			
72	95	167	1345.0	1344.7	4.46	8.06	-3.83 -5.09	23.24	.618	1.93	.145	.C26			5/2-
72	96	168	1354.6	1353.3	4.69	9.56	-3.37 -6.36	23.70	.616	2.87	.152	.C18			
72	97	169	1362.4	1361.8	4.91	7.81	-3.15 -4.37	24.09	.615	2.42	.162	.C16			5/2-
72	98	170	1371.7	1370.0	5.13	9.27	-2.92 -5.57	24.59	.613	3.41	.165	.C08			
72	99	171	1379.2	1378.1	5.36	7.53	-2.72 -3.55	25.03	.612	3.00	.171	.C06			1/2-
72	100	172	1388.0	1386.0	5.58	8.83	-2.62 -4.63	25.44	.611	4.01	.173	-.C02			
72	101	173	1395.3	1393.7	5.74	7.27	-2.38 -2.72	25.94	.611	3.75	.182	-.C05			1/2-
72	102	174	1404.0	1401.3	6.04	8.69	-2.07 -3.92	26.53	.609	5.02	.182	-.C12			
72	103	175	1411.1	1408.6	6.29	7.06	-1.76 -2.00	27.13	.607	4.81	.184	-.C14			5/2-
72	104	176	1419.3	1415.8	6.55	8.21	-1.63 -2.91	27.56	.605	5.98	.183	-.C23			
72	105	177	1426.1	1422.8	6.84	6.79	-1.40 -1.18	28.20	.603	5.92	.186	-.C27			9/2+
72	106	178	1433.7	1429.7	7.08	7.68	-1.34 -1.82	28.41	.601	6.57	.178	-.C27			
72	107	179	1440.2	1436.4	7.35	6.43	-1.14 -.25	28.98	.600	6.39	.177	-.C31			7/2-
72	108	180	1447.4	1442.9	7.64	7.25	-1.03 -.81	29.07	.599	7.13	.171	-.C36			
72	109	181	1453.4	1449.4	7.93	5.94	-.97 .78	29.43	.598	6.73	.167	-.C40			1/2-
72	110	182	1460.1	1455.8	8.12	6.69	-.94 .26	29.24	.597	7.44	.174	-.C42			
72	111	183	1465.5	1462.0	8.41	5.47	-.83 1.79	29.42	.596	6.91	.171	-.C45			3/2-

Z	N	A	B.E.	BC	SP	SN	SA	CP	EAR	X	S	A2	A4	P	N
72	112	184	1472.0	1468.1	8.69	6.44	-0.59	1.11	29.26	.556	7.27	.164	-.047		
72	113	185	1477.2	1474.0	8.99	5.20	-0.31	2.64	29.44	.555	6.82	.157	-.051		1 1/2+
72	114	186	1483.5	1479.7	9.57	6.34	.13	1.80	29.46	.554	7.41	.148	-.052		
72	115	187	1488.5	1485.3	9.65	4.98	.47	3.42	29.68	.554	6.77	.139	-.052		7/2-
72	116	188	1494.2	1490.8	9.92	5.71	.52	2.98	29.73	.554	6.84	.133	-.047		
72	117	189	1498.6	1496.1	10.26	4.44	.39	4.49	29.26	.553	5.74	.116	-.045		5/2-
72	118	190	1503.7	1501.3	10.52	5.11	.26	4.04	28.58	.553	5.62	.110	-.041		
72	119	191	1509.7	1506.4	10.95	5.91	2.30	3.47	30.23	.553	5.71	.071	-.024		1 1/2+
72	120	192	1515.1	1511.3	11.25	5.41	3.08	4.24	30.10	.553	6.30	.063	-.024		
72	121	193	1519.7	1516.0	11.45	4.60	2.39	5.24	30.69	.553	6.15	-.064	-.010		1/2-
72	122	194	1525.3	1520.7	11.75	5.62	3.08	4.42	31.02	.553	7.10	-.037	-.012		
72	123	195	1529.9	1525.2	11.99	4.60	3.51	5.67	31.84	.553	7.38	-.034	-.015		3/2-
72	124	196	1535.2	1529.5	12.30	5.33	3.74	5.17	32.12	.553	8.34	C			
72	125	197	1539.7	1533.8	12.52	4.46	4.07	6.17	33.04	.553	8.72	C			P 1/2
72	126	198	1544.7	1537.9	12.74	5.05	4.29	5.82	33.27	.553	9.82	C			
72	127	199	1546.7	1541.6	12.96	1.93	2.21	9.15	31.88	.554	7.93	C			G 5/2
72	128	200	1550.3	1545.1	13.18	3.70	1.31	7.62	30.99	.554	7.93	C			
72	129	201	1552.1	1548.5	13.40	1.73	1.56	9.80	29.53	.554	6.09	C			G 5/2
72	130	202	1555.6	1551.8	13.62	3.53	1.83	8.23	28.79	.555	6.16	C			
72	131	203	1557.1	1555.0	13.84	1.54	2.08	10.44	27.45	.555	4.36	C			G 5/2
72	132	204	1560.5	1558.0	14.05	3.36	2.35	8.85	26.66	.556	4.49	C			
72	133	205	1562.3	1560.9	14.06	1.78	3.03	10.63	25.76	.556	3.59	.051	.028		1/2-
72	134	206	1565.6	1563.8	14.22	3.33	3.43	9.35	25.16	.557	4.04	.059	.031		
72	135	207	1567.5	1566.5	14.31	1.92	3.79	10.95	24.61	.558	3.74	.080	.049		3/2-
72	136	208	1570.9	1569.1	14.48	3.38	4.19	9.60	24.26	.559	4.19	.087	.042		
72	137	209	1572.9	1571.5	14.64	1.97	4.44	11.10	23.95	.600	3.82	.095	.050		3/2+
72	138	210	1575.0	1573.9	14.84	2.08	3.54	11.25	22.51	.601	3.29	.100	.047		
72	139	211	1576.9	1576.2	15.02	1.96	5.04	12.58	22.39	.603	2.90	.106	.048		5/2-
72	140	212	1579.9	1578.4	15.21	3.01	5.19	10.69	22.08	.604	3.51	.110	.044		
72	141	213	1581.7	1580.4	15.39	1.76	5.36	12.15	21.95	.606	3.12	.116	.045		5/2+
72	142	214	1584.4	1582.4	15.58	2.73	5.48	11.35	21.55	.609	3.64	.119	.040		
72	143	215	1585.9	1584.2	15.81	1.53	5.58	12.78	21.38	.610	3.14	.124	.039		7/2-
72	144	216	1588.3	1585.9	15.96	2.40	5.67	12.04	20.84	.611	3.54	.128	.032		
72	145	217	1589.7	1587.8	16.14	1.36	5.92	13.38	20.68	.612	3.05	.133	.027		5/2+
72	146	218	1592.2	1589.5	16.32	2.49	6.32	12.44	20.42	.613	3.76	.136	.020		
72	147	219	1593.4	1591.1	16.51	1.22	6.65	13.94	20.29	.614	3.35	.138	.017		7/2+
72	148	220	1595.7	1592.6	16.68	2.32	6.88	13.05	20.04	.615	4.13	.142	.011		
72	149	221	1596.8	1594.0	16.86	1.05	7.11	14.52	19.92	.616	3.78	.144	.008		5/2-
72	150	222	1598.9	1595.3	17.04	2.13	7.32	13.64	19.66	.618	4.59	.146	.003		
72	151	223	1599.8	1596.6	17.22	.90	7.54	15.08	19.56	.619	4.27	.148	.000		1/2+
72	152	224	1601.7	1597.7	17.46	1.89	7.69	14.29	19.23	.621	5.02	.148	-.004		
72	153	225	1602.2	1598.8	17.43	.51	7.69	15.88	18.91	.624	4.45	.144	-.008		1 1/2-
72	154	226	1604.0	1599.7	17.68	1.78	7.97	14.89	18.63	.627	5.37	.152	-.010		
72	155	227	1604.5	1600.6	17.84	.52	8.22	16.28	18.50	.630	5.02	.149	-.014		5/2+
72	156	228	1606.0	1601.4	18.03	1.52	8.42	15.49	18.14	.631	5.78	.146	-.021		

Z	N	A	B.E.	BO	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
73	67	140	1003.6	1002.3	-6.47	15.99	-6.54-21.14	8.38	.738	3.34	.187	-.039	7/2+	1/2+	
73	68	141	1021.1	1018.7	-6.18	17.50	-6.63-22.42	9.25	.732	4.53	.183	-.041	7/2+		
73	69	142	1036.5	1034.7	-5.93	15.43	-6.57-19.99	10.04	.726	4.04	.188	-.040	7/2+	1/2-	
73	70	143	1053.3	1050.5	-5.54	16.75	-6.69-20.95	10.91	.721	5.16	.184	-.044	7/2+		
73	71	144	1068.0	1065.9	-5.01	14.73	-6.83-18.68	11.51	.716	4.38	.179	-.043	7/2+	5/2-	
73	72	145	1083.8	1081.0	-4.63	15.80	-7.06-19.41	11.96	.711	4.89	.165	-.045	7/2+		
73	73	146	1097.6	1095.9	-3.85	13.85	-7.07-17.12	12.40	.706	4.18	.176	-.046	7/2+	5/2+	
73	74	147	1112.3	1109.9	-3.60	14.63	-6.95-17.39	12.75	.701	4.40	.158	-.043	7/2+		
73	75	148	1125.1	1123.7	-3.08	12.87	-6.72-14.71	13.24	.697	3.24	.144	-.042	7/2+	7/2+	
73	76	149	1139.3	1137.3	-2.74	14.19	-6.50-15.66	13.71	.693	3.55	.129	-.037	7/2+		
73	77	150	1151.9	1150.5	-2.45	12.54	-5.96-13.54	14.39	.688	2.22	.099	-.027	1/2+	1/2+	
73	78	151	1166.0	1163.5	-2.18	14.17	-5.29-14.68	15.39	.683	3.12	-.076	-.021	3/2-		
73	79	152	1178.5	1176.2	-1.86	12.49	-4.43-12.70	16.55	.679	2.71	-.059	-.020	3/2-	1/2-	
73	80	153	1192.6	1188.7	-1.67	14.11	-3.79-13.93	18.00	.675	3.96	C		F11/2		
73	81	154	1205.0	1200.9	-1.31	12.38	-3.32-11.58	19.53	.672	4.16	.022	-.006	5/2-	11/2-	
73	82	155	1218.9	1212.9	-1.08	13.85	-2.81-12.85	21.15	.669	6.00	C		F11/2		
73	83	156	1229.3	1224.6	-.62	10.40	-4.16	-5.02	21.15	.663	4.70	-.017	-.005	3/2-	7/2-
73	84	157	1240.7	1236.1	-.48	11.40	-6.08	-9.88	20.82	.658	4.57	C		F11/2	
73	85	158	1250.5	1247.4	-.11	9.86	-6.00	-7.90	20.73	.655	3.20	.021	.000	5/2-	7/2-
73	86	159	1261.7	1258.4	.15	11.12	-5.71	-8.96	20.56	.653	3.29	.020	-.000	5/2-	
73	87	160	1271.0	1269.2	.45	9.32	-5.63	-6.84	20.34	.651	1.83	.026	.002	5/2-	5/2-
73	88	161	1281.8	1279.8	.75	10.80	-5.36	-8.07	20.23	.648	2.15	.044	.007	5/2-	
73	89	162	1290.6	1290.1	1.02	8.83	-5.29	-5.82	19.92	.644	.71	.053	.012	5/2-	1/2-
73	90	163	1301.2	1300.3	1.20	10.64	-5.01	-7.41	20.08	.641	1.37	.078	.004	5/2-	
73	91	164	1310.2	1310.2	1.41	8.94	-4.64	-5.58	20.26	.638	.88	.097	.030	11/2-	7/2+
73	92	165	1320.4	1319.9	1.54	10.23	-4.70	-6.81	20.40	.636	1.40	.106	.024	5/2-	
73	93	166	1329.0	1329.4	1.70	8.62	-4.48	-4.95	20.64	.635	.87	.124	.031	5/2+	3/2-
73	94	167	1339.1	1338.7	2.19	10.13	-4.31	-6.26	21.05	.633	1.60	.129	.021	5/2+	
73	95	168	1347.4	1347.5	2.42	8.30	-4.15	-4.21	21.32	.632	.95	.139	.020	5/2+	5/2-
73	96	169	1357.3	1356.8	2.70	9.85	-3.70	-5.53	21.81	.631	1.91	.145	.012	5/2+	
73	97	170	1365.3	1365.5	2.91	8.02	-3.55	-3.48	22.13	.630	1.37	.154	.013	5/2+	5/2+
73	98	171	1374.9	1374.0	3.20	9.56	-3.33	-4.79	22.69	.627	2.44	.157	.004	5/2+	
73	99	172	1382.6	1382.4	3.42	7.76	-3.17	-2.76	23.10	.624	2.07	.166	.003	5/2-	1/2-
73	100	173	1391.8	1390.5	3.77	9.18	-3.02	-3.97	23.62	.622	3.11	.166	-.005	7/2+	
73	101	174	1399.3	1398.5	3.99	7.49	-2.84	-2.06	24.09	.620	2.77	.172	-.008	7/2+	1/2-
73	102	175	1408.3	1406.3	4.28	8.99	-2.47	-3.34	24.74	.619	4.09	.173	-.015	7/2+	
73	103	176	1415.6	1413.9	4.52	7.30	-2.28	-1.44	25.35	.617	3.92	.178	-.015	7/2+	5/2-
73	104	177	1424.1	1421.4	4.83	8.52	-2.15	-2.45	25.86	.616	5.09	.177	-.023	7/2+	
73	105	178	1431.1	1428.6	5.08	7.04	-1.92	-.73	26.50	.615	5.01	.181	-.027	7/2+	9/2+
73	106	179	1439.1	1435.7	5.40	8.00	-1.87	-1.48	26.80	.614	5.83	.174	-.030	7/2+	
73	107	180	1445.8	1442.7	5.67	6.70	-1.68	.08	27.41	.613	5.71	.175	-.033	7/2+	7/2-
73	108	181	1453.4	1449.5	5.94	7.52	-1.59	-.52	27.53	.613	6.52	.173	-.037	7/2+	
73	109	182	1459.5	1456.2	6.17	6.18	-1.58	1.08	27.90	.612	6.17	.172	-.040	7/2+	1/2-
73	110	183	1466.5	1462.9	6.48	7.00	-1.54	.49	27.80	.612	6.67	.166	-.042	7/2+	
73	111	184	1472.3	1469.3	6.76	5.75	-1.44	2.05	28.03	.611	6.38	.163	-.046	7/2+	3/2-
73	112	185	1479.0	1475.6	7.06	6.74	-1.21	1.35	27.95	.611	6.67	.154	-.048	7/2+	
73	113	186	1484.5	1481.8	7.36	5.50	-.88	2.95	28.20	.610	6.15	.146	-.051	7/2+	11/2+

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
73	114	187	1491.1	1487.8	7.62	6.60	-.43	2.15	28.26	.61C	6.95	.144	-.C53	7/2+	
73	115	188	1496.4	1493.6	7.90	5.27	-.08	3.69	28.53	.609	6.40	.136	-.C54	7/2+	7/2-
73	116	189	1502.3	1499.3	8.14	5.94	.11	3.30	28.21	.608	6.47	.130	-.C45	7/2+	
73	117	190	1507.0	1504.9	8.37	4.66	-.13	4.91	28.15	.608	5.38	.116	-.C46	1/2+	9/2-
73	119	191	1512.3	1510.3	8.60	5.34	-.24	4.62	27.48	.607	5.24	.110	-.C42	1/2+	
73	119	192	1518.5	1515.6	8.86	6.17	1.85	4.09	29.18	.606	5.25	.067	-.C21	1/2+	13/2+
73	120	193	1524.1	1520.7	9.06	5.61	2.60	4.89	29.04	.606	5.93	.065	-.C24	5/2+	
73	121	194	1528.9	1525.7	9.25	4.80	1.92	6.15	29.61	.606	5.70	-.062	-.C10	3/2-	1/2-
73	122	195	1534.8	1530.6	9.48	5.85	2.65	5.38	29.96	.606	6.69	-.C35	-.C13	3/2-	
73	123	196	1539.6	1535.3	9.71	4.83	3.08	6.70	30.80	.606	6.95	-.C36	-.C15	3/2-	3/2-
73	124	197	1545.1	1539.9	9.85	5.47	3.24	6.28	31.01	.606	7.81	C		+11/2	
73	125	198	1549.8	1544.4	10.08	4.69	3.57	7.43	31.95	.606	8.20	C		+11/2 P	1/2
73	126	199	1555.0	1548.7	10.30	5.27	3.81	7.07	32.20	.606	9.20	C		+11/2	
73	127	200	1557.2	1552.6	10.53	2.16	1.73	10.40	30.84	.607	7.41	C		+11/2 G	9/2
73	128	201	1561.1	1556.4	10.75	3.92	.83	8.86	29.97	.607	7.41	C		+11/2	
73	129	202	1563.1	1560.0	10.98	1.96	1.08	11.04	28.63	.608	5.57	C		+11/2 G	9/2
73	130	203	1566.8	1563.5	11.20	3.74	1.35	9.48	27.81	.608	5.64	C		+11/2	
73	131	204	1568.6	1566.9	11.42	1.76	1.59	11.68	26.49	.609	3.84	C		+11/2 G	9/2
73	132	205	1572.1	1570.2	11.64	3.57	1.86	10.08	25.73	.610	3.98	C		+11/2	
73	133	206	1574.2	1573.3	11.89	2.04	2.57	11.83	24.89	.610	3.06	.C48	.C26	7/2-	1/2-
73	134	207	1577.7	1576.3	12.09	3.52	2.95	10.11	24.29	.611	3.45	.C54	.C28	7/2-	
73	135	208	1579.7	1579.3	12.19	2.03	3.20	11.73	23.65	.611	2.85	.C72	.C42	7/2-	3/2-
73	136	209	1583.2	1582.1	12.28	3.47	3.50	10.66	23.20	.612	3.44	.C82	.C42	7/2-	
73	137	210	1585.4	1584.8	12.54	2.23	3.90	12.06	22.96	.612	2.94	.C92	.C44	11/2-	3/2+
73	138	211	1588.7	1587.3	13.75	3.29	3.99	11.14	22.54	.613	3.45	.C95	.C42	11/2-	
73	139	212	1589.8	1589.8	12.92	1.12	3.31	13.50	21.40	.613	2.10	.103	.C45	11/2-	5/2-
73	140	213	1593.0	1592.2	13.12	3.21	4.63	12.42	21.10	.614	2.70	.107	.C42	11/2-	
73	141	214	1595.0	1594.4	13.30	1.94	4.79	13.05	20.96	.615	2.29	.113	.C42	11/2-	5/2+
73	142	215	1597.9	1596.6	13.52	2.95	4.92	12.23	20.60	.615	2.81	.116	.C38	11/2-	
73	143	216	1599.6	1598.6	13.66	1.67	5.01	13.70	20.38	.616	2.28	.122	.C36	11/2-	7/2-
73	144	217	1602.3	1600.6	13.95	2.69	5.16	12.85	19.95	.618	2.74	.125	.C28	5/2+	
73	145	218	1603.9	1602.6	14.16	1.56	5.43	14.17	19.80	.619	2.27	.129	.C24	5/2+	5/2+
73	146	219	1606.6	1604.5	14.38	2.72	5.89	13.19	19.58	.620	3.02	.132	.C18	5/2+	
73	147	220	1608.0	1606.3	14.58	1.42	6.13	14.67	19.48	.622	2.62	.135	.C15	5/2+	7/2+
73	148	221	1610.5	1608.0	14.79	2.53	6.35	13.74	19.26	.624	3.43	.138	.C09	5/2+	
73	149	222	1611.8	1609.7	14.99	1.25	6.57	15.19	19.16	.626	3.08	.141	.C06	5/2+	9/2-
73	150	223	1614.1	1611.2	15.20	2.35	6.78	14.27	18.94	.629	3.91	.142	.C01	5/2+	
73	151	224	1615.2	1612.6	15.40	1.10	7.00	15.70	18.87	.630	3.60	.144	-.C02	5/2+	1/2+
73	152	225	1617.3	1613.9	15.61	2.10	7.15	14.88	18.58	.631	4.38	.144	-.C06	5/2+	
73	153	226	1618.1	1615.2	15.88	.76	7.21	16.39	18.35	.632	3.97	.147	-.C08	7/2+	11/2-
73	154	227	1620.0	1616.3	16.02	1.91	7.48	15.47	18.04	.633	4.74	.144	-.C14	7/2+	
73	155	228	1620.7	1617.4	16.23	.74	7.67	16.85	17.94	.635	4.42	.142	-.C16	7/2+	9/2+
73	156	229	1622.5	1618.3	16.46	1.75	7.89	16.04	17.64	.636	5.25	.135	-.C24	7/2+	
73	157	230	1623.1	1619.2	16.67	.59	8.12	17.39	17.54	.638	5.01	.135	-.C26	7/2+	1/2+
73	158	231	1624.7	1620.0	16.87	1.58	8.36	16.58	17.24	.640	5.88	.140	-.C32	7/2+	

Z	N	A	B.F.	BC	SP	SN	SA	CB	EFK	X	S	A2	A4	P	N
74	69	143	1031.5	1029.3	-4.98	15.79	-6.82-22.00	8.31	.743	4.29	.187	-.038			7/2-
74	70	144	1048.5	1045.4	-4.73	17.00	-7.03-23.03	8.95	.737	5.20	.177	-.040			
74	71	145	1063.6	1061.1	-4.39	15.07	-7.14-20.63	9.62	.731	4.46	.172	-.040			5/2+
74	72	146	1079.7	1076.6	-4.05	16.14	-7.36-21.38	10.06	.726	5.00	.155	-.039			
74	73	147	1094.1	1091.7	-3.55	14.35	-7.20-19.06	10.62	.721	4.12	.151	-.040			5/2-
74	74	148	1109.6	1106.6	-2.63	15.55	-7.07-19.87	11.06	.716	4.66	.140	-.039			
74	75	149	1122.9	1120.7	-2.25	13.24	-6.90-17.17	11.55	.711	3.61	.125	-.037			7/2+
74	76	150	1137.6	1134.5	-1.77	14.67	-6.60-17.82	12.17	.707	4.03	.107	-.030			
74	77	151	1150.6	1148.0	-1.30	13.02	-5.93-15.76	12.95	.703	3.22	.085	-.025			1/2+
74	78	152	1165.1	1161.3	-.99	14.48	-5.31-16.90	13.94	.699	3.73	C				
74	79	153	1177.9	1174.3	-.60	12.88	-4.68-15.04	15.14	.695	3.62	.023	-.002			3/2+
74	80	154	1192.7	1187.1	.02	14.73	-3.85-16.60	16.86	.691	5.55	C				
74	81	155	1205.3	1199.6	.23	12.59	-3.43-14.28	18.26	.686	5.65	.018	-.005			11/2-
74	82	156	1219.5	1211.9	.60	14.22	-3.13-15.55	19.98	.682	7.58	C				
74	83	157	1230.0	1223.9	.73	10.53	-4.62-11.76	19.30	.679	6.09	C			F 7/2	
74	84	158	1241.8	1235.7	1.18	11.84	-6.40-12.57	19.61	.675	6.15	C				
74	85	159	1251.9	1247.2	1.38	10.06	-6.28-10.60	19.42	.673	4.66	C			F 7/2	
74	86	160	1263.3	1258.6	1.70	11.44	-6.10-11.61	19.27	.670	4.79	C				
74	87	161	1272.9	1269.7	1.95	9.57	-6.01-9.48	18.97	.665	3.27	C			F 7/2	
74	88	162	1284.0	1280.5	2.22	11.07	-5.80-10.66	18.89	.660	3.46	C				
74	89	163	1293.0	1291.2	2.45	9.05	-5.78-8.36	18.53	.657	1.85	C			F 7/2	
74	90	164	1303.8	1301.6	2.57	10.77	-5.50-9.77	18.56	.655	2.23	C				
74	91	165	1312.8	1311.8	2.63	9.00	-5.07-7.69	18.53	.653	1.78	.090	.027			3/2+
74	92	166	1323.3	1321.8	2.89	10.48	-5.04-9.27	18.67	.651	2.25	.096	.022			
74	93	167	1332.1	1331.6	3.09	8.83	-4.95-7.13	18.83	.649	1.71	.117	.031			3/2-
74	94	168	1342.5	1341.2	3.31	10.35	-4.70-8.61	19.70	.645	2.35	.122	.023			
74	95	169	1351.0	1350.5	3.53	8.52	-4.64-6.48	19.45	.643	1.71	.133	.023			5/2-
74	96	170	1361.1	1359.7	3.76	10.07	-4.21-7.80	19.92	.640	2.55	.140	.013			
74	97	171	1369.3	1368.7	3.99	8.25	-4.03-5.67	20.24	.638	2.01	.148	.015			5/2+
74	98	172	1379.1	1377.5	4.21	9.78	-3.81-7.00	20.77	.637	2.55	.150	.007			
74	99	173	1387.0	1386.1	4.43	7.97	-3.65-4.90	21.16	.635	2.53	.155	.006			1/2-
74	100	174	1396.5	1394.5	4.65	9.40	-3.51-6.12	21.66	.634	3.51	.155	-.001			
74	101	175	1404.2	1402.8	4.87	7.71	-3.34-4.17	22.11	.633	3.12	.165	-.003			1/2-
74	102	176	1413.4	1410.8	5.08	9.20	-2.97-5.35	22.75	.632	4.36	.166	-.011			
74	103	177	1420.9	1418.7	5.29	7.52	-2.72-3.40	23.33	.631	4.16	.171	-.014			5/2-
74	104	178	1429.6	1426.4	5.52	8.75	-2.67-4.42	23.83	.631	5.26	.170	-.015			
74	105	179	1436.9	1433.5	5.74	7.25	-2.47-2.64	24.45	.630	5.13	.173	-.022			5/2+
74	106	180	1445.1	1441.3	6.00	8.26	-2.42-3.43	24.78	.628	6.05	.168	-.027			
74	107	181	1452.1	1448.5	6.22	6.92	-2.29-1.79	25.38	.626	5.85	.170	-.030			7/2-
74	108	182	1459.8	1455.5	6.47	7.77	-2.20-2.41	25.53	.624	6.65	.165	-.034			
74	109	183	1466.3	1462.5	6.71	6.41	-2.22-.74	25.91	.623	6.27	.164	-.037			1/2-
74	110	184	1473.6	1469.4	7.02	7.31	-2.16-1.36	25.89	.621	6.78	.155	-.040			
74	111	185	1479.6	1476.1	7.31	6.04	-2.06-.27	26.19	.620	6.33	.152	-.043			3/2-
74	112	186	1486.7	1482.7	7.67	7.10	-1.66-.51	26.25	.620	6.95	.146	-.045			
74	113	187	1492.5	1489.1	7.97	5.80	-1.32-1.08	26.58	.619	6.61	.143	-.048			11/2+
74	114	188	1499.3	1495.3	8.18	6.81	-.95-.34	26.63	.618	7.23	.135	-.045			
74	115	189	1504.9	1501.4	8.46	5.55	-.61-1.89	26.98	.618	6.80	.130	-.050			7/2-

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
74	116	190	1511.1	1507.3	8.78	6.27	-.68	1.45	26.77	.617	6.95	.120	-.046		
74	117	191	1516.2	1513.1	9.18	5.06	-.61	2.93	26.89	.617	6.12	.110	-.044		5/2-
74	118	192	1521.8	1518.8	9.48	5.64	-.67	2.63	26.31	.616	6.00	.101	-.039		
74	119	193	1528.2	1524.3	9.71	6.41	1.30	3.78	28.03	.616	6.64	.080	-.033		1 1/2+
74	120	194	1534.3	1529.7	10.16	6.05	2.24	2.70	28.13	.616	7.01	.057	-.022		
74	121	195	1539.4	1534.9	10.45	5.09	1.42	3.89	28.78	.616	6.86	-.052	-.010		1/2-
74	122	196	1545.5	1540.0	10.74	6.14	2.15	2.99	29.22	.615	7.92	-.026	-.010		
74	123	197	1550.6	1545.0	10.96	5.05	2.60	4.28	30.08	.615	8.21	-.026	-.012		3/2-
74	124	198	1556.4	1549.8	11.33	5.64	2.82	3.72	30.45	.615	9.27	C			
74	125	199	1561.3	1554.5	11.55	4.91	3.13	4.73	31.41	.615	9.66	C			P 1/2
74	126	200	1566.8	1559.0	11.77	5.49	3.29	4.38	31.68	.615	10.75	C			
74	127	201	1569.2	1563.2	12.00	2.38	1.21	7.71	30.34	.616	8.86	C			G 5/2
74	128	202	1573.3	1567.1	12.22	4.14	.30	6.18	29.49	.616	8.86	C			
74	129	203	1575.5	1571.0	12.44	2.18	.55	8.36	28.17	.616	7.02	C			G 5/2
74	130	204	1579.5	1574.7	12.65	3.96	.82	6.80	27.38	.616	7.09	C			
74	131	205	1581.4	1578.3	12.87	1.98	1.06	9.00	26.08	.616	5.29	C			G 5/2
74	132	206	1585.2	1581.8	13.09	3.79	1.32	7.42	25.33	.617	5.43	C			
74	133	207	1587.0	1585.2	12.85	1.80	1.58	9.73	24.06	.617	3.70	C			G 5/2
74	134	208	1590.7	1588.4	12.97	3.64	1.87	8.14	23.39	.618	3.93	C			
74	135	209	1593.1	1591.5	13.35	2.40	2.49	9.65	22.93	.618	3.74	.066	.037		3/2-
74	136	210	1596.7	1594.6	13.50	3.62	2.79	8.53	22.46	.619	4.30	.073	.039		
74	137	211	1599.1	1597.5	13.65	2.37	3.24	9.97	22.17	.620	3.82	.088	.043		2/2+
74	138	212	1602.6	1600.3	13.84	3.48	3.35	8.95	21.76	.621	4.31	.092	.041		
74	139	213	1604.7	1602.9	14.85	2.14	3.52	10.50	21.44	.622	3.76	.099	.044		5/2-
74	140	214	1607.3	1605.5	14.21	2.57	4.00	10.23	20.31	.623	3.55	.104	.042		
74	141	215	1609.4	1608.0	14.39	2.12	4.17	11.54	20.18	.624	3.12	.110	.043		5/2+
74	142	216	1612.5	1610.3	14.58	3.14	4.30	10.02	19.87	.626	3.63	.113	.038		
74	143	217	1614.4	1612.6	14.76	1.85	4.38	11.53	19.60	.627	3.08	.119	.036		7/2-
74	144	218	1617.2	1614.7	14.95	2.87	4.53	10.68	19.17	.629	3.52	.121	.030		
74	145	219	1619.0	1616.9	15.12	1.74	4.74	12.02	19.04	.630	3.03	.126	.025		5/2+
74	146	220	1621.9	1619.1	15.30	2.90	5.24	11.05	18.83	.631	3.74	.128	.019		
74	147	221	1623.5	1621.1	15.48	1.60	5.48	12.57	18.72	.632	3.33	.132	.016		7/2+
74	148	222	1626.2	1623.0	15.66	2.71	5.69	11.66	18.51	.633	4.10	.133	.009		
74	149	223	1627.6	1624.8	15.84	1.43	5.90	13.18	18.41	.633	3.73	.136	.007		5/2-
74	150	224	1630.1	1626.5	16.02	2.53	6.12	12.27	18.20	.634	4.54	.137	.001		
74	151	225	1631.4	1628.1	16.20	1.28	6.34	12.75	18.12	.636	4.21	.136	-.002		1/2+
74	152	226	1633.7	1629.6	16.39	2.29	6.50	12.94	17.85	.637	4.57	.137	-.006		
74	153	227	1634.7	1631.1	16.60	.99	6.59	14.42	17.66	.638	4.56	.138	-.009		1 1/2-
74	154	228	1636.8	1632.4	16.81	2.12	6.82	13.60	17.39	.640	5.34	.134	-.015		
74	155	229	1637.8	1633.7	17.00	.94	7.24	15.03	17.31	.642	5.04	.131	-.019		5/2+
74	156	230	1639.7	1634.8	17.20	1.95	7.41	14.24	17.04	.644	5.86	.129	-.024		
74	157	231	1640.5	1635.9	17.37	.76	7.65	15.64	16.96	.647	5.61	.129	-.027		1/2+
74	158	232	1642.2	1636.9	17.53	1.73	7.86	14.85	16.67	.650	6.45	.133	-.030		
74	159	233	1642.8	1637.7	17.69	.64	8.12	16.13	16.52	.652	6.30	.134	-.035		1/2+
74	160	234	1644.3	1638.5	17.85	1.51	8.24	15.44	16.24	.654	7.07	.134	-.038		

Z	N	A	B.E.	BO	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
75	71	146	1057.6	1055.6	-6.02	15.39	-7.23-20.23	8.37	.747	2.35	.156	-.038	5/2+	5/2+	
75	72	147	1074.3	1071.6	-5.49	16.68	-7.30-21.21	8.97	.741	4.14	.145	-.036	5/2+		
75	73	148	1089.0	1087.1	-5.10	14.73	-7.30-18.88	9.53	.736	2.41	.140	-.038	5/2+	5/2-	
75	74	149	1104.9	1102.2	-4.71	15.94	-7.15-19.75	10.00	.730	4.07	.130	-.038	5/2+		
75	75	150	1119.0	1117.1	-3.93	14.02	-6.98-17.42	10.47	.726	2.06	.121	-.035	5/2+	7/2+	
75	76	151	1134.0	1131.2	-3.52	15.08	-6.53-17.98	11.12	.722	2.72	.103	-.031	5/2+		
75	77	152	1147.4	1145.1	-3.21	13.34	-6.06-15.30	11.89	.718	2.55	.088	-.026	5/2+	1/2+	
75	78	153	1162.1	1158.7	-2.94	14.74	-5.51-16.36	12.76	.713	2.60	.046	-.012	11/2-		
75	79	154	1175.3	1172.0	-2.65	13.18	-4.88-14.10	13.92	.709	2.40	.040	-.009	11/2-	3/2+	
75	80	155	1190.2	1185.1	-2.47	14.91	-4.14-15.59	15.43	.705	5.15	.018	-.005	11/2-		
75	81	156	1203.1	1197.9	-2.11	12.95	-3.68-13.17	16.91	.701	5.31	.024	-.006	11/2-	11/2-	
75	82	157	1217.5	1210.4	-2.01	14.32	-3.47-14.47	18.39	.698	7.03	C		+11/2		
75	83	158	1228.5	1222.8	-1.51	11.03	-4.83-10.55	18.37	.694	5.77	.019	-.003	11/2-	1/2-	
75	84	159	1240.5	1234.8	-1.32	12.04	-6.64-11.47	18.05	.691	5.72	.016	-.002	11/2-		
75	85	160	1251.0	1246.7	-.95	10.43	-6.61-9.48	17.89	.686	4.33	.023	-.002	11/2-	3/2-	
75	86	161	1262.7	1258.3	-.69	11.69	-6.31-10.53	17.69	.683	4.43	.022	-.002	11/2-		
75	87	162	1272.5	1269.6	-.37	9.89	-6.28-8.42	17.45	.679	2.97	.028	-.002	11/2-	5/2-	
75	88	163	1283.9	1280.8	-.09	11.35	-6.05-9.63	17.36	.677	2.20	.033	-.003	11/2-		
75	89	164	1293.3	1291.7	.21	9.35	-6.01-7.35	17.00	.674	1.62	.032	-.003	11/2-	7/2-	
75	90	165	1304.3	1302.4	.53	11.08	-5.73-8.82	17.05	.672	2.07	.045	-.004	11/2-		
75	91	166	1313.2	1312.9	.43	8.90	-5.66-6.40	16.60	.669	.72	.076	.006	11/2-	1/2+	
75	92	167	1324.2	1323.2	.92	10.97	-5.32-8.39	16.95	.664	1.50	.086	.001	1/2+		
75	93	168	1333.1	1333.2	.95	8.86	-5.40-6.13	16.90	.661	.57	.102	.016	1/2+	3/2+	
75	94	169	1343.7	1343.1	1.26	10.66	-4.98-7.73	17.53	.658	1.44	.113	.005	1/2+		
75	95	170	1352.5	1352.7	1.49	8.76	-4.84-5.61	17.54	.656	.79	.126	.017	5/2-	5/2-	
75	96	171	1362.8	1362.2	1.79	10.37	-4.60-7.00	18.06	.654	1.68	.125	.005	5/2-		
75	97	172	1371.3	1371.4	2.00	8.45	-4.45-4.89	18.32	.652	1.05	.135	.008	5/2-	5/2+	
75	98	173	1381.4	1380.5	2.29	10.07	-4.22-6.28	18.91	.651	2.08	.141	.001	5/2-		
75	99	174	1389.6	1389.4	2.50	8.19	-4.05-4.18	19.23	.650	1.54	.145	.001	5/2-	7/2+	
75	100	175	1399.2	1398.1	2.75	9.65	-3.96-5.42	19.73	.647	2.58	.145	-.007	5/2+		
75	101	176	1407.2	1406.6	3.07	8.02	-3.69-3.50	20.25	.644	2.15	.156	-.006	5/2+	1/2-	
75	102	177	1416.7	1414.5	3.34	9.47	-3.40-4.82	20.91	.642	3.43	.156	-.012	5/2+		
75	103	178	1424.4	1423.0	3.55	7.73	-3.16-2.92	21.46	.640	2.17	.162	-.014	5/2+	5/2-	
75	104	179	1433.5	1431.0	3.83	9.03	-3.12-4.01	22.02	.639	4.28	.155	-.018	5/2+		
75	105	180	1440.9	1438.8	4.05	7.48	-2.94-2.22	22.63	.638	4.09	.163	-.021	5/2+	5/2+	
75	106	181	1449.5	1446.4	4.35	8.56	-2.90-3.08	23.03	.637	5.11	.158	-.026	5/2+		
75	107	182	1456.6	1453.8	4.58	7.15	-2.79-1.46	23.63	.636	4.92	.160	-.030	5/2+	7/2-	
75	108	183	1464.7	1461.1	4.89	8.09	-2.70-2.16	23.86	.635	5.70	.154	-.034	5/2+		
75	109	184	1471.4	1468.4	5.17	6.69	-2.72-.48	24.29	.634	5.34	.153	-.036	5/2+	1/2-	
75	110	185	1479.1	1475.5	5.53	7.67	-2.57-1.23	24.41	.633	6.02	.147	-.035	5/2+		
75	111	186	1485.4	1482.4	5.80	6.31	-2.43-.40	24.74	.633	5.60	.144	-.042	5/2+	3/2-	
75	112	187	1492.8	1489.2	6.10	7.40	-2.04-.44	24.88	.632	6.33	.138	-.044	5/2+		
75	113	188	1498.9	1495.9	6.36	6.07	-1.72-1.16	25.25	.632	5.96	.136	-.046	5/2+	11/2+	
75	114	189	1506.0	1502.3	6.66	7.10	-1.36-.37	25.38	.631	6.66	.125	-.047	5/2+		
75	115	190	1511.8	1508.7	6.93	5.82	-1.04-1.91	25.78	.631	6.31	.125	-.045	5/2+	7/2-	
75	116	191	1518.3	1514.9	7.21	6.54	-1.10-1.45	25.62	.631	6.55	.116	-.046	5/2+		
75	117	192	1523.7	1520.9	7.48	5.33	-1.03-3.13	25.80	.630	5.81	.107	-.044	5/2+	5/2-	

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
75	118	193	1531.2	1526.8	9.40	7.56	.59	1.21	26.93	.630	7.40	.C95	-.C40	5/2+	
75	119	194	1536.2	1532.5	7.97	4.97	.90	4.12	26.98	.630	6.36	.C80	-.C32	1/2+	1 1/2+
75	120	195	1542.5	1538.1	9.20	6.29	1.84	3.16	27.10	.629	6.77	.C57	-.C22	1/2+	
75	121	196	1547.7	1543.6	8.34	5.23	.90	4.39	27.69	.629	6.53	-.C52	-.C11	1/2-	1/2-
75	122	197	1554.1	1548.9	8.54	6.34	1.63	3.72	28.11	.628	7.60	-.C33	-.C12	1/2-	
75	123	198	1559.3	1554.1	8.78	5.28	2.12	5.16	28.99	.628	7.88	-.C32	-.C14	1/2-	3/2-
75	124	199	1565.3	1559.2	8.86	5.92	2.19	4.82	29.25	.628	8.76	C		+11/2	
75	125	200	1570.4	1564.1	9.08	5.14	2.50	6.02	30.22	.628	9.15	C		+11/2	P 1/2
75	126	201	1576.1	1568.9	9.31	5.71	2.74	5.67	30.51	.628	10.24	C		+11/2	
75	127	202	1578.7	1573.2	9.53	2.61	.67	8.99	29.20	.628	8.36	C		+11/2	G 5/2
75	128	203	1583.1	1577.4	9.76	4.36	-.24	7.46	28.37	.628	8.35	C		+11/2	
75	129	204	1585.5	1581.5	9.98	2.40	-.00	9.64	27.07	.628	6.52	C		+11/2	G 5/2
75	130	205	1589.7	1585.4	10.20	4.18	.26	8.08	26.30	.629	6.59	C		+11/2	
75	131	206	1591.9	1589.2	10.42	2.20	.50	10.28	25.01	.629	4.80	C		+11/2	G 9/2
75	132	207	1596.0	1592.9	10.75	4.12	.87	8.57	24.41	.630	5.07	.C18	.C00	11/2-	
75	133	208	1598.0	1596.5	11.00	2.05	1.16	10.74	23.21	.630	3.42	.C27	.C08	11/2-	1/2+
75	134	209	1601.9	1600.0	11.27	3.91	1.51	9.06	22.61	.630	3.75	.C35	.C11	11/2-	
75	135	210	1604.4	1603.3	11.37	2.50	1.47	10.63	22.06	.631	3.17	.C60	.C31	5/2-	3/2-
75	136	211	1608.2	1606.5	11.56	3.81	2.26	9.28	21.58	.631	3.64	.C65	.C32	5/2-	
75	137	212	1610.7	1609.7	11.65	2.47	2.70	10.81	21.20	.631	3.14	.C84	.C35	5/2-	3/2+
75	138	213	1614.4	1612.7	11.85	3.69	2.92	9.60	20.80	.632	3.63	.C87	.C37	5/2-	
75	139	214	1616.7	1615.5	12.01	2.30	2.99	11.30	20.45	.632	3.03	.C94	.C41	5/2-	5/2-
75	140	215	1620.1	1618.3	12.88	3.44	3.13	10.34	20.01	.633	3.45	.C96	.C38	5/2-	
75	141	216	1621.8	1621.0	12.38	1.62	3.63	12.36	19.18	.633	2.38	.C06	.C40	5/2-	5/2+
75	142	217	1625.1	1623.6	12.59	3.35	3.77	10.80	18.85	.634	2.89	.C08	.C35	5/2-	
75	143	218	1627.1	1626.0	12.77	2.02	3.85	12.32	18.62	.634	2.31	.C14	.C34	5/2-	7/2-
75	144	219	1630.2	1628.4	12.98	3.08	3.98	11.45	18.22	.635	2.76	.C16	.C27	5/2-	
75	145	220	1632.1	1630.8	13.17	1.93	4.25	12.86	18.08	.636	2.27	.C22	.C23	5/2-	5/2+
75	146	221	1635.3	1633.1	13.39	3.12	4.67	11.79	17.91	.637	3.02	.C24	.C16	5/2-	
75	147	222	1637.0	1635.3	13.58	1.79	4.90	13.28	17.81	.638	2.61	.C28	.C13	5/2-	7/2+
75	148	223	1640.0	1637.4	13.83	2.95	5.14	12.29	17.66	.639	3.41	.C27	.C04	5/2-	
75	149	224	1641.6	1639.4	14.02	1.62	5.35	13.79	17.58	.641	3.04	.C25	.C02	5/2-	9/2-
75	150	225	1644.4	1641.3	14.25	2.76	5.57	12.83	17.42	.642	3.88	.C25	-.C03	5/2-	
75	151	226	1645.9	1643.1	14.44	1.47	5.80	14.29	17.37	.644	3.57	.C31	-.C06	5/2-	1/2+
75	152	227	1648.3	1644.9	14.62	2.47	5.92	13.46	17.10	.646	4.34	.C25	-.C11	5/2+	
75	153	228	1649.6	1646.5	14.94	1.31	6.13	14.86	17.06	.649	4.05	.C30	-.C14	5/2+	11/2-
75	154	229	1652.0	1648.0	15.19	2.37	6.39	13.88	16.89	.651	4.90	.C26	-.C15	5/2+	
75	155	230	1653.2	1649.4	15.40	1.15	6.76	15.31	16.86	.652	4.63	.C24	-.C22	5/2+	9/2+
75	156	231	1655.3	1650.8	15.62	2.16	7.01	14.55	16.63	.653	5.48	.C22	-.C26	5/2+	
75	157	232	1656.3	1652.0	15.80	.95	7.22	15.93	16.57	.655	5.23	.C24	-.C25	5/2+	1/2+
75	158	233	1658.2	1653.2	15.99	1.92	7.39	15.08	16.27	.657	6.10	.C26	-.C33	5/2+	
75	159	234	1659.0	1654.3	16.16	.81	7.61	16.28	16.23	.660	5.92	.C28	-.C36	5/2+	1/2+
75	160	235	1660.7	1655.2	16.34	1.69	7.72	15.58	15.87	.663	6.68	.C25	-.C35	5/2+	
75	161	236	1661.3	1656.1	16.52	.66	7.91	16.75	15.84	.667	6.54	.C30	-.C42	5/2+	3/2+
75	162	237	1662.7	1657.0	16.72	1.39	7.96	16.17	15.40	.671	7.12	.C28	-.C44	5/2+	

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
76	73	149	1084.4	1082.0	-4.59	15.07	-7.50-21.01	7.98	.751	3.61	.131	-.034			5/2-
76	74	150	1100.8	1097.5	-4.18	16.36	-7.28-21.97	8.54	.746	4.42	.119	-.035			
76	75	151	1115.3	1112.6	-3.69	14.51	-7.12-19.54	9.11	.741	3.55	.108	-.033			7/2+
76	76	152	1131.3	1127.5	-2.75	16.02	-6.65-20.66	9.89	.736	4.38	.089	-.025			
76	77	153	1145.0	1141.7	-2.40	13.68	-6.21-17.91	10.67	.731	3.74	-.068	-.022			3/2-
76	78	154	1160.4	1155.6	-1.71	15.44	-5.45-18.74	11.91	.727	4.83	C				
76	79	155	1173.8	1169.2	-1.47	13.41	-5.05-16.40	12.95	.723	4.62	C			D 3/2	
76	80	156	1189.2	1182.6	-1.00	15.37	-4.16-17.96	14.64	.719	6.63	C				
76	81	157	1202.2	1195.7	-.93	13.03	-4.01-15.43	15.80	.715	6.55	C			D 3/2	
76	82	158	1217.2	1208.5	-.30	14.95	-3.79-16.87	17.58	.711	6.65	C				
76	83	159	1228.3	1221.1	-.22	11.11	-5.27-12.94	17.34	.708	7.16	C			F 7/2	
76	84	160	1240.7	1233.5	.17	12.42	-7.07-13.95	17.08	.704	7.22	C				
76	85	161	1251.3	1245.6	.38	10.64	-6.96-11.88	16.82	.701	5.74	C			F 7/2	
76	86	162	1263.3	1257.5	.69	12.00	-6.80-12.96	16.62	.698	5.86	C				
76	87	163	1273.5	1269.1	.94	10.14	-6.72-10.81	16.31	.695	4.35	C			F 7/2	
76	88	164	1285.1	1280.6	1.22	11.63	-6.52-12.01	16.19	.691	4.55	C				
76	89	165	1294.7	1291.8	1.48	9.61	-6.48 -9.72	15.77	.688	2.97	C			F 7/2	
76	90	166	1306.1	1302.7	1.72	11.32	-6.23-11.14	15.78	.685	3.31	0				
76	91	167	1315.0	1313.5	1.79	8.97	-6.31 -8.52	15.16	.681	1.74	-.043	.016			5/2-
76	92	168	1326.1	1324.1	1.94	11.12	-5.96-10.35	15.38	.679	2.09	C				
76	93	169	1335.2	1334.4	2.14	9.06	-5.90 -7.99	15.24	.676	1.45	.093	.019			3/2+
76	94	170	1346.1	1344.5	2.36	10.87	-5.50 -9.65	15.61	.674	2.20	.100	.012			
76	95	171	1355.1	1354.4	2.58	8.98	-5.35 -7.60	15.77	.672	1.60	.119	.022			5/2-
76	96	172	1365.6	1364.2	2.78	10.56	-5.13 -9.12	16.21	.671	2.37	.123	.008			
76	97	173	1374.3	1373.7	3.01	8.68	-4.97 -6.97	16.41	.667	1.76	.136	.013			5/2+
76	98	174	1384.6	1383.0	3.23	10.29	-4.75 -8.37	16.95	.663	2.66	.134	.005			
76	99	175	1393.0	1392.2	3.45	8.41	-4.59 -6.33	17.27	.661	2.11	.145	.006			7/2+
76	100	176	1402.9	1401.1	3.74	9.94	-4.43 -7.70	17.82	.658	3.11	.144	-.001			
76	101	177	1411.1	1409.9	3.87	8.15	-4.25 -5.66	18.22	.656	2.63	.151	-.002			1/2-
76	102	178	1420.7	1418.4	4.02	9.63	-4.03 -6.96	18.81	.655	3.73	.152	-.008			
76	103	179	1428.7	1426.8	4.24	7.95	-3.79 -5.08	19.34	.653	3.46	.160	-.010			5/2-
76	104	180	1437.9	1435.0	4.47	9.26	-3.72 -6.24	19.89	.652	4.52	.156	-.015			
76	105	181	1445.6	1443.1	4.70	7.70	-3.54 -4.49	20.49	.651	4.32	.160	-.018			5/2+
76	106	182	1454.4	1450.9	4.91	8.78	-3.51 -5.29	20.87	.650	5.22	.155	-.022			
76	107	183	1461.8	1458.6	5.15	7.39	-3.38 -3.64	21.44	.649	5.10	.158	-.028			7/2-
76	108	184	1470.2	1466.2	5.43	8.36	-3.28 -4.39	21.73	.647	5.88	.150	-.031			
76	109	185	1477.1	1473.7	5.66	6.92	-3.28 -2.67	22.16	.645	5.51	.149	-.034			1/2-
76	110	186	1485.0	1481.0	5.93	7.94	-3.11 -3.44	22.32	.644	6.16	.142	-.036			
76	111	187	1491.6	1488.2	6.17	6.55	-2.98 -1.75	22.66	.643	5.75	.139	-.039			3/2-
76	112	188	1499.2	1495.3	6.44	7.67	-2.62 -2.61	22.87	.641	6.47	.132	-.041			
76	113	189	1505.6	1502.2	6.69	6.31	-2.34 -.92	23.26	.640	6.10	.130	-.043			11/2+
76	114	190	1512.9	1506.9	6.95	7.36	-2.08 -1.69	23.43	.640	6.75	.122	-.044			
76	115	191	1519.0	1515.5	7.21	6.09	-1.79 -.03	23.88	.639	6.48	.117	-.046			7/2-
76	116	192	1526.0	1521.9	7.68	7.01	-1.59 -.68	23.78	.638	7.00	.109	-.043			
76	117	193	1531.7	1528.1	7.99	5.65	-1.49 1.03	24.25	.638	6.38	.102	-.041			5/2-
76	118	194	1539.5	1534.3	8.31	7.88	.11 .61	25.49	.637	7.98	.092	-.035			
76	119	195	1544.9	1540.3	8.67	5.33	.38 1.96	25.70	.637	7.13	.071	-.030			13/2+

L	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
76	120	196	1551.3	1546.1	8.84	6.46	1.20	1.35	25.79	.636	7.34	-.037	-.005		
76	121	197	1557.0	1551.8	9.28	5.68	.47	2.42	26.61	.636	7.48	-.035	-.006		1/2-
76	122	198	1563.7	1557.3	9.67	6.72	1.14	1.60	27.21	.636	8.72	0			
76	123	199	1569.3	1562.7	9.95	5.57	1.62	3.06	28.17	.636	9.12	-.024	-.010		3/2-
76	124	200	1575.6	1568.0	10.37	6.34	1.82	2.44	28.65	.636	10.27	0			
76	125	201	1581.0	1573.2	10.60	5.36	2.13	3.60	29.64	.635	10.65	0			P 1/2
76	126	202	1586.9	1578.2	10.82	5.93	2.23	3.25	29.95	.635	11.74	0			
76	127	203	1589.8	1582.7	11.04	2.83	.15	6.58	28.65	.635	9.86	0			G 5/2
76	128	204	1594.3	1587.1	11.26	4.58	-.76	5.06	27.85	.635	9.85	0			
76	129	205	1597.0	1591.4	11.48	2.62	-.52	7.23	26.57	.636	8.02	0			G 5/2
76	130	206	1601.4	1595.6	11.69	4.40	-.26	5.68	25.87	.636	8.08	0			
76	131	207	1603.8	1599.6	11.91	2.42	-.03	7.88	24.56	.636	6.29	0			G 5/2
76	132	208	1608.0	1603.6	12.01	4.72	.23	6.30	23.85	.636	6.42	0			
76	133	209	1610.2	1607.4	12.19	2.23	.48	8.50	22.63	.636	4.69	0			G 5/2
76	134	210	1614.3	1611.0	12.35	4.07	.77	6.88	22.00	.637	4.92	0			
76	135	211	1616.7	1614.6	12.31	2.46	1.43	8.70	21.21	.637	4.10	.055	.026		3/2-
76	136	212	1620.7	1618.0	12.50	4.00	1.78	7.32	20.73	.638	4.53	.059	.029		
76	137	213	1623.2	1621.4	12.50	2.48	1.86	9.04	20.17	.638	3.98	.079	.042		3/2+
76	138	214	1627.2	1624.6	12.81	3.99	2.23	7.61	19.89	.639	4.49	.084	.037		
76	139	215	1629.7	1627.7	12.99	2.48	2.33	9.17	19.54	.639	3.88	.092	.041		5/2-
76	140	216	1633.3	1630.6	13.19	3.64	2.48	8.23	19.11	.640	4.30	.094	.038		
76	141	217	1635.1	1633.5	13.37	1.80	2.14	10.28	18.28	.641	3.21	.104	.041		5/2+
76	142	218	1638.7	1636.3	13.57	3.54	3.12	9.19	17.96	.642	3.71	.105	.036		
76	143	219	1640.9	1638.9	13.75	2.21	3.21	10.58	17.73	.643	3.12	.112	.035		7/2-
76	144	220	1644.2	1641.5	14.01	3.34	3.41	9.27	17.41	.644	3.62	.112	.025		
76	145	221	1646.3	1644.1	14.12	2.04	3.61	10.71	17.21	.646	3.05	.119	.025		5/2+
76	146	222	1649.6	1646.6	14.29	3.29	4.02	9.67	17.03	.647	3.75	.120	.018		
76	147	223	1651.5	1649.0	14.46	1.96	4.25	11.24	16.93	.649	3.32	.124	.015		7/2+
76	148	224	1654.6	1651.3	14.63	3.12	4.46	10.28	16.80	.650	4.07	.123	.006		
76	149	225	1656.4	1653.5	14.80	1.80	4.67	11.79	16.72	.651	3.67	.125	.004		5/2-
76	150	226	1659.4	1655.6	14.98	2.93	4.89	10.81	16.57	.652	4.48	.124	-.001		
76	151	227	1661.0	1657.6	15.15	1.64	5.10	12.29	16.51	.653	4.13	.126	-.004		1/2+
76	152	228	1663.7	1659.6	15.39	2.71	5.29	11.37	16.32	.655	4.92	.122	-.005		
76	153	229	1665.1	1661.4	15.46	1.38	5.39	12.90	16.17	.656	4.53	.123	-.012		11/2-
76	154	230	1667.7	1663.1	15.68	2.59	5.69	11.96	16.03	.658	5.40	.118	-.019		
76	155	231	1669.1	1664.7	15.93	1.40	6.10	13.39	16.08	.660	5.20	.116	-.022		5/2+
76	156	232	1671.4	1666.2	16.09	2.32	6.30	12.64	15.86	.663	6.01	.114	-.025		
76	157	233	1672.5	1667.7	16.22	1.08	6.44	14.10	15.75	.667	5.65	.114	-.028		13/2-
76	158	234	1674.5	1669.0	16.31	2.01	6.50	13.35	15.43	.670	6.49	.118	-.033		
76	159	235	1675.5	1670.3	16.48	.98	6.72	14.55	15.41	.672	6.28	.121	-.035		1/2+
76	160	236	1677.3	1671.5	16.64	1.84	6.83	13.70	15.06	.674	7.02	.122	-.038		
76	161	237	1678.1	1672.5	16.79	.81	7.00	14.82	15.03	.677	6.85	.125	-.042		3/2+
76	162	238	1679.7	1673.5	16.98	1.59	7.09	14.02	14.59	.679	7.46	.122	-.044		
76	163	239	1680.0	1674.4	16.79	.27	6.87	15.96	14.19	.682	5.55	0			11 5/2
76	164	240	1682.4	1675.3	18.35	2.38	8.05	14.74	14.72	.686	7.11	0			

Z	N	A	B.E.	BC	SP	SN	SA	CE	BAR	X	S	A2	A4	P	N
77	74	151	1094.9	1092.2	-5.82	16.94	-7.61-21.51	7.61	.761	3.34	.094	-.026	11/2-		
77	75	152	1109.8	1107.7	-5.43	14.90	-7.44-18.94	8.22	.756	2.74	.091	-.025	11/2-	7/2+	
77	76	153	1126.3	1122.9	-5.01	16.43	-6.96-20.07	9.07	.751	3.69	-.062	-.018	3/2+		
77	77	154	1140.9	1137.8	-4.08	14.61	-6.37-17.81	9.98	.746	3.40	-.060	-.015	3/2+	3/2-	
77	78	155	1156.6	1152.0	-3.77	15.75	-5.69-18.65	11.18	.742	4.62	0		0	3/2	
77	79	156	1170.4	1165.9	-3.37	13.82	-5.22-16.03	12.27	.738	4.53	.014	.003	1/2+	3/2+	
77	80	157	1186.0	1179.6	-3.18	15.56	-4.40-17.58	13.81	.733	6.42	0		0	3/2	
77	81	158	1199.5	1193.0	-2.70	13.51	-4.06-15.15	15.15	.729	6.56	.017	-.005	1/2+	11/2-	
77	82	159	1214.6	1206.1	-2.61	15.04	-3.93-16.58	16.69	.725	8.44	0		0	3/2	
77	83	160	1226.0	1219.0	-2.31	11.41	-5.47-12.47	16.39	.722	6.95	0		0	3/2 F	7/2
77	84	161	1238.7	1231.7	-2.02	12.71	-7.09-13.48	16.09	.718	7.01	0		0	3/2	
77	85	162	1249.6	1244.1	-1.74	10.93	-7.18-11.42	15.80	.715	5.53	0		0	3/2 F	7/2
77	86	163	1261.9	1256.2	-1.45	12.29	-6.93-12.49	15.56	.711	5.65	0		0	3/2	
77	87	164	1272.3	1268.2	-1.17	10.43	-6.93-10.35	15.24	.708	4.14	0		0	3/2 F	7/2
77	88	165	1284.2	1279.9	-.89	11.91	-6.71-11.55	15.08	.705	4.35	0		0	3/2	
77	89	166	1294.1	1291.4	-.60	9.90	-6.71 -9.26	14.65	.702	2.77	0		0	3/2 F	7/2
77	90	167	1305.7	1302.6	-.33	11.60	-6.47-10.68	14.63	.699	3.11	0		0	3/2	
77	91	168	1315.0	1313.7	-.02	9.28	-6.54 -8.09	14.00	.696	1.49	-.035	.010	3/2+	9/2-	
77	92	169	1326.4	1324.5	.28	11.42	-6.20 -9.96	14.22	.693	1.98	.020	.004	1/2+		
77	93	170	1335.6	1335.1	.44	9.21	-5.89 -7.53	13.94	.691	.97	-.058	.024	3/2+	5/2-	
77	94	171	1346.7	1345.5	.60	11.03	-5.82 -5.21	14.17	.688	1.64	.088	.001	11/2-		
77	95	172	1355.7	1355.7	.66	9.04	-5.64 -6.97	14.11	.685	.67	.101	.012	11/2-	3/2-	
77	96	173	1366.6	1365.7	.93	10.84	-5.46 -8.58	14.55	.682	1.55	.106	.008	11/2-		
77	97	174	1375.4	1375.5	1.14	8.89	-5.33 -6.43	14.72	.680	1.01	.132	-.004	11/2-	5/2+	
77	98	175	1385.9	1385.1	1.30	10.45	-5.25 -7.86	15.16	.678	1.63	.116	.002	11/2-		
77	99	176	1394.5	1394.5	1.45	8.57	-5.13 -5.67	15.36	.676	1.02	.131	.005	11/2-	7/2+	
77	100	177	1404.6	1403.7	1.70	10.19	-5.01 -7.02	15.90	.674	1.96	.128	-.001	11/2-		
77	101	178	1413.0	1412.7	1.88	8.33	-4.87 -4.95	16.22	.673	1.49	.142	.000	11/2-	1/2-	
77	102	179	1422.8	1421.5	2.08	9.82	-4.70 -6.16	16.74	.671	2.48	.140	-.006	11/2-		
77	103	180	1430.9	1430.2	2.24	8.11	-4.61 -4.24	17.13	.670	2.18	.153	-.007	3/2-	5/2-	
77	104	181	1440.4	1438.6	2.43	9.45	-4.63 -5.25	17.62	.666	3.16	.146	-.016	11/2-		
77	105	182	1448.3	1446.9	2.71	7.98	-4.38 -3.52	18.25	.663	2.97	.153	-.016	3/2-	9/2+	
77	106	183	1457.4	1455.0	2.96	9.04	-4.38 -4.38	18.66	.661	3.93	.146	-.024	11/2-		
77	107	184	1465.0	1463.0	3.19	7.61	-4.25 -2.75	19.24	.659	3.72	.151	-.025	11/2-	7/2-	
77	108	185	1473.6	1470.8	3.47	8.65	-4.16 -3.57	19.58	.658	4.51	.142	-.026	11/2-		
77	109	186	1480.8	1478.5	3.71	7.16	-4.15 -1.92	20.02	.657	4.14	.142	-.031	11/2-	1/2-	
77	110	187	1489.0	1486.1	4.02	8.25	-3.99 -2.78	20.26	.655	4.82	.131	-.033	11/2-		
77	111	188	1495.9	1493.6	4.28	6.81	-3.86 -1.14	20.64	.654	4.38	.125	-.036	11/2-	3/2-	
77	112	189	1503.8	1500.9	4.61	8.00	-3.54 -2.09	20.94	.654	5.13	.115	-.037	11/2-		
77	113	190	1510.4	1508.0	4.88	6.59	-3.26 -.51	21.33	.653	4.81	.117	-.035	11/2-	11/2+	
77	114	191	1518.2	1514.9	5.28	7.76	-2.90 -1.44	21.73	.652	5.68	.110	-.035	11/2-		
77	115	192	1524.6	1521.7	5.55	6.35	-2.61 .20	22.22	.652	5.43	.108	-.042	11/2-	3/2-	
77	116	193	1531.9	1528.4	5.89	7.35	-2.36 -.56	22.44	.651	6.14	.101	-.040	11/2-		
77	117	194	1539.4	1534.9	7.71	7.46	-.72 .93	24.31	.651	7.10	.095	-.037	11/2-	5/2-	
77	118	195	1546.0	1541.3	6.50	6.67	-.59 .69	24.13	.650	7.43	.085	-.036	11/2-		
77	119	196	1551.9	1547.5	7.02	5.85	-.08 2.02	24.65	.650	6.79	.064	-.026	11/2-	13/2+	
77	120	197	1558.6	1553.5	7.31	6.75	-.89 1.50	24.78	.649	7.18	-.035	-.005	3/2+		

L	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	A
77	121	198	1564.5	1559.5	7.55	5.91	.05	2.78	25.62	.649	7.33	-.034	-.006	3/2+	1/2-
77	122	199	1571.6	1565.3	7.85	7.02	.79	1.89	26.31	.648	8.70	-.022	-.007	3/2+	
77	123	200	1577.3	1570.9	8.00	5.72	1.28	3.41	27.22	.647	8.97	-.025	-.010	3/2+	3/2-
77	124	201	1583.8	1576.4	8.18	6.52	1.46	2.84	27.66	.647	10.07	C		C 3/2	
77	125	202	1589.4	1581.8	8.40	5.58	1.76	4.02	28.67	.647	10.46	C		C 3/2	P 1/2
77	126	203	1595.5	1587.0	8.63	6.16	2.00	3.67	29.01	.647	11.54	C		C 3/2	
77	127	204	1598.6	1591.8	8.85	3.06	-.08	6.99	27.73	.646	9.66	C		C 3/2	G 9/2
77	128	205	1603.4	1596.4	9.07	4.80	-1.00	5.47	26.94	.646	9.66	C		C 3/2	
77	129	206	1606.2	1600.9	9.29	2.85	-.76	7.64	25.69	.646	7.83	C		C 3/2	G 9/2
77	130	207	1610.9	1605.3	9.51	4.61	-.50	6.09	24.95	.647	7.89	C		C 3/2	
77	131	208	1613.5	1609.6	9.73	2.64	-.27	8.29	23.71	.647	6.10	C		C 3/2	G 9/2
77	132	209	1617.9	1613.7	9.95	4.43	-.02	6.71	23.03	.647	6.24	C		C 3/2	
77	133	210	1620.4	1617.7	10.17	2.45	.23	8.90	21.82	.646	4.51	C		C 3/2	G 9/2
77	134	211	1624.7	1621.6	10.38	4.28	.39	7.29	21.21	.648	4.74	C		C 3/2	
77	135	212	1627.3	1625.4	10.53	2.62	.96	9.17	20.39	.649	3.74	.050	.023	1/2+	3/2-
77	136	213	1631.5	1629.0	10.73	4.20	1.25	7.47	19.92	.650	4.13	.052	.023	1/2+	
77	137	214	1634.0	1632.5	10.81	2.56	1.30	9.32	19.27	.650	3.31	.068	.034	1/2+	3/2+
77	138	215	1638.1	1636.0	10.87	4.04	1.54	8.24	18.86	.651	3.75	.070	.033	1/2+	
77	139	216	1640.8	1639.3	11.08	2.70	1.76	9.79	18.53	.651	3.22	.087	.037	1/2+	5/2-
77	140	217	1644.6	1642.5	11.29	3.84	1.92	8.86	18.13	.651	3.64	.089	.034	1/2+	
77	141	218	1647.1	1645.5	11.95	2.45	2.08	10.44	17.77	.652	2.97	.097	.037	1/2+	5/2+
77	142	219	1650.7	1648.5	12.00	3.60	2.24	9.50	17.32	.652	3.32	.097	.032	1/2+	
77	143	220	1652.7	1651.4	11.83	2.04	2.66	11.24	16.73	.653	2.38	.104	.031	1/2+	7/2-
77	144	221	1656.2	1654.1	11.97	3.49	2.79	9.97	16.38	.654	2.79	.103	.023	11/2-	
77	145	222	1658.4	1656.9	12.18	2.25	3.02	11.47	16.19	.655	2.25	.111	.020	11/2-	7/2-
77	146	223	1662.0	1659.6	12.42	3.53	3.47	10.21	16.08	.656	2.99	.111	.011	11/2-	
77	147	224	1664.1	1662.3	12.61	2.15	3.69	11.74	15.99	.657	2.59	.119	.006	11/2-	7/2+
77	148	225	1667.4	1664.8	12.80	3.31	3.88	10.72	15.85	.658	3.37	.115	.011	11/2-	
77	149	226	1669.4	1667.2	12.96	1.95	4.04	12.27	15.75	.660	2.91	.117	.006	11/2-	9/2-
77	150	227	1672.5	1669.5	13.15	3.12	4.21	11.29	15.61	.662	3.69	.113	-.000	11/2-	
77	151	228	1674.3	1671.7	13.30	1.79	4.38	12.75	15.53	.664	3.30	.115	-.003	11/2-	7/2+
77	152	229	1677.2	1673.8	13.50	2.92	4.54	11.81	15.37	.667	4.06	.111	-.009	11/2-	
77	153	230	1678.9	1675.8	13.77	1.65	4.71	13.25	15.32	.670	3.78	.112	-.013	11/2-	11/2-
77	154	231	1681.7	1677.7	14.01	2.83	5.07	12.19	15.31	.671	4.71	.107	-.018	11/2-	
77	155	232	1683.3	1679.5	14.18	1.58	5.34	13.60	15.37	.673	4.51	.106	-.021	11/2-	9/2+
77	156	233	1685.8	1681.2	14.40	2.53	5.51	12.80	15.20	.675	5.31	.102	-.025	11/2-	
77	157	234	1687.1	1682.8	14.58	1.26	5.62	14.28	15.12	.676	4.97	.101	-.027	11/2-	13/2-
77	158	235	1689.2	1684.4	14.74	2.17	5.63	13.55	14.77	.679	5.62	.101	-.026	11/2-	
77	159	236	1690.2	1685.8	14.76	1.00	5.68	14.92	14.60	.681	5.24	.102	-.031	11/2-	1/2+
77	160	237	1692.2	1687.2	14.85	1.93	5.69	14.16	14.18	.684	5.88	.105	-.034	11/2-	
77	161	238	1693.0	1688.4	14.83	.78	5.67	15.43	13.97	.687	5.37	.103	-.033	11/2-	3/2+
77	162	239	1695.2	1689.6	15.45	2.21	6.19	14.51	14.03	.690	5.56	C		C 3/2	
77	163	240	1696.3	1690.7	16.33	1.16	6.69	16.09	14.37	.693	5.70	.003	.014	1/2+	15/2-
77	164	241	1698.6	1691.7	16.25	2.30	7.59	14.88	14.68	.696	6.92	C		C 3/2	
77	165	242	1698.8	1692.6	16.44	.15	7.27	17.46	14.18	.700	6.15	C		C 3/2	D 9/2

L	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
78	76	154	1122.3	1117.9	-3.98	16.88	-6.76-22.07	8.31	.766	4.80	-.064	-.020			
78	77	155	1137.2	1133.1	-3.68	14.91	-6.36-19.74	9.17	.761	4.51	-.062	-.021			3/2-
78	78	156	1153.6	1148.0	-2.99	16.43	-5.94-20.96	10.26	.756	5.64	C				
78	79	157	1167.6	1162.2	-2.81	14.00	-5.62-18.37	11.21	.751	5.43	C				D 3/2
78	80	158	1183.6	1176.2	-2.41	15.95	-5.11-19.49	12.83	.747	7.43	C				
78	81	159	1197.2	1189.8	-2.32	13.61	-4.91-16.95	13.91	.743	7.35	C				D 3/2
78	82	160	1212.7	1203.3	-1.84	15.52	-4.76-18.57	15.61	.739	9.44	C				
78	83	161	1224.4	1216.5	-1.55	11.70	-6.10-14.46	15.28	.735	7.96	C				F 7/2
78	84	162	1237.4	1229.4	-1.27	12.99	-8.06-15.47	14.95	.731	8.01	C				
78	85	163	1248.6	1242.1	-.98	11.22	-7.95-13.41	14.64	.728	6.54	C				F 7/2
78	86	164	1261.2	1254.5	-.70	12.57	-7.80-14.47	14.37	.725	6.65	C				
78	87	165	1271.9	1266.8	-.42	10.71	-7.73-12.33	14.00	.721	5.15	C				F 7/2
78	88	166	1284.1	1278.7	-.14	12.19	-7.55-13.53	13.82	.718	5.35	C				
78	89	167	1294.3	1290.5	.13	10.18	-7.52-11.24	13.36	.715	3.77	C				F 7/2
78	90	168	1306.1	1302.0	.41	11.87	-7.28-12.65	13.31	.712	4.11	C				
78	91	169	1315.7	1313.3	.65	9.52	-7.38-10.02	12.64	.709	2.41	-.037	.006			9/2-
78	92	170	1327.3	1324.4	.90	11.67	-7.02-11.86	12.82	.706	2.89	C				
78	93	171	1336.7	1335.3	1.04	9.36	-6.64-9.27	12.38	.704	1.66	-.055	.017			9/2-
78	94	172	1348.0	1346.0	1.28	11.27	-6.48-10.92	12.58	.701	2.20	.060	.007			
78	95	173	1357.2	1356.4	1.47	9.23	-6.31-8.59	12.42	.699	1.34	.090	.021			3/2-
78	96	174	1368.2	1366.7	1.67	11.04	-6.15-10.32	12.78	.696	2.08	.092	.015			
78	97	175	1377.2	1376.8	1.80	9.02	-6.11-8.06	12.80	.694	1.29	.114	.015			5/2+
78	98	176	1388.0	1386.6	2.12	10.77	-5.91-9.83	13.27	.692	2.24	.117	.015			
78	99	177	1396.8	1396.3	2.39	8.84	-5.75-7.68	13.46	.690	1.72	.141	.012			7/2+
78	100	178	1407.2	1405.7	2.59	10.39	-5.65-9.18	13.94	.687	2.55	.135	.006			
78	101	179	1415.9	1415.0	2.88	8.61	-5.45-7.16	14.28	.685	2.08	.145	.005			1/2-
78	102	180	1425.9	1424.1	3.08	10.03	-5.35-8.41	14.75	.682	3.02	.147	-.002			
78	103	181	1434.3	1433.0	3.42	8.44	-5.06-6.60	15.26	.681	2.76	.155	-.003			5/2-
78	104	182	1444.0	1441.7	3.67	9.71	-4.98-7.70	15.76	.679	3.75	.155	-.010			
78	105	183	1452.2	1450.3	3.87	8.17	-4.75-5.92	16.34	.677	3.52	.155	-.014			9/2+
78	106	184	1461.4	1458.6	4.07	9.24	-4.78-6.75	16.70	.676	4.38	.154	-.018			
78	107	185	1469.3	1466.8	4.30	7.83	-4.65-5.14	17.26	.675	4.17	.158	-.022			7/2-
78	108	186	1478.1	1474.9	4.46	8.81	-4.61-5.88	17.52	.673	5.01	.151	-.030			
78	109	187	1485.5	1482.9	4.68	7.39	-4.61-4.33	17.95	.672	4.50	.146	-.031			1/2-
78	110	188	1493.9	1490.7	4.89	8.45	-4.52-5.14	18.16	.671	5.13	.135	-.033			
78	111	189	1501.0	1498.4	5.12	7.04	-4.40-3.42	18.54	.670	4.68	.131	-.036			3/2-
78	112	190	1509.2	1505.9	5.30	8.18	-4.16-4.28	18.74	.669	5.31	.120	-.035			
78	113	191	1516.0	1513.3	5.53	6.82	-3.89-1.82	19.19	.667	4.57	.117	-.038			11/2+
78	114	192	1524.0	1520.5	5.78	8.00	-3.56-2.58	19.56	.665	5.78	.107	-.037			
78	115	193	1530.6	1527.6	6.01	6.59	-3.29-1.65	20.06	.663	5.54	.105	-.040			3/2-
78	116	194	1539.5	1534.4	7.61	8.95	-1.70-2.62	21.67	.662	7.54	.096	-.036			
78	117	195	1545.9	1541.2	6.58	6.43	-1.35-1.89	22.29	.661	7.22	.088	-.033			9/2-
78	118	196	1553.1	1547.8	7.09	7.18	-1.18-1.41	22.40	.660	7.54	.064	-.025			
78	119	197	1559.4	1554.2	7.46	6.23	-.60-.06	23.08	.659	7.35	.055	-.021			13/2+
78	120	198	1566.5	1560.5	7.90	7.18	-1.30-1.76	23.47	.659	8.11	-.035	-.006			
78	121	199	1572.7	1566.7	8.13	6.13	-.49-.98	24.32	.658	8.26	-.035	-.006			1/2-
78	122	200	1579.9	1572.7	8.35	7.25	.30-.09	25.04	.658	9.62	-.022	-.007			

Z	N	A	P.E.	BC	SP	SN	SA	CE	EAR	X	S	A2	A4	P	N
78	123	201	1585.9	1578.6	8.58	5.95	.57	1.60	25.96	.657	5.85	-.025	-.010		7/2-
78	124	202	1592.6	1584.3	8.82	6.76	.61	1.02	26.44	.657	11.01	0			
78	125	203	1598.4	1589.9	9.04	5.81	.85	2.15	27.47	.657	11.35	0			P 1/2
78	126	204	1604.8	1595.3	9.26	6.38	.89	1.80	27.82	.656	12.47	0			
78	127	205	1608.1	1600.3	9.48	3.28	-1.19	5.12	26.57	.656	10.60	0			G 5/2
78	128	206	1613.1	1605.2	9.70	5.02	-2.11	3.61	25.80	.656	10.55	0			
78	129	207	1616.2	1609.9	9.92	3.07	-1.88	5.78	24.56	.656	8.76	0			G 5/2
78	130	208	1621.0	1614.5	10.14	4.83	-1.62	4.24	23.85	.656	8.82	0			
78	131	209	1623.9	1619.0	10.36	2.85	-1.39	6.43	22.63	.656	7.03	0			G 5/2
78	132	210	1628.5	1623.3	10.57	4.64	-1.14	4.86	21.97	.656	7.16	0			
78	133	211	1631.2	1627.6	10.79	2.67	-.89	7.06	20.75	.657	5.44	0			G 9/2
78	134	212	1635.7	1631.7	11.00	4.45	-.61	5.45	20.20	.657	5.66	0			
78	135	213	1638.2	1635.6	10.89	2.51	-.34	7.65	19.07	.657	4.06	-.022	.005		5/2+
78	136	214	1642.6	1639.5	11.10	4.41	-.00	5.99	18.62	.658	4.45	-.036	.005		
78	137	215	1645.5	1643.3	11.50	2.96	.49	7.66	18.16	.658	4.05	.068	.032		3/2+
78	138	216	1649.8	1646.9	11.71	4.25	.75	6.34	17.77	.659	4.53	.070	.032		
78	139	217	1652.7	1650.4	11.92	2.91	1.18	7.74	17.47	.660	4.03	.087	.036		5/2-
78	140	218	1656.7	1653.8	12.12	4.04	1.23	6.83	17.05	.661	4.44	.087	.035		
78	141	219	1659.4	1657.1	12.31	2.65	1.40	8.42	16.73	.662	3.75	.096	.035		5/2+
78	142	220	1663.2	1660.2	12.50	3.78	1.55	7.44	16.25	.663	4.11	.095	.034		
78	143	221	1665.4	1663.3	12.67	2.21	1.96	5.22	15.70	.664	3.15	.102	.035		7/2-
78	144	222	1669.1	1666.3	12.93	3.75	2.16	8.01	15.43	.666	3.66	.103	.025		
78	145	223	1671.4	1669.3	12.96	2.27	2.23	5.53	15.05	.667	2.91	.107	.026		7/2-
78	146	224	1675.1	1672.2	13.11	3.68	2.56	8.27	14.98	.670	3.56	.107	.018		
78	147	225	1677.4	1675.0	13.25	2.29	2.81	5.86	14.88	.671	3.05	.114	.015		7/2+
78	148	226	1680.9	1677.7	13.44	3.50	3.02	8.78	14.76	.672	3.83	.113	.008		
78	149	227	1683.0	1680.3	13.63	2.14	3.21	10.34	14.66	.673	3.46	.115	.014		5/2-
78	150	228	1686.3	1682.8	13.76	3.26	3.35	5.38	14.52	.674	4.05	.111	.005		
78	151	229	1688.2	1685.2	13.94	1.97	3.52	10.89	14.45	.675	3.70	.115	.001		7/2+
78	152	230	1691.3	1687.5	14.11	3.08	3.67	5.92	14.30	.677	4.44	.108	-.005		
78	153	231	1693.1	1689.7	14.24	1.77	3.80	11.47	14.21	.678	4.03	.108	-.010		5/2+
78	154	232	1696.1	1691.8	14.39	2.99	4.07	10.42	14.15	.680	4.93	.104	-.015		
78	155	233	1697.8	1693.8	14.55	1.73	4.43	11.87	14.21	.682	4.68	.101	-.020		5/2+
78	156	234	1700.6	1695.7	14.76	2.75	4.59	11.07	14.09	.684	5.50	.096	-.022		
78	157	235	1702.0	1697.5	14.94	1.44	4.63	12.61	14.03	.687	5.15	.054	-.024		13/2-
78	158	236	1704.4	1699.2	15.14	2.37	4.67	11.87	13.72	.689	5.75	.050	-.025		
78	159	237	1705.6	1700.8	15.31	1.18	4.77	13.37	13.60	.692	5.28	.084	-.026		1/2+
78	160	238	1707.6	1702.4	15.43	2.05	4.81	12.79	13.16	.695	6.08	.103	-.033		
78	161	239	1708.9	1703.8	15.94	1.29	5.13	14.02	13.31	.697	5.11	.028	-.005		13/2-
78	162	240	1711.6	1705.2	16.47	2.74	6.02	12.77	13.74	.700	6.45	0			
78	163	241	1712.7	1706.5	16.39	1.08	6.29	14.59	13.86	.703	6.26	0			J 5/2
78	164	242	1715.4	1707.6	16.83	2.73	7.44	13.12	14.46	.705	7.81	0			
78	165	243	1715.8	1708.7	17.01	.33	7.49	15.70	13.99	.708	7.03	0			D 5/2
78	166	244	1717.0	1709.8	17.18	1.25	6.36	14.96	13.27	.712	7.27	0			
78	167	245	1717.2	1710.7	17.36	.14	6.54	16.25	12.80	.716	6.45	0			D 5/2

Z	N	A	B.E.	BC	SP	SN	SA	CE	EAR	X	S	A2	A4	P	N
79	78	157	1148.5	1143.1	-5.15	16.59	-6.08-20.55	9.79	.770	5.40	C			C 3/2	
79	79	158	1163.3	1158.0	-4.32	14.83	-5.86-18.49	10.80	.766	5.32	-.026	-.005		1/2+	1/2-
79	80	159	1179.5	1172.3	-4.12	16.15	-5.46-19.61	12.27	.762	7.19	C			C 3/2	
79	81	160	1193.4	1186.3	-3.83	13.90	-5.38-16.54	13.31	.758	7.11	C			C 3/2	0 3/2
79	82	161	1209.2	1200.0	-3.55	15.80	-5.13-18.16	14.97	.753	9.19	C			C 3/2	
79	83	162	1221.2	1213.4	-3.26	11.99	-6.66-14.06	14.62	.749	7.71	C			C 3/2	F 7/2
79	84	163	1234.4	1226.7	-2.97	13.28	-8.43-15.07	14.26	.745	7.77	C			C 3/2	
79	85	164	1245.9	1239.6	-2.69	11.50	-8.33-13.01	13.89	.742	6.29	C			C 3/2	F 7/2
79	86	165	1258.8	1252.4	-2.41	12.85	-8.18-14.08	13.59	.738	6.41	C			C 3/2	
79	87	166	1269.8	1264.9	-2.12	10.99	-8.12-11.94	13.19	.734	4.91	C			C 3/2	F 7/2
79	88	167	1282.2	1277.1	-1.84	12.47	-7.94-13.14	12.98	.731	5.11	C			C 3/2	
79	89	168	1292.7	1289.2	-1.56	10.46	-7.92-10.85	12.52	.728	3.54	C			C 3/2	F 7/2
79	90	169	1304.8	1301.0	-1.29	12.14	-7.68-12.26	12.44	.725	3.87	C			C 3/2	
79	91	170	1314.7	1312.6	-.97	9.84	-7.74 -9.68	11.77	.722	2.22	-.039	.001		1/2+	9/2-
79	92	171	1326.6	1323.9	-.70	11.94	-7.40-11.60	11.92	.720	2.73	-.022	-.001		1/2+	
79	93	172	1336.3	1335.1	-.42	9.63	-7.05 -8.97	11.46	.717	1.37	-.052	.008		1/2+	9/2-
79	94	173	1347.8	1346.0	-.14	11.56	-6.91-10.76	11.65	.714	1.98	-.054	.003		1/2+	
79	95	174	1357.1	1356.7	-.07	9.30	-6.82 -8.19	11.27	.711	.69	-.068	.006		1/2+	11/2+
79	96	175	1368.4	1367.3	.18	11.28	-6.57 -9.93	11.61	.709	1.46	-.069	.006		1/2+	
79	97	176	1377.4	1377.6	.15	9.00	-6.61 -7.38	11.31	.706	.22	-.078	.007		1/2+	7/2-
79	98	177	1388.4	1387.7	.37	10.99	-6.46 -9.13	11.73	.704	1.09	-.079	.002		1/2+	
79	99	178	1397.3	1397.6	.43	8.90	-6.45 -6.78	11.72	.702	.50	.117	.017		1/2-	7/2+
79	100	179	1407.9	1407.4	.67	10.63	-6.28 -8.30	12.15	.700	1.44	.125	.006		3/2+	
79	101	180	1416.7	1416.9	.84	8.78	-6.06 -6.24	12.38	.698	.93	.142	.009		1/2-	1/2-
79	102	181	1426.9	1426.2	1.05	10.25	-6.00 -7.32	12.81	.696	1.78	.139	.002		1/2-	
79	103	182	1435.5	1435.4	1.23	8.61	-5.72 -5.54	13.22	.694	1.90	.179	-.001		1/2-	5/2-
79	104	183	1445.5	1444.4	1.47	9.95	-5.59 -6.56	13.70	.693	2.51	.155	-.006		1/2-	
79	105	184	1453.9	1453.2	1.70	8.40	-5.29 -4.86	14.25	.691	2.26	.160	-.011		1/2-	9/2+
79	106	185	1463.4	1461.8	1.92	9.45	-5.29 -5.67	14.56	.689	3.09	.156	-.015		1/2-	
79	107	186	1471.4	1470.2	2.15	8.07	-5.20 -4.06	15.10	.687	2.88	.160	-.020		1/2-	7/2-
79	108	187	1480.4	1478.5	2.28	8.94	-5.30 -4.70	15.24	.685	3.50	.149	-.026		3/2-	
79	109	188	1488.0	1486.8	2.53	7.64	-5.27 -3.13	15.67	.684	3.12	.148	-.030		3/2-	1/2-
79	110	189	1496.8	1494.9	2.84	8.76	-5.15 -4.02	15.95	.682	3.38	.116	-.027		3/2-	
79	111	190	1504.1	1502.8	3.11	7.31	-5.00 -2.39	16.36	.681	3.01	.115	-.030		3/2+	1/2-
79	112	191	1513.4	1510.5	4.22	9.28	-3.97 -4.15	17.48	.680	4.47	.100	-.029		3/2+	
79	113	192	1520.6	1518.1	4.64	7.25	-3.53 -2.64	18.12	.678	4.31	.099	-.031		3/2+	11/2+
79	114	193	1529.1	1525.6	5.16	8.52	-3.01 -3.85	18.77	.677	5.43	.090	-.030		3/2+	
79	115	194	1536.1	1532.9	5.55	6.98	-2.62 -1.24	19.43	.677	5.37	.091	-.033		3/2+	3/2-
79	116	195	1544.3	1540.0	4.76	8.17	-2.21 -2.20	20.03	.676	6.36	.081	-.029		3/2+	
79	117	196	1550.9	1547.0	4.98	6.65	-1.92 -.52	20.64	.675	6.12	.072	-.029		3/2+	9/2-
79	118	197	1558.6	1553.8	5.51	7.71	-1.57 -1.22	21.05	.674	6.77	-.060	-.009		1/2+	
79	119	198	1565.0	1560.5	5.64	6.36	-2.66 .72	21.65	.674	6.55	-.052	-.007		1/2+	5/2-
79	120	199	1572.9	1567.0	6.33	7.87	-1.47 -.56	22.50	.673	7.99	-.042	-.008		1/2+	
79	121	200	1579.2	1573.4	6.56	6.36	-.96 1.18	23.36	.673	6.12	-.040	-.007		1/2+	1/2-
79	122	201	1586.7	1579.6	6.77	7.46	-.24 .31	24.08	.672	5.46	-.076	-.008		1/2+	
79	123	202	1592.9	1585.7	7.00	6.18	.03 1.76	25.01	.672	5.73	-.028	-.011		1/2+	3/2-
79	124	203	1599.8	1591.7	7.17	6.94	-.06 1.29	25.47	.672	10.78	C			C 3/2	

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
79	125	204	1605.8	1597.5	7.40	6.03	.25	2.50	26.51	.671	11.16	C		C 3/2	P 1/2
79	126	205	1612.4	1603.2	7.62	6.60	.33	2.15	26.87	.671	12.25	C		C 3/2	
79	127	206	1615.9	1608.4	7.84	3.51	-1.75	5.47	25.63	.671	10.37	C		C 3/2	G 9/2
79	128	207	1621.2	1613.5	8.07	5.24	-2.67	3.96	24.89	.671	10.26	C		C 3/2	
79	129	208	1624.5	1618.4	8.29	3.29	-2.44	6.12	23.67	.671	8.54	C		C 3/2	G 9/2
79	130	209	1629.5	1623.2	8.51	5.05	-2.19	4.58	22.98	.671	6.60	C		C 3/2	
79	131	210	1632.6	1627.9	8.73	3.07	-1.96	6.78	21.78	.671	4.82	C		C 3/2	G 9/2
79	132	211	1637.4	1632.5	8.94	4.86	-1.71	5.21	21.13	.671	6.94	C		C 3/2	
79	133	212	1640.3	1636.9	9.16	2.88	-1.47	7.40	19.97	.671	5.22	C		C 3/2	G 9/2
79	134	213	1645.0	1641.3	9.37	4.71	-1.19	5.79	19.40	.671	5.45	C		C 3/2	
79	135	214	1647.8	1645.4	9.62	2.75	-.89	7.95	18.33	.672	3.91	-.032	.003	1/2+	5/2+
79	136	215	1652.4	1649.5	9.84	4.63	-.55	6.23	17.91	.672	4.34	-.042	.001	1/2+	
79	137	216	1655.4	1653.5	9.81	2.94	-.22	8.11	17.24	.672	3.51	.060	.028	3/2+	3/2+
79	138	217	1659.7	1657.3	9.87	4.30	-.12	6.81	16.72	.673	3.53	-.049	.010	1/2+	
79	139	218	1662.8	1661.0	10.09	3.13	.45	8.30	16.45	.673	3.35	.080	.035	1/2-	5/2-
79	140	219	1667.0	1664.6	10.29	4.25	.65	7.34	16.09	.674	3.75	.080	.032	1/2-	
79	141	220	1669.8	1668.1	10.44	2.80	.75	8.98	15.69	.674	3.08	.090	.037	1/2-	5/2+
79	142	221	1673.8	1671.5	10.65	3.99	.90	8.03	15.28	.675	3.40	.088	.032	1/2-	
79	143	222	1676.4	1674.8	10.97	2.54	.98	9.66	14.84	.676	2.59	.096	.033	1/2-	7/2-
79	144	223	1680.1	1677.9	11.02	3.79	1.18	8.63	14.44	.677	2.91	.092	.028	1/2-	
79	145	224	1682.6	1681.1	11.17	2.43	1.57	10.15	14.08	.677	2.19	.101	.027	3/2+	7/2-
79	146	225	1686.4	1684.2	11.37	3.88	1.96	8.98	13.96	.678	2.80	.097	.015	3/2+	
79	147	226	1688.9	1687.2	11.50	2.47	2.13	10.47	13.79	.680	2.24	.104	.016	3/2+	7/2+
79	148	227	1692.6	1690.1	11.70	3.70	2.30	9.38	13.70	.681	2.98	.101	.011	3/2+	
79	149	228	1694.9	1692.9	11.85	2.30	2.45	10.94	13.61	.682	2.56	.111	.012	3/2+	9/2-
79	150	229	1698.4	1695.6	12.08	3.48	2.62	9.93	13.49	.684	3.23	.100	.003	3/2+	
79	151	230	1700.5	1698.2	12.22	2.12	2.79	11.47	13.40	.685	2.78	.103	.001	3/2+	7/2+
79	152	231	1703.8	1700.7	12.46	3.32	2.99	10.45	13.32	.687	3.54	.095	-.006	3/2+	
79	153	232	1705.7	1703.1	12.63	1.94	3.13	11.99	13.24	.689	3.14	.098	-.009	3/2+	9/2+
79	154	233	1708.9	1705.4	12.82	3.18	3.39	10.93	13.23	.691	3.98	.089	-.014	3/2+	
79	155	234	1710.8	1707.6	13.03	1.95	3.69	12.33	13.34	.693	3.75	.090	-.017	3/2+	9/2+
79	156	235	1713.8	1709.7	13.27	2.99	3.85	11.45	13.31	.695	4.64	.083	-.019	3/2+	
79	157	236	1715.5	1711.7	13.45	1.62	3.89	13.00	13.28	.697	4.27	.076	-.024	3/2+	13/2-
79	158	237	1718.1	1713.6	13.76	2.68	4.04	12.14	13.13	.699	4.93	.067	-.021	3/2+	
79	159	238	1719.6	1715.4	14.06	1.48	4.25	13.30	13.13	.702	4.56	.063	-.020	3/2+	9/2+
79	160	239	1722.1	1717.1	14.54	2.53	4.61	12.57	13.01	.704	5.05	.020	-.001	3/2+	
79	161	240	1723.6	1718.7	14.73	1.49	5.09	14.26	13.20	.706	4.92	.024	-.004	3/2+	17/2-
79	162	241	1726.5	1720.3	14.88	2.89	6.05	12.95	13.63	.709	6.24	C		C 3/2	
79	163	242	1727.8	1721.7	15.07	1.26	6.53	14.91	13.77	.712	6.05	C		C 3/2	J15/2
79	164	243	1730.7	1723.1	15.25	2.91	7.23	13.45	14.40	.715	7.60	C		C 3/2	
79	165	244	1731.2	1724.4	15.43	.51	6.58	16.03	13.96	.718	6.82	C		C 3/2	D 5/2
79	166	245	1732.6	1725.6	15.61	1.43	5.71	15.28	13.29	.721	7.06	C		C 3/2	
79	167	246	1733.0	1726.7	15.78	.32	5.89	16.57	12.85	.724	6.28	C		C 3/2	D 5/2
79	168	247	1734.2	1727.7	15.96	1.28	6.09	15.79	12.20	.727	6.54	C		C 3/2	
79	169	248	1734.5	1728.6	16.16	.30	6.43	16.95	11.89	.730	5.91	.019	.002	3/2+	1/2+

Z	N	A	R.E.	RC	SP	SN	SA	CE	EAR	X	S	A2	A4	P	N
8C	80	160	1176.0	1168.0	-3.43	16.96	-5.89-21.82	11.44	.776	8.08	C				
8C	81	161	1190.2	1182.2	-3.14	14.19	-5.71-18.76	12.44	.771	8.00	C				D 7/2
8C	82	162	1206.3	1196.2	-2.86	16.09	-5.57-19.94	14.08	.767	10.08	C				
8C	83	163	1218.6	1210.0	-2.57	12.27	-6.91-15.85	13.68	.763	8.60	C				F 7/2
8C	84	164	1232.1	1223.5	-2.29	13.56	-8.87-16.84	13.29	.759	8.65	C				
8C	85	165	1243.9	1236.7	-2.01	11.79	-8.78-14.79	12.90	.755	7.18	C				F 7/2
8C	86	166	1257.1	1249.8	-1.73	13.13	-8.64-15.85	12.57	.751	7.30	C				
8C	87	167	1268.3	1262.5	-1.45	11.27	-8.59-13.72	12.16	.748	5.80	C				F 7/2
8C	88	168	1281.1	1275.1	-1.18	12.74	-8.41-14.90	11.92	.745	6.00	C				
8C	89	169	1291.8	1287.4	-.90	10.73	-8.39-12.62	11.41	.742	4.42	C				F 7/2
8C	90	170	1304.2	1299.5	-.63	12.42	-8.16-14.02	11.31	.738	4.76	C				
8C	91	171	1314.2	1311.3	-.44	10.02	-8.32-11.36	10.52	.735	2.99	-.033	.002			9/2-
8C	92	172	1326.5	1323.0	-.13	12.26	-7.93-13.32	10.70	.732	3.54	C				
8C	93	173	1336.3	1334.4	.02	9.77	-7.67-10.56	10.12	.729	2.02	-.046	.003			13/2+
8C	94	174	1348.1	1345.6	.33	11.87	-7.47-12.43	10.34	.726	2.71	-.050	.001			
8C	95	175	1357.7	1356.6	.57	9.54	-7.29-9.90	9.91	.724	1.35	-.062	.002			11/2+
8C	96	176	1364.2	1367.4	.83	11.55	-7.02-11.80	10.22	.722	2.11	-.063	.001			
8C	97	177	1378.5	1377.9	1.08	9.24	-7.01-9.21	9.88	.719	.85	-.072	.002			7/2-
8C	98	178	1389.7	1388.3	1.34	11.25	-6.80-11.12	10.29	.717	1.72	-.072	-.001			
8C	99	179	1398.8	1398.5	1.54	9.10	-6.72-8.72	10.19	.715	1.40	.136	.021			7/2+
8C	100	180	1409.7	1408.5	1.75	10.84	-6.64-10.50	10.58	.712	2.17	.134	.015			
8C	101	181	1418.8	1418.3	2.14	9.17	-6.31-8.47	10.94	.710	1.86	.157	.013			7/2+
8C	102	182	1429.2	1427.9	2.29	10.40	-6.30-9.70	11.25	.708	2.59	.154	.007			
8C	103	183	1438.2	1437.3	2.62	8.94	-5.98-7.97	11.73	.706	2.50	.178	.003			5/2-
8C	104	184	1448.3	1446.5	2.76	10.10	-5.91-8.94	12.10	.704	3.07	.157	-.003			
8C	105	185	1456.9	1455.6	3.00	8.64	-5.71-7.57	12.62	.703	2.79	.161	-.009			9/2+
8C	106	186	1466.6	1464.4	3.22	9.68	-5.74-8.20	12.92	.701	3.59	.156	-.013			
8C	107	187	1474.9	1473.1	3.46	8.30	-5.62-6.60	13.44	.700	3.36	.160	-.018			7/2-
8C	108	188	1484.1	1481.7	3.72	9.20	-5.65-7.28	13.60	.698	4.02	.149	-.025			
8C	109	189	1492.0	1490.2	3.96	7.87	-5.61-5.68	14.01	.697	3.63	.149	-.025			1/2-
8C	110	190	1500.9	1498.5	4.14	8.95	-5.47-6.52	14.23	.695	4.02	.127	-.027			
8C	111	191	1508.4	1506.7	4.35	7.52	-5.34-4.72	14.00	.694	3.56	.123	-.030			3/2-
8C	112	192	1517.2	1514.7	3.82	8.76	-5.03-5.23	14.96	.693	4.19	.103	-.029			
8C	113	193	1524.5	1522.5	3.89	7.31	-4.77-2.11	15.43	.692	3.85	.101	-.031			11/2+
8C	114	194	1534.1	1530.2	4.95	9.58	-3.36-5.00	16.91	.691	5.73	.089	-.029			
8C	115	195	1541.3	1537.7	5.19	7.21	-2.97-3.21	17.55	.689	5.68	.091	-.032			3/2-
8C	116	196	1549.6	1545.1	5.34	8.32	-2.65-4.07	18.08	.688	6.45	.070	-.026			
8C	117	197	1556.6	1552.3	5.71	7.01	-2.23-2.10	18.83	.687	6.35	.064	-.025			9/2-
8C	118	198	1564.9	1559.4	6.30	8.30	-2.88-3.23	19.61	.686	7.53	-.059	-.011			
8C	119	199	1571.5	1566.3	6.53	6.99	-2.72-1.07	20.22	.685	7.32	-.054	-.009			5/2-
8C	120	200	1579.6	1573.0	6.76	8.10	-1.80-2.17	21.08	.684	8.71	-.037	-.007			
8C	121	201	1586.2	1579.6	6.99	6.59	-1.44-1.50	21.96	.684	8.85	-.036	-.007			1/2-
8C	122	202	1593.8	1586.1	7.15	7.63	-.99-1.23	22.63	.683	10.07	C				
8C	123	203	1600.3	1592.4	7.44	6.47	-.65-.16	23.64	.682	10.46	-.026	-.009			3/2-
8C	124	204	1607.5	1598.6	7.75	7.24	-.67-.56	24.19	.682	11.61	C				
8C	125	205	1613.8	1604.6	7.97	6.25	-.36-.83	25.24	.682	11.99	C				P 1/2
8C	126	206	1620.6	1610.6	8.19	6.82	-.30-.49	25.63	.681	13.07	C				

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
8C	127	207	1624.3	1616.0	8.41	3.73	-2.38	3.79	24.40	.681	11.20	C			G 9/2
8C	128	208	1629.8	1621.3	8.63	5.46	-3.30	2.29	23.68	.681	11.19	C			
8C	129	209	1633.3	1626.5	8.85	3.51	-3.07	4.46	22.48	.681	9.36	C			G 9/2
8C	130	210	1638.6	1631.5	9.07	5.26	-2.83	2.92	21.80	.681	9.42	C			
8C	131	211	1641.9	1636.4	9.28	3.29	-2.60	5.11	20.62	.681	7.64	0			G 9/2
8C	132	212	1646.9	1641.2	9.50	5.07	-2.36	3.55	20.00	.681	7.77	C			
8C	133	213	1650.0	1645.8	9.71	3.10	-2.11	5.74	18.86	.681	6.05	C			G 9/2
8C	134	214	1655.0	1650.4	9.92	4.92	-1.84	4.1	18.31	.681	6.27	C			
8C	135	215	1657.9	1654.8	10.08	2.91	-1.60	6.36	17.20	.681	4.60	C			G 9/2
8C	136	216	1662.7	1659.0	10.26	4.81	-1.28	4.67	16.77	.682	5.00	-.025	.002		
8C	137	217	1665.7	1663.2	10.33	3.01	-.78	6.64	15.95	.682	4.13	.058	.029		3/2+
8C	138	218	1670.3	1667.2	10.64	4.61	-.57	5.02	15.59	.683	4.21	-.044	.012		
8C	139	219	1673.6	1671.2	10.81	3.29	-.24	6.64	15.30	.683	4.14	.084	.039		5/2-
8C	140	220	1678.0	1675.0	11.00	4.44	-.06	5.41	14.94	.684	4.52	.084	.036		
8C	141	221	1681.1	1678.7	11.24	3.04	.07	7.01	14.62	.685	3.91	.094	.041		5/2+
8C	142	222	1685.2	1682.3	11.41	4.16	.20	6.05	14.20	.685	4.18	.092	.036		
8C	143	223	1688.0	1685.7	11.64	2.76	.31	7.66	13.80	.686	3.40	.100	.038		7/2-
8C	144	224	1691.9	1689.1	11.80	3.95	.48	6.63	13.38	.688	3.65	.096	.032		
8C	145	225	1694.6	1692.5	12.08	2.71	.97	8.09	13.13	.689	3.01	.106	.031		5/2+
8C	146	226	1698.6	1695.8	12.11	3.91	1.14	7.05	12.90	.690	3.44	.101	.024		
8C	147	227	1701.2	1699.0	12.30	2.61	1.48	8.52	12.75	.691	2.87	.109	.020		7/2+
8C	148	228	1705.0	1702.1	12.45	3.86	1.65	7.42	12.65	.692	3.51	.102	.015		
8C	149	229	1707.5	1705.1	12.63	2.48	1.83	9.02	12.56	.694	3.03	.110	.011		9/2-
8C	150	230	1711.2	1708.0	12.81	3.66	1.99	7.97	12.46	.695	3.74	.106	.008		
8C	151	231	1713.5	1710.7	12.99	2.30	2.15	9.54	12.39	.696	3.26	.108	.005		7/2+
8C	152	232	1716.9	1713.4	13.14	3.47	2.36	8.52	12.31	.698	3.95	.097	-.003		
8C	153	233	1719.0	1716.0	13.32	2.12	2.51	10.09	12.24	.700	3.53	.101	-.006		9/2+
8C	154	234	1722.4	1718.5	13.49	3.35	2.77	9.01	12.22	.701	4.33	.089	-.012		
8C	155	235	1724.5	1720.9	13.65	2.11	3.11	10.56	12.34	.703	4.11	.090	-.015		9/2+
8C	156	236	1727.7	1723.2	13.84	3.17	3.30	9.52	12.34	.705	4.95	.081	-.018		
8C	157	237	1729.5	1725.3	14.04	1.82	3.38	11.12	12.35	.707	4.56	.072	-.022		13/2-
8C	158	238	1732.1	1727.4	13.99	2.63	3.27	10.43	11.99	.709	4.74	.034	.001		
8C	159	239	1733.9	1729.4	14.31	1.79	3.62	12.17	12.15	.711	4.66	.049	-.014		11/2+
8C	160	240	1737.1	1731.4	14.97	3.18	4.44	10.97	12.53	.713	5.75	C			
8C	161	241	1738.7	1733.2	15.06	1.58	4.84	12.83	12.66	.716	5.52	C			J1 9/2
8C	162	242	1741.9	1734.9	15.39	3.23	6.02	11.36	13.28	.718	7.02	C			
8C	163	243	1743.4	1736.5	15.58	1.44	6.17	13.33	13.46	.721	6.83	C			J1 9/2
8C	164	244	1746.4	1738.1	15.75	3.09	6.52	11.87	14.12	.724	6.38	C			
8C	165	245	1747.1	1739.5	15.93	.69	6.12	14.45	13.71	.726	7.61	C			D 9/2
8C	166	246	1748.7	1740.9	16.11	1.61	5.00	13.71	13.07	.729	7.84	C			
8C	167	247	1749.2	1742.2	16.29	.50	5.17	15.00	12.63	.732	7.06	C			D 9/2
8C	168	248	1750.7	1743.4	16.46	1.46	5.38	14.22	12.01	.735	7.32	C			
8C	169	249	1751.0	1744.5	16.49	.32	5.56	15.53	11.59	.739	6.53	C			D 9/2
8C	170	250	1752.4	1745.5	16.67	1.34	5.79	14.69	11.03	.742	6.84	0			
8C	171	251	1752.6	1746.5	16.88	.27	5.97	15.93	10.73	.746	6.18	.020	-.001		3/2+

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
81	82	163	1202.0	1192.0	-4.36	16.37	-5.81-20.20	13.78	.781	9.92	C			S 1/2	
81	83	164	1214.5	1206.1	-4.07	12.56	-7.15-15.69	13.35	.777	8.44	C			S 1/2 F 7/2	
81	84	165	1228.4	1219.9	-3.79	13.84	-9.11-16.68	12.93	.772	8.45	C			S 1/2	
81	85	166	1240.4	1233.4	-3.50	12.07	-9.03-14.63	12.52	.768	7.02	C			S 1/2 F 7/2	
81	86	167	1253.8	1246.7	-3.22	13.41	-8.89-15.69	12.17	.765	7.14	C			S 1/2	
81	87	168	1265.4	1259.7	-2.94	11.56	-8.84-13.56	11.71	.762	5.64	C			S 1/2 F 7/2	
81	88	169	1278.4	1272.6	-2.67	13.02	-8.67-14.75	11.44	.758	5.85	C			S 1/2	
81	89	170	1289.4	1285.1	-2.39	11.01	-8.66-12.47	10.91	.754	4.27	C			S 1/2 F 7/2	
81	90	171	1302.1	1297.5	-2.12	12.69	-8.44-13.87	10.78	.751	4.61	C			S 1/2	
81	91	172	1312.4	1309.6	-1.85	10.29	-8.60-11.20	9.98	.748	2.80	-.022	.003	1/2+	5/2-	
81	92	173	1324.9	1321.5	-1.57	12.54	-8.21-13.34	10.14	.745	3.40	C			S 1/2	
81	93	174	1334.9	1333.2	-1.35	10.00	-8.05-10.37	9.47	.742	1.74	-.024	.003	1/2+	13/2+	
81	94	175	1347.0	1344.7	-1.14	12.08	-7.92-12.34	9.60	.739	2.31	C			S 1/2	
81	95	176	1356.7	1356.0	-1.03	9.65	-7.90 -9.49	8.99	.737	.74	-.027	.000	1/2+	11/2+	
81	96	177	1368.5	1367.0	-.75	11.83	-7.63-11.51	9.29	.734	1.51	-.024	.001	1/2+		
81	97	178	1377.8	1377.9	-.66	9.34	-7.60 -8.73	8.78	.731	.06	-.039	-.001	1/2+	7/2-	
81	98	179	1389.3	1388.5	-.41	11.49	-7.38-10.72	9.17	.729	.91	-.038	.000	1/2+		
81	99	180	1398.4	1398.9	-.44	9.07	-7.31 -8.01	8.77	.727	-.06	-.085	.013	1/2+	9/2+	
81	100	181	1409.6	1409.2	-.08	11.20	-7.10 -9.57	9.24	.725	.59	-.055	-.001	1/2+		
81	101	182	1418.7	1419.2	-.08	9.17	-6.83 -7.50	9.32	.723	.91	.162	.020	3/2-	7/2+	
81	102	183	1429.4	1429.1	.18	10.66	-6.79 -8.53	9.62	.721	1.62	.155	.012	3/2-		
81	103	184	1438.5	1438.7	.38	9.13	-6.44 -6.78	10.02	.719	1.36	.178	.008	3/2-	5/2-	
81	104	185	1448.6	1448.2	.29	10.01	-6.67 -7.40	10.04	.717	.91	.102	.008	1/2+		
81	105	186	1457.6	1457.5	.70	9.05	-6.24 -6.00	10.71	.715	1.45	.161	-.009	11/2-	9/2+	
81	106	187	1467.5	1466.6	.92	9.90	-6.30 -6.82	10.97	.713	2.20	.154	-.010	11/2-		
81	107	188	1476.0	1475.6	1.14	8.53	-6.18 -5.24	11.45	.711	1.94	.158	-.016	11/2-	7/2-	
81	108	189	1485.5	1484.3	1.41	9.48	-6.15 -5.95	11.65	.709	2.25	.130	-.019	3/2+		
81	109	190	1493.6	1493.1	1.64	8.10	-6.12 -4.37	12.03	.708	1.97	.135	-.024	3/2+	1/2-	
81	110	191	1502.9	1501.7	2.02	9.33	-5.73 -5.43	12.39	.707	2.38	.104	-.019	3/2+		
81	111	192	1511.2	1510.1	2.75	8.25	-5.12 -4.26	13.24	.705	2.34	.095	-.023	1/2+	1/2-	
81	112	193	1520.6	1518.3	3.42	9.43	-4.45 -5.70	14.03	.704	3.36	.068	-.018	1/2+		
81	113	194	1528.3	1526.4	3.80	7.69	-4.08 -3.43	14.63	.703	3.28	.076	-.023	1/2+	11/2+	
81	114	195	1537.3	1534.3	3.22	9.01	-4.35 -4.45	15.30	.702	4.05	-.033	-.004	1/2+		
81	115	196	1544.8	1542.1	3.48	7.47	-4.13 -2.45	15.98	.701	4.18	.052	-.020	1/2+	1/2-	
81	116	197	1553.7	1549.7	4.12	8.97	-3.68 -3.81	16.97	.700	5.42	-.025	-.002	1/2+		
81	117	198	1560.9	1557.1	4.28	7.17	-3.49 -1.65	17.99	.699	5.33	-.029	-.003	1/2+	1/2-	
81	118	199	1569.7	1564.4	4.74	8.76	-2.90 -3.06	18.61	.698	6.93	-.019	-.004	1/2+		
81	119	200	1576.7	1571.6	5.15	7.00	-2.55 -1.00	19.39	.697	6.95	-.018	-.004	1/2+	5/2-	
81	120	201	1584.9	1578.6	5.31	8.26	-2.00 -2.05	20.20	.697	8.27	C			S 1/2	
81	121	202	1591.8	1585.4	5.62	6.90	-1.46 -.37	21.16	.696	8.63	-.019	-.005	1/2+	1/2-	
81	122	203	1599.7	1592.1	5.85	7.86	-1.47 -1.21	21.83	.695	5.53	C			S 1/2	
81	123	204	1606.2	1598.6	5.90	6.52	-1.32 .47	22.68	.695	10.06	C			S 1/2 F 5/2	
81	124	205	1613.8	1605.0	6.30	7.64	-1.14 -.43	23.41	.694	11.46	C			S 1/2	
81	125	206	1620.3	1611.3	6.52	6.48	-.84 .95	24.47	.694	11.84	C			S 1/2 P 1/2	
81	126	207	1627.4	1617.4	6.74	7.04	-.73 .61	24.86	.694	12.52	C			S 1/2	
81	127	208	1631.3	1623.1	6.97	3.95	-2.81 3.92	23.65	.693	11.05	C			S 1/2 G 5/2	
81	128	209	1637.0	1628.6	7.19	5.68	-3.73 2.42	22.94	.693	11.04	C			S 1/2	

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
81	129	210	1640.7	1634.0	7.41	3.73	-3.51	4.58	21.76	.693	9.22	C		S 1/2 G 9/2	
81	130	211	1646.2	1639.3	7.62	5.48	-3.27	3.05	21.10	.693	9.28	C		S 1/2	
81	131	212	1649.7	1644.4	7.84	3.51	-3.04	5.24	19.93	.693	7.50	C		S 1/2 G 9/2	
81	132	213	1655.0	1649.4	8.06	5.29	-2.80	3.68	19.33	.693	7.63	C		S 1/2	
81	133	214	1658.3	1654.2	8.27	3.32	-2.56	5.86	18.20	.693	5.91	C		S 1/2 G 9/2	
81	134	215	1663.4	1659.0	8.49	5.13	-2.30	4.26	17.67	.693	6.13	C		S 1/2	
81	135	216	1666.6	1663.6	8.70	3.12	-2.06	6.48	16.58	.693	4.47	C		S 1/2 G 9/2	
81	136	217	1671.5	1668.1	8.87	4.98	-1.78	4.84	16.13	.694	4.79	C		S 1/2	
81	137	218	1674.5	1672.5	8.86	3.00	-1.54	7.02	15.14	.694	3.29	-.027	.002	1/2+	9/2+
81	138	219	1679.4	1676.7	9.15	4.90	-1.26	5.18	14.85	.694	3.76	-.023	.001	1/2+	
81	139	220	1682.7	1680.8	9.06	3.21	-.99	7.13	14.29	.695	3.43	.078	.037	3/2+	5/2-
81	140	221	1687.3	1684.9	9.27	4.64	-.65	5.94	13.96	.695	3.80	.077	.033	3/2+	
81	141	222	1690.5	1688.8	9.43	3.20	-.58	7.58	13.60	.696	3.20	.090	.040	3/2+	5/2+
81	142	223	1694.9	1692.5	9.64	4.37	-.46	6.69	13.22	.697	3.45	.086	.035	3/2+	
81	143	224	1697.8	1696.2	9.80	2.93	-.33	8.30	12.80	.698	2.67	.095	.036	3/2+	7/2-
81	144	225	1702.0	1699.8	10.01	4.16	-.16	7.14	12.42	.698	2.91	.089	.032	3/2+	
81	145	226	1704.8	1703.4	10.17	2.87	.17	8.75	12.15	.699	2.20	.095	.031	3/2+	5/2+
81	146	227	1708.9	1706.9	10.35	4.09	.47	7.74	11.91	.700	2.62	.090	.025	1/2+	
81	147	228	1711.7	1710.3	10.49	2.75	.79	9.28	11.72	.701	1.98	.097	.021	1/2+	7/2+
81	148	229	1715.7	1713.6	10.71	4.07	.99	8.08	11.67	.702	2.63	.090	.016	1/2+	
81	149	230	1718.3	1716.8	10.84	2.61	1.18	9.68	11.54	.703	2.09	.097	.014	1/2+	9/2-
81	150	231	1722.2	1719.6	11.05	3.87	1.34	8.64	11.48	.705	2.76	.090	.005	1/2+	
81	151	232	1724.7	1722.8	11.21	2.46	1.50	10.19	11.40	.706	2.28	.094	.003	1/2+	7/2+
81	152	233	1728.4	1725.7	11.42	3.68	1.71	9.17	11.36	.707	2.96	.075	-.000	1/2+	
81	153	234	1730.6	1728.5	11.57	2.27	1.86	10.72	11.28	.709	2.45	.078	-.003	1/2+	9/2+
81	154	235	1734.3	1731.1	11.89	3.66	2.19	9.53	11.39	.710	3.38	.065	-.010	1/2+	
81	155	236	1736.4	1733.7	11.91	2.13	2.39	11.12	11.36	.712	2.99	.071	-.011	1/2+	11/2-
81	156	237	1739.8	1736.2	12.15	3.42	2.63	10.01	11.45	.714	3.83	.053	-.011	1/2+	
81	157	238	1741.8	1738.6	12.28	1.95	2.63	11.86	11.43	.716	3.28	.034	.001	1/2+	11/2-
81	158	239	1745.3	1740.8	13.18	3.54	3.18	10.49	11.82	.718	4.48	C		S 1/2	
81	159	240	1747.3	1743.0	13.37	1.98	3.54	12.37	12.01	.720	4.29	.020	-.001	1/2+	11/2+
81	160	241	1750.7	1745.1	13.63	3.44	4.30	10.99	12.50	.723	5.62	C		S 1/2	
81	161	242	1752.5	1747.1	13.81	1.76	4.59	12.95	12.71	.725	5.38	C		S 1/2 J15/2	
81	162	243	1755.9	1749.0	13.99	3.41	5.47	11.48	13.10	.727	6.89	C		S 1/2	
81	163	244	1757.5	1750.8	14.18	1.63	5.61	13.45	13.50	.729	6.70	C		S 1/2 J15/2	
81	164	245	1760.8	1752.6	14.35	3.27	5.99	11.99	14.16	.732	8.24	C		S 1/2	
81	165	246	1761.7	1754.2	14.54	.87	5.59	14.57	13.78	.735	7.47	C		S 1/2 D 5/2	
81	166	247	1763.5	1755.7	14.71	1.79	4.47	13.83	14.16	.738	7.71	C		S 1/2	
81	167	248	1764.1	1757.2	14.89	.68	4.64	15.12	12.76	.741	6.92	C		S 1/2 D 5/2	
81	168	249	1765.8	1758.6	15.07	1.64	4.84	14.34	12.17	.744	7.18	C		S 1/2	
81	169	250	1766.3	1759.9	15.25	.50	5.02	15.65	11.77	.747	6.39	C		S 1/2 D 5/2	
81	170	251	1767.8	1761.1	15.42	1.51	5.25	14.81	11.23	.749	6.70	C		S 1/2	
81	171	252	1768.1	1762.2	15.46	.31	5.27	16.18	10.80	.753	5.89	C		S 1/2 G 7/2	
81	172	253	1769.5	1763.2	15.77	1.44	5.55	15.23	10.37	.757	6.30	C		S 1/2	
81	173	254	1769.7	1764.2	15.48	.14	5.64	16.70	9.95	.760	5.49	C		S 1/2 G 7/2	

L	N	A	B.E.	BC	SP	SN	SA	CE	PAR	X	S	A2	A4	P	N
82	84	166	1225.0	1215.8	-3.34	14.12	-9.60-16.75	12.05	.766	9.21	C				
82	85	167	1237.4	1229.6	-3.06	12.35	-9.52-17.70	11.60	.762	7.75	C				F 7/2
82	86	168	1251.0	1243.2	-2.79	13.69	-9.39-18.75	11.23	.779	7.66	C				
82	87	169	1262.9	1256.5	-2.51	11.83	-9.34-16.61	10.74	.775	6.27	C				F 7/2
82	88	170	1276.2	1269.6	-2.24	13.29	-9.18-17.79	10.46	.771	6.57	C				
82	89	171	1287.5	1282.5	-1.96	11.29	-9.17-15.51	9.91	.767	5.00	C				F 7/2
82	90	172	1300.4	1295.1	-1.69	12.96	-8.95-16.90	9.76	.764	5.23	C				
82	91	173	1310.8	1307.5	-1.59	10.39	-9.30-14.06	8.75	.761	3.32	C				H 5/2
82	92	174	1323.8	1319.7	-1.15	12.97	-8.74-16.09	9.07	.758	4.12	C				
82	93	175	1333.9	1331.6	-1.05	10.10	-8.66-13.23	8.21	.755	2.26	C				H 5/2
82	94	176	1346.4	1343.4	-.62	12.51	-8.41-15.08	8.49	.752	3.02	C				
82	95	177	1356.2	1354.9	-.47	9.80	-8.39-12.27	7.77	.749	1.31	C				H 5/2
82	96	178	1368.3	1366.2	-.18	12.12	-8.14-13.98	8.09	.746	2.11	C				
82	97	179	1377.8	1377.3	-.00	9.51	-8.17-11.33	7.46	.744	.52	C				H 5/2
82	98	180	1389.6	1388.2	.28	11.78	-7.94-12.74	7.84	.742	1.35	C				
82	99	181	1399.2	1398.9	.84	9.63	-7.54-10.55	7.73	.739	1.67	.151	.C22			1/2-
82	100	182	1410.5	1409.4	.89	11.24	-7.55-11.77	7.98	.737	2.33	.151	.C26			
82	101	183	1420.1	1419.7	1.35	9.63	-7.02-9.94	8.24	.734	1.75	.167	.C21			7/2+
82	102	184	1431.0	1429.8	1.57	10.89	-6.97-10.96	8.51	.732	2.54	.168	.C14			
82	103	185	1440.4	1439.7	1.83	9.39	-6.75-9.24	8.92	.730	2.01	.169	.C09			5/2-
82	104	186	1450.8	1449.5	2.27	10.45	-6.70-10.08	9.14	.728	2.98	.186	.C01			
82	105	187	1459.9	1459.0	2.30	9.07	-6.56-8.50	9.57	.726	2.25	.164	-.C03			5/2+
82	106	188	1470.0	1468.4	2.51	10.11	-6.55-9.41	9.79	.725	2.97	.159	-.C06			
82	107	189	1478.8	1477.6	2.74	8.76	-6.43-8.02	10.25	.723	2.70	.163	-.C14			7/2-
82	108	190	1488.5	1486.6	2.95	9.68	-6.42-8.56	10.39	.722	3.28	.153	-.C17			
82	109	191	1496.7	1495.6	3.11	8.26	-6.47-6.91	10.69	.720	2.83	.150	-.C25			1/2-
82	110	192	1506.1	1504.4	3.21	9.43	-6.25-7.83	10.90	.719	3.12	.121	-.C22			
82	111	193	1514.1	1513.0	2.95	7.99	-6.13-6.10	11.25	.717	2.65	.117	-.C26			3/2-
82	112	194	1524.1	1521.5	3.47	9.96	-5.12-7.85	12.32	.716	3.22	C				
82	113	195	1532.1	1529.9	3.77	7.99	-4.65-5.54	12.98	.715	3.72	.085	-.C24			11/2+
82	114	196	1541.5	1538.0	4.23	9.47	-3.95-6.85	13.88	.713	4.53	C				
82	115	197	1549.1	1546.0	4.38	7.61	-3.65-4.94	14.46	.712	4.31	C				P 3/2
82	116	198	1558.5	1553.8	4.74	9.34	-3.89-6.47	15.54	.711	5.98	C				
82	117	199	1565.8	1561.5	4.91	7.34	-3.76-4.24	16.16	.710	5.81	C				P 3/2
82	118	200	1574.9	1569.0	5.22	9.06	-3.03-5.66	17.26	.709	7.51	C				
82	119	201	1582.1	1576.4	5.44	7.22	-2.82-3.67	18.03	.708	7.53	C				F 5/2
82	120	202	1590.7	1583.6	5.75	8.58	-2.54-4.79	18.94	.707	9.05	C				
82	121	203	1597.7	1590.7	5.87	7.02	-2.12-3.01	19.79	.707	9.17	C				F 5/2
82	122	204	1605.9	1597.6	6.20	8.19	-2.03-3.92	20.59	.706	10.60	C				
82	123	205	1612.6	1604.4	6.43	6.74	-1.88-2.41	21.44	.706	10.74	C				F 5/2
82	124	206	1620.5	1611.0	6.65	7.86	-1.64-3.09	22.18	.705	12.13	C				
82	125	207	1627.2	1617.5	6.87	6.70	-1.41-1.92	23.25	.705	12.51	C				P 1/2
82	126	208	1634.4	1623.9	7.09	7.26	-1.39-2.25	23.65	.704	13.59	C				
82	127	209	1638.6	1629.7	7.31	4.18	-3.47-1.05	22.46	.704	11.72	C				G 5/2
82	128	210	1644.5	1635.5	7.53	5.89	-4.39-1.44	21.76	.704	11.71	C				
82	129	211	1648.5	1641.1	7.75	3.95	-4.17-1.72	20.59	.704	9.85	C				G 5/2
82	130	212	1654.2	1646.6	7.96	5.70	-3.93-.20	19.95	.703	9.95	C				

Z	N	A	B.E.	BC	SP	SN	SA	CP	PAR	X	S	A2	A4	P	A
82	131	213	1657.9	1651.9	8.18	3.73	-3.71	2.39	18.80	.703	8.17	C			G 5/2
82	132	214	1663.4	1657.1	8.39	5.50	-3.48	.83	18.21	.703	8.30	C			
82	133	215	1666.9	1662.2	8.61	3.53	-3.24	3.02	17.10	.703	6.58	C			G 5/2
82	134	216	1672.3	1667.1	8.82	5.34	-2.97	1.43	16.59	.704	6.80	C			
82	135	217	1675.6	1672.0	9.03	3.33	-2.74	3.65	15.51	.704	5.14	C			G 5/2
82	136	218	1680.8	1676.7	9.24	5.19	-2.47	2.09	15.09	.704	5.46	C			
82	137	219	1683.8	1681.2	9.30	3.06	-2.32	4.47	13.97	.704	3.77	C			11 1/2
82	138	220	1689.0	1685.7	9.56	5.16	-1.97	3.11	13.74	.705	4.30	C			
82	139	221	1692.5	1690.0	9.81	3.46	-1.52	4.91	13.25	.705	4.29	.087	.043		5/2-
82	140	222	1697.3	1694.3	9.99	4.83	-1.30	4.01	12.92	.705	4.64	.086	.040		
82	141	223	1700.8	1698.4	10.28	3.49	-1.11	5.55	12.66	.706	4.12	.098	.046		5/2+
82	142	224	1705.3	1702.4	10.44	4.53	-1.01	4.71	12.26	.707	4.32	.095	.042		
82	143	225	1708.3	1706.2	10.52	3.01	-1.05	6.43	11.74	.707	3.41	.103	.043		7/2-
82	144	226	1712.8	1710.0	10.83	4.47	-.74	5.16	11.50	.708	3.74	.097	.038		
82	145	227	1715.9	1713.8	11.05	3.08	-.41	6.73	11.27	.709	3.02	.103	.037		5/2+
82	146	228	1720.2	1717.5	11.24	4.28	-.08	5.72	11.04	.710	3.41	.098	.030		
82	147	229	1723.0	1721.1	11.37	2.88	.09	7.30	10.80	.711	2.73	.109	.027		7/2+
82	148	230	1727.2	1724.6	11.51	4.20	.39	6.12	10.71	.712	3.28	.102	.021		
82	149	231	1730.1	1728.0	11.72	2.82	.60	7.68	10.62	.713	2.73	.109	.017		5/2-
82	150	232	1734.1	1731.2	11.86	4.01	.75	6.65	10.54	.715	3.36	.101	.012		
82	151	233	1736.7	1734.4	12.07	2.67	.94	8.18	10.50	.716	2.95	.113	.012		7/2+
82	152	234	1740.6	1737.5	12.21	3.83	1.11	7.17	10.43	.717	3.48	.091	.000		
82	153	235	1743.0	1740.4	12.40	2.46	1.27	8.71	10.38	.719	3.00	.093	-.003		5/2+
82	154	236	1746.7	1743.3	12.47	3.72	1.52	7.62	10.41	.720	3.63	.057	-.006		
82	155	237	1749.1	1746.1	12.64	2.31	1.71	9.16	10.40	.722	3.25	.069	-.009		11 1/2-
82	156	238	1752.9	1748.7	13.03	3.80	2.17	7.89	10.70	.724	4.14	C			
82	157	239	1755.0	1751.3	13.24	2.16	2.22	9.51	10.73	.725	3.73	C			J1 5/2
82	158	240	1758.9	1753.8	13.56	3.86	2.91	8.03	11.29	.727	5.13	C			
82	159	241	1760.9	1756.1	13.65	2.06	3.15	9.85	11.40	.729	4.82	C			J1 5/2
82	160	242	1764.7	1758.4	13.93	3.72	4.24	8.43	11.99	.731	6.26	C			
82	161	243	1766.6	1760.6	14.11	1.95	4.39	10.22	12.17	.733	6.03	C			J1 5/2
82	162	244	1770.2	1762.7	14.29	3.59	4.80	8.76	12.84	.736	7.53	C			
82	163	245	1772.0	1764.7	14.47	1.81	5.03	10.73	13.06	.738	7.34	C			J1 5/2
82	164	246	1775.5	1766.6	14.65	3.45	5.24	9.28	13.76	.741	8.88	C			
82	165	247	1776.5	1768.4	14.83	1.05	4.85	11.85	13.41	.743	8.11	C			D 5/2
82	166	248	1778.5	1770.1	15.01	1.96	3.72	11.12	12.81	.746	8.34	C			
82	167	249	1779.3	1771.8	15.19	.86	3.89	12.41	12.44	.748	7.56	C			D 5/2
82	168	250	1781.1	1773.3	15.36	1.81	4.10	11.64	11.86	.751	7.82	C			
82	169	251	1781.8	1774.8	15.54	.68	4.27	12.95	11.47	.754	7.03	C			D 5/2
82	170	252	1783.5	1776.2	15.71	1.69	4.50	12.12	10.96	.757	7.34	O			
82	171	253	1784.0	1777.5	15.89	.49	4.67	13.65	10.56	.760	6.53	C			G 7/2
82	172	254	1785.6	1778.7	16.06	1.62	4.95	12.72	10.16	.764	6.93	C			
82	173	255	1785.9	1779.8	16.23	.31	4.99	14.02	9.75	.767	6.12	C			G 7/2
82	174	256	1787.3	1780.8	16.40	1.43	5.28	13.23	9.33	.770	6.50	C			
82	175	257	1787.5	1781.8	16.58	.15	5.01	14.53	8.92	.773	5.69	C			G 7/2

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
83	86	169	1245.5	1239.2	-5.56	13.96-11.17-17.52			9.56	.752	6.25	C		F 9/2	
83	87	170	1257.6	1252.8	-5.28	12.12-11.12-15.39			9.07	.768	4.76	C		F 9/2 F 7/2	
83	88	171	1271.2	1266.2	-5.00	13.57-10.96-16.57			8.76	.764	4.56	C		F 9/2	
83	89	172	1282.7	1279.3	-4.73	11.56-10.95-14.29			8.18	.781	3.40	C		F 9/2 F 7/2	
83	90	173	1296.0	1292.2	-4.45	13.23-10.74-15.69			8.01	.777	3.73	C		F 9/2	
83	91	174	1306.9	1304.9	-3.90	10.95-10.80-13.13			7.26	.774	2.09	-.024	.C11	9/2-	9/2-
83	92	175	1319.9	1317.3	-3.91	12.96-10.53-15.06			7.28	.770	2.52	C		F 9/2	
83	93	176	1330.5	1329.6	-3.35	10.66-10.16-12.31			6.70	.767	1.10	-.032	.C15	9/2-	13/2+
83	94	177	1343.1	1341.6	-3.25	12.61-10.09-13.79			6.80	.765	1.63	-.026	.C09	9/2-	
83	95	178	1353.5	1353.4	-2.65	10.40 -9.69-11.38			6.37	.762	1.46	.116	.C46	3/2+	9/2+
83	96	179	1365.7	1364.6	-2.60	12.17 -9.60-12.41			6.46	.759	1.56	-.086	.C33	9/2-	
83	97	180	1376.1	1376.3	-1.75	10.36 -8.89-10.40			6.40	.757	1.19	.132	.C45	3/2+	9/2-
83	98	181	1387.9	1387.5	-1.69	11.83 -8.88-11.51			6.57	.754	1.60	-.116	.C34	1/2+	
83	99	182	1397.9	1398.4	-1.31	10.01 -8.20 -9.56			6.56	.751	.89	.152	.C36	11/2-	1/2-
83	100	183	1409.4	1409.2	-1.09	11.46 -8.24-10.66			6.77	.749	1.51	.154	.C31	11/2-	
83	101	184	1419.2	1419.7	-.86	9.87 -7.44 -8.83			7.01	.747	.92	.169	.C24	11/2-	7/2+
83	102	185	1430.3	1430.1	-.63	11.11 -7.52 -9.81			7.23	.745	1.74	.180	.C17	11/2-	
83	103	186	1440.0	1440.3	-.41	9.62 -7.08 -8.06			7.59	.742	1.21	.181	.C15	11/2-	9/2-
83	104	187	1450.6	1450.2	-.21	10.65 -7.09 -8.78			7.72	.741	1.55	.161	.C06	11/2-	
83	105	188	1459.8	1460.0	-.08	9.21 -7.02 -7.21			8.03	.739	1.07	.163	.C01	9/2-	9/2+
83	106	189	1470.0	1469.7	-.04	10.15 -6.88 -7.93			8.03	.737	1.42	-.131	.C12	13/2+	
83	107	190	1479.1	1479.1	.34	9.14 -6.79 -6.51			8.61	.735	1.41	.163	-.C11	9/2-	7/2-
83	108	191	1489.0	1488.3	.57	9.91 -6.77 -7.21			8.73	.732	1.95	.151	-.C14	9/2-	
83	109	192	1497.5	1497.6	.81	8.51 -6.79 -5.61			9.02	.731	1.41	.144	-.C21	1/2-	1/2-
83	110	193	1507.2	1506.6	1.10	9.72 -6.56 -6.58			9.30	.729	1.84	-.120	-.C00	13/2+	
83	111	194	1515.5	1515.5	1.32	8.21 -6.45 -4.96			9.62	.728	1.28	.112	-.C21	1/2-	3/2-
83	112	195	1525.8	1524.3	1.67	10.30 -5.47 -6.86			10.79	.727	2.49	.066	-.C14	3/2-	
83	113	196	1533.9	1532.8	1.83	8.15 -5.57 -4.60			11.37	.726	2.41	.076	-.C20	3/2-	11/2+
83	114	197	1543.4	1541.2	1.89	9.52 -5.48 -5.71			12.09	.725	3.29	-.035	.C03	9/2-	
83	115	198	1551.2	1549.5	2.09	7.81 -5.36 -3.77			12.64	.724	3.14	.042	-.C14	1/2-	13/2+
83	116	199	1560.8	1557.5	2.32	9.56 -4.80 -5.21			13.70	.723	4.66	-.027	-.C00	9/2-	
83	117	200	1568.4	1565.4	2.61	7.64 -4.63 -3.48			14.38	.722	4.56	-.030	.C01	9/2-	1/2-
83	118	201	1577.6	1573.2	2.76	9.21 -4.39 -4.82			15.39	.721	6.16	-.021	-.C02	9/2-	
83	119	202	1585.1	1580.8	3.00	7.46 -4.10 -2.82			16.18	.720	6.18	-.020	-.C03	9/2-	9/2-
83	120	203	1593.9	1588.2	3.22	8.80 -4.06 -3.94			17.08	.719	7.70	-.019	-.C04	9/2-	
83	121	204	1601.2	1595.5	3.48	7.28 -3.78 -2.18			17.96	.718	7.85	-.020	-.C04	9/2-	1/2-
83	122	205	1609.4	1602.7	3.54	8.25 -3.80 -2.96			18.60	.718	9.09	C		F 9/2	
83	123	206	1616.4	1609.7	3.99	7.18 -3.51 -1.50			19.67	.717	9.48	-.020	-.C06	9/2-	3/2-
83	124	207	1624.5	1616.5	4.00	7.87 -3.49 -2.18			20.20	.716	10.62	C		F 9/2	
83	125	208	1631.4	1623.2	4.22	6.92 -3.09 -1.80			21.28	.716	11.00	C		F 9/2 P 1/2	
83	126	209	1638.9	1629.8	4.44	7.48 -3.25 -1.13			21.70	.715	12.08	C		F 9/2	
83	127	210	1643.3	1635.9	4.67	4.40 -5.32 2.17			20.51	.715	10.22	C		F 9/2 G 9/2	
83	128	211	1649.4	1641.9	4.89	6.12 -6.25 .67			19.83	.715	10.21	C		F 9/2	
83	129	212	1653.6	1647.7	5.11	4.17 -6.03 2.83			18.67	.714	8.39	C		F 9/2 G 9/2	
83	130	213	1659.5	1653.4	5.33	5.92 -5.79 1.31			18.04	.714	8.45	C		F 9/2	
83	131	214	1663.4	1658.9	5.55	3.95 -5.57 3.49			16.91	.714	6.68	C		F 9/2 G 9/2	
83	132	215	1669.2	1664.4	5.77	5.72 -5.33 1.94			16.33	.714	6.81	C		F 9/2	

Z	N	A	R.F.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	A
83	133	216	1672.9	1669.6	5.99	3.75	-5.09	4.13	15.24	.714	5.10	C		F 9/2	G 9/2
83	134	217	1678.5	1674.8	6.20	5.55	-4.83	2.54	14.74	.714	5.32	C		F 9/2	
83	135	218	1692.1	1679.5	6.49	3.63	-4.52	4.67	13.77	.714	3.77	-.019	.004	9/2-	5/2+
83	136	219	1687.5	1684.8	6.74	5.44	-4.21	3.00	13.40	.714	4.14	-.023	.005	9/2-	
83	137	220	1691.3	1689.6	7.48	3.80	-3.53	4.93	12.82	.715	3.76	.066	.040	1/2-	3/2+
83	138	221	1696.6	1654.2	7.59	5.26	-3.25	3.83	12.51	.715	4.13	.066	.039	1/2-	
83	139	222	1700.5	1658.8	8.06	3.93	-2.32	5.53	12.29	.715	3.73	.088	.046	1/2+	5/2-
83	140	223	1705.5	1703.2	8.25	5.02	-2.20	4.71	11.97	.716	4.07	.088	.044	1/2+	
83	141	224	1709.2	1707.5	8.47	3.70	-1.71	6.22	11.74	.716	3.55	.099	.049	1/2+	5/2+
83	142	225	1714.0	1711.7	8.61	4.72	-1.63	4.99	11.34	.717	3.73	.096	.044	1/2+	
83	143	226	1717.2	1715.8	8.85	3.21	-1.63	6.84	10.84	.718	2.80	.104	.046	1/2+	7/2-
83	144	227	1721.8	1719.7	9.03	4.66	-1.34	5.97	10.60	.719	3.11	.098	.041	1/2+	
83	145	228	1725.1	1723.7	9.22	3.27	-.99	7.50	10.37	.719	2.36	.103	.040	1/2+	5/2+
83	146	229	1729.5	1727.6	9.39	4.46	-.70	6.56	10.14	.720	2.74	.099	.034	1/2+	
83	147	230	1732.6	1731.4	9.54	3.03	-.54	8.13	9.88	.721	1.55	.107	.030	1/2+	1/2+
83	148	231	1737.0	1735.1	9.72	4.38	-.25	6.99	9.79	.722	2.49	.099	.024	1/2-	
83	149	232	1739.9	1738.7	9.88	2.98	-.01	8.49	9.69	.723	1.88	.109	.020	1/2-	9/2-
83	150	233	1744.1	1742.2	10.06	4.19	.10	7.61	9.62	.724	2.49	.098	.016	1/2-	
83	151	234	1746.9	1745.5	10.21	2.82	.31	9.01	9.55	.725	1.58	.107	.011	1/2-	7/2+
83	152	235	1750.9	1748.8	10.39	4.00	.44	8.11	9.49	.726	2.59	.094	.008	1/2-	
83	153	236	1753.6	1751.9	10.56	2.63	.62	9.55	9.44	.728	2.09	.094	.001	1/2-	9/2+
83	154	237	1757.4	1755.0	10.69	3.85	.73	8.52	9.43	.729	2.66	.067	.003	1/2-	
83	155	238	1760.0	1757.9	10.91	2.53	1.04	9.98	9.44	.730	2.30	.076	-.005	1/2-	11/2-
83	156	239	1763.7	1760.8	10.89	3.79	1.17	8.88	9.56	.732	3.08	.050	-.003	1/2-	
83	157	240	1766.1	1763.5	11.11	2.38	1.42	10.37	9.64	.734	2.76	.059	-.010	1/2-	11/2-
83	158	241	1770.0	1766.2	11.13	3.88	1.88	9.10	10.09	.736	3.83	.022	.001	1/2-	
83	159	242	1772.3	1768.8	11.37	2.30	2.24	10.63	10.24	.738	3.58	.024	-.000	1/2-	11/2+
83	160	243	1776.1	1771.2	11.39	3.74	2.44	9.40	10.71	.740	4.84	C		F 9/2	
83	161	244	1778.2	1773.6	11.57	2.13	2.60	11.28	10.91	.742	4.60	C		F 9/2	J1 ⁵ /2
83	162	245	1782.0	1775.9	11.76	3.77	2.93	9.83	11.60	.744	6.10	C		F 9/2	
83	163	246	1783.9	1778.0	11.94	1.99	3.16	11.79	11.84	.746	5.92	C		F 9/2	J1 ⁵ /2
83	164	247	1787.6	1780.1	12.12	3.63	3.37	10.34	12.57	.748	7.45	C		F 9/2	
83	165	248	1788.8	1782.1	12.30	1.23	2.98	12.91	12.22	.751	6.69	C		F 9/2	D 5/2
83	166	249	1791.0	1784.0	12.48	2.15	1.85	12.18	11.65	.754	6.93	C		F 9/2	
83	167	250	1792.0	1785.8	12.67	1.04	2.02	13.46	11.29	.756	6.15	C		F 9/2	D 5/2
83	168	251	1794.0	1787.6	12.84	1.99	2.22	12.69	10.75	.759	6.41	C		F 9/2	
83	169	252	1794.8	1789.2	13.02	.85	2.40	14.00	10.39	.762	5.62	C		F 9/2	D 5/2
83	170	253	1796.8	1790.8	13.35	2.02	2.78	13.02	10.04	.764	6.11	-.014	.008	9/2-	
83	171	254	1797.5	1792.2	13.55	.69	2.98	14.36	9.69	.767	5.32	.017	.005	1/2-	3/2+
83	172	255	1799.2	1793.6	13.55	1.62	3.08	13.59	9.13	.770	5.53	0		F 9/2	
83	173	256	1799.8	1794.5	13.88	.64	3.41	14.91	8.88	.773	4.86	.018	-.001	1/2-	5/2+
83	174	257	1801.2	1796.1	13.90	1.45	3.41	14.12	8.33	.777	5.10	C		F 9/2	
83	175	258	1801.6	1797.3	14.08	.32	3.60	15.57	7.95	.780	4.25	C		F 9/2	G 7/2
83	176	259	1803.0	1798.3	14.25	1.44	3.77	14.63	7.55	.783	4.67	C		F 9/2	
83	177	260	1803.2	1799.3	14.54	.19	3.99	16.05	7.20	.787	4.93	-.124	.041	9/2-	11/2-

Z	N	A	S.E.	BC	SP	SN	SA	CP	FAH	X	S	A2	A4	P	N
84	87	171	1253.8	1248.7	-3.78	12.39	-11.84	-18.00	7.92	.802	5.08	C			F 7/2
84	88	172	1267.7	1262.4	-3.51	13.84	-11.69	-19.17	7.59	.798	5.26	C			
84	89	173	1279.5	1275.8	-3.24	11.84	-11.68	-16.89	6.98	.794	3.72	C			F 7/2
84	90	174	1293.0	1288.9	-2.97	13.50	-11.47	-18.28	6.81	.790	4.05	C			
84	91	175	1304.0	1301.9	-2.88	11.03	-11.72	-15.54	5.86	.787	2.20	-.024	.008		5/2-
84	92	176	1317.4	1314.6	-2.43	13.41	-11.27	-17.03	6.04	.784	2.85	C			
84	93	177	1328.6	1327.1	-1.96	11.13	-10.54	-14.72	5.62	.781	3.26	.119	.060		7/2-
84	94	178	1341.4	1339.3	-1.77	12.81	-10.70	-15.58	5.66	.777	3.63	.117	.056		
84	95	179	1352.5	1351.4	-1.03	11.14	-9.67	-13.66	5.69	.774	2.77	.132	.054		5/2+
84	96	180	1364.9	1363.2	-.82	12.37	-9.80	-14.64	5.71	.771	3.02	.125	.047		
84	97	181	1375.6	1374.8	-.46	10.72	-8.88	-12.77	5.75	.768	2.28	.142	.047		5/2-
84	98	182	1387.6	1386.3	-.33	11.97	-9.03	-13.74	5.78	.766	2.68	.140	.042		
84	99	183	1397.9	1397.5	.02	10.36	-8.18	-11.91	5.85	.764	1.86	.156	.038		1/2-
84	100	184	1409.6	1408.5	.25	11.70	-8.26	-13.07	6.01	.761	2.47	.158	.032		
84	101	185	1419.8	1419.3	.52	10.13	-7.76	-11.22	6.24	.759	1.85	.174	.025		7/2+
84	102	186	1431.1	1429.9	.77	11.36	-7.64	-12.22	6.46	.757	2.69	.188	.016		
84	103	187	1441.1	1440.3	1.08	9.93	-7.34	-10.55	6.86	.754	2.24	.189	.015		5/2-
84	104	188	1451.8	1450.6	1.21	10.78	-7.45	-11.14	6.87	.752	2.56	.172	.010		
84	105	189	1461.3	1460.6	1.44	9.44	-7.40	-9.56	7.17	.750	1.70	.155	-.003		9/2+
84	106	190	1471.8	1470.5	1.85	10.55	-7.30	-10.51	7.32	.748	2.58	.163	-.003		
84	107	191	1481.0	1480.2	1.92	9.21	-7.17	-9.05	7.72	.746	2.26	.167	-.011		7/2-
84	108	192	1491.1	1489.7	2.12	10.11	-7.17	-9.76	7.79	.745	2.78	.157	-.013		
84	109	193	1499.9	1499.1	2.35	8.74	-7.19	-8.09	8.07	.743	2.25	.154	-.018		1/2-
84	110	194	1509.7	1508.4	2.43	9.79	-7.08	-9.01	8.16	.742	2.53	.125	-.019		
84	111	195	1518.1	1517.6	2.66	8.44	-6.90	-7.14	8.46	.740	2.01	.120	-.023		3/2-
84	112	196	1528.5	1526.5	2.77	10.41	-5.91	-9.01	9.51	.739	3.28	.092	-.020		
84	113	197	1536.9	1535.3	3.03	8.41	-5.49	-7.36	10.11	.737	2.13	.092	-.024		11/2+
84	114	198	1546.7	1544.0	3.25	9.75	-5.70	-8.82	10.81	.736	4.24	.077	-.022		
84	115	199	1554.8	1552.4	3.57	8.12	-5.56	-7.17	11.44	.735	4.16	.080	-.025		3/2-
84	116	200	1564.2	1560.7	3.37	9.37	-5.66	-7.21	12.08	.733	4.77	C			
84	117	201	1572.0	1568.9	3.60	7.87	-5.40	-5.58	12.76	.732	4.69	-.023	-.000		1/2-
84	118	202	1581.5	1576.9	3.86	9.46	-5.28	-6.92	13.80	.731	6.30	C			
84	119	203	1589.2	1584.7	4.08	7.68	-4.94	-5.10	14.60	.730	6.32	C			F 5/2
84	120	204	1598.2	1592.4	4.31	9.03	-4.97	-6.22	15.51	.729	7.84	C			
84	121	205	1605.7	1599.9	4.51	7.47	-4.71	-4.44	16.37	.728	7.96	C			F 5/2
84	122	206	1614.3	1607.3	4.90	8.64	-4.65	-5.35	17.18	.728	9.39	C			
84	123	207	1621.5	1614.5	4.91	7.19	-4.47	-3.75	18.04	.727	9.53	C			F 5/2
84	124	208	1629.8	1621.6	5.34	8.31	-4.35	-4.52	18.79	.727	10.92	C			
84	125	209	1637.0	1628.5	5.57	7.15	-3.95	-3.25	19.88	.726	11.30	C			P 1/2
84	126	210	1644.7	1635.3	5.79	7.70	-4.11	-3.58	20.30	.726	12.38	C			
84	127	211	1649.3	1641.6	6.01	4.62	-6.18	-.29	19.13	.725	10.52	C			G 5/2
84	128	212	1655.6	1647.8	6.23	6.33	-7.11	-1.77	18.46	.725	10.51	C			
84	129	213	1660.0	1653.8	6.45	4.39	-6.89	.39	17.31	.725	8.69	C			G 5/2
84	130	214	1666.2	1659.7	6.66	6.13	-6.65	-1.13	16.70	.725	8.75	C			
84	131	215	1670.3	1665.5	6.88	4.17	-6.44	1.06	15.57	.724	6.98	C			G 5/2
84	132	216	1676.3	1671.1	7.09	5.93	-6.20	-.49	15.01	.724	7.11	C			
84	133	217	1680.2	1676.7	7.31	3.96	-5.97	1.70	13.93	.724	5.40	C			G 5/2

Z	N	A	P.E.	BC	SP	SN	SA	CB	BAR	X	S	B2	B4	P	N
84	134	218	1686.0	1682.0	7.52	5.76	-5.71	.11	13.45	.724	5.62	C			
84	135	219	1689.7	1687.3	7.65	3.76	-5.48	2.33	12.41	.724	3.97	C			G 5/2
84	136	220	1695.5	1692.4	7.94	5.73	-5.09	1.20	12.14	.724	4.90	.053	.031		
84	137	221	1699.6	1697.4	8.30	4.16	-4.26	3.03	11.73	.725	4.36	.067	.045		7/2+
84	138	222	1705.3	1702.3	8.68	5.64	-3.81	2.04	11.61	.725	5.11	.086	.046		
84	139	223	1709.5	1707.0	8.95	4.20	-2.67	3.53	11.47	.725	4.72	.098	.053		5/2-
84	140	224	1714.7	1711.7	9.14	5.22	-2.61	2.75	11.15	.726	5.05	.099	.050		
84	141	225	1718.2	1716.2	8.93	3.49	-2.59	4.66	10.53	.726	4.10	.109	.055		5/2+
84	142	226	1723.2	1720.6	9.26	5.05	-2.36	3.29	10.28	.727	4.40	.106	.050		
84	143	227	1727.0	1724.8	9.84	3.79	-2.06	4.77	10.17	.727	3.82	.113	.051		7/2-
84	144	228	1731.8	1729.0	9.99	4.80	-1.79	3.98	9.89	.728	4.06	.108	.046		
84	145	229	1735.3	1733.2	10.23	3.52	-1.28	5.44	9.73	.728	3.32	.114	.043		5/2+
84	146	230	1739.9	1737.3	10.38	4.60	-1.16	4.53	9.47	.729	3.66	.112	.039		
84	147	231	1743.2	1741.3	10.59	3.24	-1.00	6.07	9.24	.730	2.87	.119	.035		1/2+
84	148	232	1747.7	1745.2	10.69	4.46	-.80	5.00	9.06	.731	3.20	.112	.029		
84	149	233	1751.0	1748.9	11.02	3.31	-.37	6.34	9.11	.732	2.82	.115	.025		5/2-
84	150	234	1755.2	1752.6	11.04	4.21	-.36	5.57	8.88	.733	3.21	.113	.018		
84	151	235	1758.3	1756.2	11.32	3.10	-.08	6.93	8.92	.734	2.79	.119	.017		1/2+
84	152	236	1762.3	1759.6	11.40	4.08	-.02	6.04	8.77	.736	3.22	.115	.008		
84	153	237	1765.2	1763.0	11.58	2.82	.13	7.44	8.73	.737	2.79	.115	.006		5/2+
84	154	238	1769.2	1766.2	11.73	3.99	.30	6.51	8.70	.739	3.33	.092	-.003		
84	155	239	1771.8	1769.3	11.89	2.69	.53	7.88	8.72	.740	2.91	.095	-.007		11/2-
84	156	240	1775.7	1772.4	11.97	3.87	.68	6.86	8.77	.742	3.56	.066	-.010		
84	157	241	1778.3	1775.3	12.20	2.61	.98	8.23	8.90	.743	3.26	.060	-.016		5/2+
84	158	242	1782.2	1778.2	12.15	3.83	1.01	7.15	9.11	.745	3.99	C			
84	159	243	1784.7	1780.9	12.36	2.51	1.36	8.55	9.34	.747	3.78	.020	.000		11/2+
84	160	244	1788.7	1783.6	12.63	4.01	1.51	7.20	9.92	.748	5.13	C			
84	161	245	1791.0	1786.1	12.82	2.32	1.77	8.95	10.14	.750	4.89	C			115/2
84	162	246	1795.0	1788.6	13.00	3.95	2.00	7.62	10.83	.752	6.39	C			
84	163	247	1797.1	1790.9	13.18	2.17	2.22	9.46	11.09	.755	6.20	C			115/2
84	164	248	1800.9	1793.2	13.36	3.80	2.44	8.01	11.84	.757	7.74	C			
84	165	249	1802.3	1795.4	13.54	1.41	2.04	10.59	11.52	.759	6.57	C			D 5/2
84	166	250	1804.7	1797.5	13.72	2.32	.92	9.86	10.97	.762	7.21	C			
84	167	251	1805.9	1799.5	13.90	1.22	1.09	11.15	10.64	.764	6.43	C			D 5/2
84	168	252	1808.0	1801.4	14.07	2.17	1.29	10.38	10.11	.766	6.65	C			
84	169	253	1809.1	1803.2	14.25	1.03	1.46	11.69	9.77	.769	5.90	C			D 5/2
84	170	254	1811.1	1804.9	14.27	2.04	1.69	11.01	9.28	.771	6.21	C			
84	171	255	1812.0	1806.6	14.42	.84	1.86	12.37	8.92	.774	5.41	C			G 7/2
84	172	256	1813.9	1808.1	14.77	1.96	2.13	11.47	8.55	.777	5.81	C			
84	173	257	1814.6	1809.6	14.79	.66	2.31	12.89	8.18	.780	5.00	C			G 7/2
84	174	258	1816.4	1811.0	15.12	1.78	2.47	11.90	7.80	.783	5.39	C			
84	175	259	1816.9	1812.3	15.29	.50	2.65	13.28	7.43	.786	4.58	C			G 7/2
84	176	260	1818.5	1813.5	15.46	1.61	2.83	12.52	7.05	.789	4.96	C			
84	177	261	1819.1	1814.7	15.93	.66	3.34	14.05	7.00	.793	5.57	-.116	.045		7/2+
84	178	262	1820.9	1815.7	16.09	1.73	3.80	13.30	6.91	.796	6.24	-.126	.044		

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
85	89	174	1273.9	1271.8	-5.56	12.11	-11.96	-15.67	5.49	.808	2.16	C		F 9/2	F 7/2
85	90	175	1287.7	1285.2	-5.29	13.77	-11.76	-17.05	5.28	.804	2.49	C		F 9/2	
85	91	176	1299.6	1298.4	-4.40	11.92	-11.40	-14.93	4.93	.800	3.53	.122	.074	1/2+	7/2+
85	92	177	1313.1	1311.4	-4.37	13.44	-11.19	-15.68	4.85	.797	2.88	.102	.049	1/2+	
85	93	178	1325.0	1324.1	-3.55	11.95	-10.19	-13.74	4.98	.793	2.70	.119	.062	1/2+	3/2-
85	94	179	1338.1	1336.7	-3.31	13.05	-10.10	-14.62	4.98	.789	2.07	.117	.059	1/2+	
85	95	180	1349.5	1349.0	-3.05	11.39	-9.36	-12.72	4.98	.787	2.17	.133	.057	1/2+	5/2+
85	96	181	1362.0	1361.1	-2.63	12.59	-9.38	-13.61	4.94	.784	2.53	.132	.052	1/2+	
85	97	182	1373.0	1373.0	-2.56	11.00	-8.79	-11.77	4.97	.781	1.67	.144	.050	1/2+	5/2-
85	98	183	1385.2	1384.6	-2.33	12.20	-8.76	-12.69	4.95	.779	2.05	.143	.046	1/2+	
85	99	184	1395.8	1396.1	-2.15	10.53	-8.58	-10.79	4.92	.776	1.15	.165	.040	1/2+	1/2-
85	100	185	1407.7	1407.4	-1.87	11.98	-8.44	-11.96	5.10	.773	1.75	.161	.036	3/2+	
85	101	186	1418.1	1418.4	-1.64	10.36	-8.09	-10.13	5.29	.770	1.08	.177	.028	3/2+	7/2+
85	102	187	1429.7	1429.3	-1.41	11.60	-7.95	-11.11	5.50	.768	1.89	.193	.018	3/2+	
85	103	188	1439.9	1440.0	-1.14	10.19	-7.63	-9.43	5.90	.766	1.45	.193	.019	1/2-	5/2-
85	104	189	1450.9	1450.5	-.9	11.02	-7.72	-10.04	5.90	.764	1.94	.189	.015	1/2-	
85	105	190	1460.5	1460.8	-.74	9.60	-7.74	-8.39	6.07	.762	1.23	.189	.008	1/2-	9/2+
85	106	191	1471.2	1470.9	-.62	10.67	-7.71	-9.22	6.09	.760	1.70	-.148	.019	7/2-	
85	107	192	1480.6	1480.8	-.43	9.41	-7.52	-7.79	6.43	.758	1.13	.168	-.007	3/2+	7/2-
85	108	193	1491.0	1490.5	-.13	10.41	-7.26	-8.52	6.54	.756	1.79	-.145	.015	7/2-	
95	109	194	1499.9	1500.2	.00	8.88	-7.52	-6.85	6.70	.755	1.03	.153	-.015	3/2+	1/2-
85	110	195	1510.2	1509.8	.52	10.31	-7.12	-7.99	7.06	.753	1.89	-.139	.009	7/2-	
85	111	196	1518.7	1519.2	.62	8.54	-7.09	-6.30	7.22	.751	1.17	-.136	.005	7/2-	3/2-
85	112	197	1528.8	1528.4	.27	10.06	-6.75	-7.54	7.69	.749	2.10	-.129	.002	7/2-	
85	113	198	1537.1	1537.4	.15	8.29	-6.66	-5.60	7.92	.748	1.50	-.127	-.001	7/2-	7/2+
85	114	199	1546.9	1546.3	.17	9.77	-7.20	-6.79	8.41	.747	2.49	-.121	-.003	7/2-	
85	115	200	1556.2	1555.0	1.38	9.33	-6.02	-5.17	10.00	.746	3.00	.083	-.025	5/2-	7/2-
85	116	201	1565.7	1563.5	1.50	9.49	-6.05	-6.06	10.54	.745	3.69	-.050	.011	13/2+	
85	117	202	1573.8	1571.9	1.76	8.13	-5.73	-4.37	11.23	.744	3.59	-.032	.018	13/2+	5/2-
85	118	203	1583.3	1580.1	1.80	9.50	-5.79	-5.57	12.08	.743	4.94	-.033	.001	7/2-	
85	119	204	1591.2	1588.2	2.03	7.91	-5.52	-3.99	12.86	.742	4.96	-.033	.004	7/2-	5/2-
85	120	205	1600.5	1596.1	2.25	9.24	-5.48	-5.11	13.76	.741	6.42	-.019	-.002	7/2-	
85	121	206	1608.2	1603.8	2.50	7.73	-5.21	-3.37	14.65	.740	6.58	-.021	-.002	7/2-	1/2-
85	122	207	1617.0	1611.4	2.66	8.80	-5.21	-4.21	15.39	.739	7.91	0		F 9/2	
85	123	208	1624.5	1618.5	3.00	7.54	-4.95	-2.73	16.37	.738	8.20	-.020	-.005	7/2-	3/2-
85	124	209	1632.9	1626.2	3.11	8.42	-4.78	-3.38	17.02	.738	9.45	C		F 9/2	
85	125	210	1640.3	1633.3	3.33	7.37	-4.60	-2.12	18.11	.737	9.83	C		F 9/2	P 1/2
85	126	211	1648.2	1640.3	3.56	7.92	-4.55	-2.45	18.54	.736	10.90	C		F 9/2	
85	127	212	1653.1	1646.9	3.78	4.85	-6.62	.84	17.37	.736	9.05	C		F 9/2	G 9/2
85	128	213	1659.6	1653.3	4.00	6.55	-7.55	-.65	16.71	.735	9.04	C		F 9/2	
85	129	214	1664.3	1659.5	4.22	4.62	-7.34	1.51	15.57	.735	7.23	0		F 9/2	G 9/2
85	130	215	1670.6	1665.6	4.44	6.35	-7.10	-.01	14.97	.735	7.29	C		F 9/2	
85	131	216	1675.0	1671.6	4.66	4.39	-6.89	2.17	13.86	.734	5.53	0		F 9/2	G 9/2
85	132	217	1681.1	1677.5	4.88	6.15	-6.66	.63	13.31	.734	5.66	C		F 9/2	
85	133	218	1695.3	1683.2	5.09	4.18	-6.43	2.81	12.25	.734	3.55	C		F 9/2	G 9/2
85	134	219	1691.3	1688.8	5.31	5.98	-6.17	1.22	11.78	.734	4.17	C		F 9/2	
85	135	220	1695.9	1694.2	6.14	4.60	-5.32	2.95	11.37	.734	4.40	.075	.052	1/2+	3/2-

Z	N	A	B.E.	BC	SP	Si	SA	CE	EAR	X	S	A2	A4	D	N
85	136	221	1701.9	1699.6	6.41	5.99	-4.88	1.96	11.17	.734	5.63	.094	.066	1/2+	
85	137	222	1706.5	1704.8	6.89	4.64	-3.87	3.28	11.04	.735	4.45	.087	.057	1/2+	3/2+
85	138	223	1712.2	1709.9	6.94	5.69	-3.61	2.72	10.78	.735	4.83	.090	.055	1/2+	
85	139	224	1716.6	1714.6	7.18	4.43	-2.98	4.20	10.68	.735	4.24	.097	.056	1/2+	5/2-
85	140	225	1722.0	1719.7	7.37	5.40	-2.84	2.64	10.36	.736	4.55	.100	.054	1/2+	
85	141	226	1725.7	1724.4	7.56	3.69	-3.08	4.73	9.74	.736	3.40	.107	.054	1/2+	5/2+
85	142	227	1731.0	1729.0	7.77	5.26	-2.84	4.07	9.51	.737	3.78	.108	.051	1/2+	
85	143	228	1735.0	1733.4	8.00	4.02	-2.53	5.51	9.44	.737	3.10	.117	.048	1/2+	7/2-
85	144	229	1740.0	1737.8	8.17	4.97	-2.27	4.82	9.15	.738	3.52	.112	.048	1/2+	
85	145	230	1743.7	1742.2	8.35	3.70	-1.78	6.24	8.99	.738	2.76	.116	.046	1/2+	5/2+
85	146	231	1748.5	1746.5	8.52	4.77	-1.66	5.42	8.72	.739	3.05	.114	.042	1/2+	
85	147	232	1751.9	1750.7	8.70	3.42	-1.52	6.96	8.49	.740	2.27	.120	.039	1/2+	1/2+
85	148	233	1756.5	1754.8	8.87	4.65	-1.33	5.96	8.31	.741	2.66	.115	.033	1/2+	
85	149	234	1760.0	1758.7	9.00	3.44	-.91	7.29	8.31	.742	2.06	.120	.028	1/2+	9/2-
85	150	235	1764.4	1762.6	9.25	4.47	-.83	6.44	8.16	.743	2.57	.116	.024	1/2+	
85	151	236	1767.6	1766.4	9.33	3.18	-.63	7.89	8.11	.744	1.98	.120	.020	1/2+	1/2+
85	152	237	1771.8	1770.0	9.48	4.22	-.60	7.05	7.93	.745	2.45	.117	.012	3/2-	
85	153	238	1774.9	1773.5	9.73	3.06	-.35	8.42	7.96	.746	1.96	.119	.007	1/2+	7/2+
85	154	239	1778.9	1777.0	9.79	4.05	-.30	7.57	7.81	.747	2.44	.104	.004	3/2-	
85	155	240	1781.8	1780.3	9.95	2.85	-.08	8.97	7.83	.749	1.96	.103	-.003	3/2-	11/2-
85	156	241	1785.8	1783.5	10.05	3.97	.04	7.95	7.80	.750	2.53	.078	-.005	3/2-	
85	157	242	1788.5	1786.6	10.20	2.75	.27	9.30	7.90	.752	2.15	.070	-.013	3/2-	9/2+
85	158	243	1792.4	1789.7	10.28	3.91	.39	8.28	8.01	.753	2.86	.046	-.005	3/2-	
85	159	244	1795.1	1792.6	10.43	2.67	.68	9.56	8.23	.755	2.57	.036	-.005	3/2-	11/2+
85	160	245	1799.2	1795.4	10.48	4.07	.87	8.25	8.69	.757	3.73	C		† 9/2	
85	161	246	1801.8	1798.2	10.79	2.62	1.19	9.89	9.05	.759	3.64	.016	-.000	3/2-	13/2-
85	162	247	1805.8	1800.8	10.85	4.01	1.46	8.65	9.66	.761	5.00	C		† 9/2	
85	163	248	1808.2	1803.4	11.04	2.36	1.69	10.53	9.94	.763	4.81	C		† 9/2	J15/2
85	164	249	1812.1	1805.8	11.22	3.99	1.90	9.08	10.70	.765	6.35	C		† 9/2	
85	165	250	1813.7	1808.2	11.40	1.59	1.50	11.65	10.40	.767	5.59	C		† 9/2	D 5/2
85	166	251	1816.2	1810.4	11.58	2.50	.38	10.92	9.87	.769	5.82	C		† 9/2	
85	167	252	1817.6	1812.6	11.76	1.40	.54	12.21	9.54	.771	5.05	C		† 9/2	D 5/2
85	168	253	1820.0	1814.7	11.94	2.35	.74	11.44	9.03	.773	5.31	C		† 9/2	
85	169	254	1821.3	1816.7	12.27	1.36	1.07	12.60	8.85	.776	4.70	.016	.008	3/2-	1/2+
85	170	255	1823.6	1818.6	12.43	2.20	1.28	11.89	8.38	.779	4.99	.016	.006	3/2-	
85	171	256	1824.6	1820.4	12.65	1.06	1.49	13.21	8.08	.781	4.23	.019	.004	3/2-	3/2+
85	172	257	1826.7	1822.1	12.78	2.09	1.56	12.36	7.68	.784	4.58	.016	.003	3/2-	
85	173	258	1827.5	1823.8	12.90	.79	1.65	13.83	7.27	.787	3.74	.034	.001	3/2-	5/2+
85	174	259	1829.4	1825.3	13.00	1.88	1.91	13.36	6.83	.789	4.02	C		† 9/2	
85	175	260	1830.2	1826.8	13.35	.85	2.12	14.15	6.64	.792	4.45	-.102	.047	1/2+	13/2-
85	176	261	1832.4	1828.2	13.93	2.19	2.86	13.10	6.69	.796	5.27	-.118	.044	7/2-	
85	177	262	1833.4	1829.5	14.24	.97	3.51	14.42	6.81	.799	4.96	-.118	.046	7/2-	3/2+
85	178	263	1835.3	1830.8	14.41	1.90	3.97	13.68	6.72	.803	5.63	-.126	.044	7/2-	
85	179	264	1836.1	1831.9	14.59	.83	4.61	14.93	6.87	.806	5.32	-.131	.044	7/2-	15/2+
85	180	265	1837.4	1833.0	14.76	1.27	4.31	14.66	6.34	.809	5.49	-.137	.041	7/2-	

Z	N	A	R.E.	RC	SP	SN	SA	CE	PAR	X	S	A2	A4	P	N
86	91	177	1296.6	1254.5	-3.03	12.69	-11.19	-17.16	4.42	.813	3.86	.111	.064		3/2+
86	92	178	1310.5	1307.8	-2.57	13.89	-10.80	-18.03	4.52	.810	4.55	.115	.064		
86	93	179	1322.7	1320.8	-2.35	12.17	-9.66	-15.96	4.59	.806	3.77	.128	.064		3/2-
86	94	180	1335.9	1333.6	-2.11	13.29	-9.78	-16.82	4.54	.803	4.12	.127	.060		
86	95	181	1347.7	1346.1	-1.80	11.71	-9.20	-15.00	4.58	.800	3.24	.141	.057		5/2+
86	96	182	1360.5	1358.5	-1.55	12.84	-9.17	-15.86	4.52	.797	3.63	.141	.054		
86	97	183	1371.8	1370.6	-1.27	11.28	-9.03	-14.05	4.55	.793	2.75	.150	.052		5/2-
86	98	184	1384.2	1382.6	-1.03	12.43	-8.97	-14.96	4.51	.790	3.12	.150	.047		
86	99	185	1395.0	1394.3	-.76	10.80	-8.89	-13.10	4.49	.788	2.18	.167	.041		1/2-
86	100	186	1407.2	1405.8	-.54	12.20	-8.66	-14.26	4.62	.785	2.75	.165	.037		
86	101	187	1417.8	1417.1	-.29	10.62	-8.40	-12.48	4.81	.783	2.04	.175	.028		7/2+
86	102	188	1429.7	1428.2	-.02	11.87	-8.23	-13.48	5.01	.781	2.87	.190	.025		
86	103	189	1440.1	1439.2	.19	10.41	-7.95	-11.78	5.37	.778	2.38	.195	.015		5/2-
86	104	190	1451.4	1449.5	.43	11.25	-8.06	-12.39	5.34	.776	2.86	.191	.016		
86	105	191	1461.2	1460.4	.67	9.83	-8.16	-10.75	5.50	.774	2.14	.190	.009		5/2+
86	106	192	1472.0	1470.8	.84	10.84	-8.09	-11.55	5.43	.771	2.24	.158	-.002		
86	107	193	1481.7	1481.0	1.11	9.68	-7.85	-10.21	5.81	.769	2.03	.171	-.007		5/2-
86	108	194	1492.2	1490.9	1.24	10.54	-7.87	-10.86	5.80	.768	2.50	.162	-.009		
86	109	195	1501.4	1500.9	1.54	9.18	-7.90	-9.28	6.02	.766	1.93	.155	-.015		1/2-
86	110	196	1511.6	1510.7	1.46	10.23	-7.78	-10.21	6.05	.764	2.50	-.144	.008		
86	111	197	1520.5	1520.3	1.74	8.82	-7.70	-8.23	6.25	.763	1.65	.125	-.020		3/2-
86	112	198	1530.7	1529.8	1.91	10.23	-7.27	-9.45	6.63	.761	2.67	-.133	.001		
86	113	199	1539.3	1539.0	2.20	8.58	-7.13	-7.68	6.91	.760	1.88	.104	-.024		11/2+
86	114	200	1550.2	1548.1	3.38	10.95	-6.58	-9.90	8.35	.758	3.77	.091	-.024		
86	115	201	1558.8	1557.1	2.65	8.60	-6.40	-8.31	8.98	.757	3.68	.090	-.027		3/2-
86	116	202	1568.6	1565.8	2.97	9.82	-6.33	-8.51	9.60	.756	4.70	.078	-.023		
86	117	203	1577.0	1574.4	3.15	8.31	-6.15	-8.00	10.24	.754	4.45	.063	-.023		5/2-
86	118	204	1586.4	1582.6	3.14	9.49	-6.02	-9.33	10.86	.753	5.45	-.066	.003		
86	119	205	1594.6	1591.2	3.35	8.12	-5.77	-6.14	11.62	.752	5.20	-.033	.002		5/2-
86	120	206	1604.0	1599.3	3.57	9.47	-5.76	-7.34	12.52	.751	6.77	-.022	-.002		
86	121	207	1612.0	1607.3	3.80	7.96	-5.48	-5.67	13.43	.750	6.92	-.023	-.003		1/2-
86	122	208	1621.0	1615.1	4.02	9.01	-5.50	-6.48	14.17	.749	8.25	C			
86	123	209	1628.8	1622.8	4.25	7.77	-5.21	-5.09	15.16	.748	8.54	-.022	-.005		3/2-
86	124	210	1637.4	1630.3	4.46	8.63	-5.22	-5.75	15.80	.748	9.78	C			
86	125	211	1645.0	1637.7	4.68	7.59	-4.82	-4.54	16.90	.747	10.16	C			P 1/2
86	126	212	1653.1	1644.9	4.90	8.14	-4.99	-4.86	17.33	.747	11.23	C			
86	127	213	1658.2	1651.7	5.12	5.07	-7.07	-1.57	16.18	.746	9.38	C			G 5/2
86	128	214	1665.0	1658.3	5.34	6.77	-7.99	-3.05	15.52	.746	9.37	C			
86	129	215	1669.8	1664.7	5.56	4.83	-7.78	-.85	14.40	.746	7.56	C			G 5/2
86	130	216	1676.4	1671.1	5.78	6.56	-7.55	-2.40	13.80	.745	7.62	C			
86	131	217	1681.0	1677.3	5.99	4.60	-7.34	-.22	12.70	.745	5.86	C			G 5/2
86	132	218	1687.3	1683.3	6.20	6.36	-7.12	-1.76	12.17	.745	5.55	C			
86	133	219	1691.7	1689.3	6.42	4.39	-6.89	.42	11.11	.745	4.28	C			G 5/2
86	134	220	1699.0	1695.1	6.76	6.32	-6.50	-.90	10.75	.745	5.08	.050	.025		
86	135	221	1703.1	1700.7	7.17	5.00	-5.46	.70	10.59	.745	6.01	.096	.070		3/2-
86	136	222	1709.0	1706.3	7.14	5.97	-5.26	-.01	10.16	.745	5.03	.067	.045		
86	137	223	1714.2	1711.7	7.63	5.13	-3.89	1.44	10.33	.745	5.28	.093	.055		3/2+

Z	N	A	B.E.	BO	SP	SN	SA	CP	EAR	X	S	A2	A4	P	N
86	138	224	1720.1	1717.0	7.85	5.91	-3.71	.73	10.09	.745	5.66	.096	.057		
86	139	225	1723.9	1722.2	7.26	3.85	-4.02	3.00	9.21	.745	4.26	.102	.058		5/2-
86	140	226	1729.7	1727.2	7.64	5.78	-3.88	1.30	9.08	.745	4.74	.105	.055		
86	141	227	1734.3	1732.1	8.54	4.59	-3.49	2.69	9.17	.746	4.26	.111	.055		5/2+
86	142	228	1739.7	1736.9	8.74	5.46	-3.25	2.03	8.96	.746	4.64	.113	.052		
86	143	229	1744.0	1741.6	9.01	4.29	-2.44	3.39	8.98	.747	4.15	.115	.054		7/2-
86	144	230	1749.1	1746.2	9.15	5.11	-2.38	2.78	8.64	.747	4.44	.117	.051		
86	145	231	1753.1	1750.8	9.41	3.95	-2.21	4.18	8.55	.748	3.71	.121	.048		5/2+
86	146	232	1758.0	1755.3	9.59	4.96	-2.06	3.32	8.28	.748	4.04	.120	.044		
86	147	233	1761.7	1759.6	9.82	3.65	-1.93	4.80	8.10	.749	3.23	.124	.041		1/2+
86	148	234	1766.5	1763.9	9.94	4.77	-1.76	3.88	7.86	.750	3.57	.122	.036		
86	149	235	1770.1	1768.1	10.12	3.62	-1.38	5.15	7.84	.750	2.64	.127	.030		5/2-
86	150	236	1774.7	1772.1	10.29	4.63	-1.24	4.32	7.69	.752	3.42	.124	.026		
86	151	237	1778.1	1776.1	10.49	3.38	-1.16	5.73	7.65	.753	2.82	.128	.021		1/2+
86	152	238	1782.5	1779.9	10.70	4.44	-.94	4.85	7.52	.754	3.33	.123	.018		
86	153	239	1785.7	1783.6	10.84	3.20	-.83	6.25	7.51	.755	2.75	.126	.014		7/2+
86	154	240	1790.0	1787.3	11.05	4.26	-.65	5.37	7.40	.756	3.25	.117	.004		
86	155	241	1792.9	1790.8	11.13	2.94	-.53	6.82	7.33	.758	2.71	.117	.001		11/2-
86	156	242	1797.0	1794.2	11.27	4.10	-.42	5.94	7.27	.759	3.24	.096	-.006		
86	157	243	1799.9	1797.5	11.41	2.89	-.22	7.16	7.35	.761	2.77	.083	-.013		1/2+
86	158	244	1803.9	1800.7	11.45	3.96	-.13	6.22	7.34	.762	3.35	.057	-.011		
86	159	245	1806.6	1803.8	11.54	2.76	.02	7.47	7.47	.764	2.93	.051	-.008		11/2+
86	160	246	1810.9	1806.9	11.74	4.27	.45	6.14	7.97	.765	4.05	C			
86	161	247	1813.7	1809.8	11.88	2.77	.71	7.63	8.31	.767	3.92	.017	-.001		13/2-
86	162	248	1817.9	1812.6	12.10	4.23	.93	6.39	8.97	.768	5.31	C			
86	163	249	1820.4	1815.3	12.28	2.54	1.15	8.24	9.26	.770	5.13	C			J15/2
86	164	250	1824.6	1817.9	12.46	4.16	1.36	5.79	10.03	.772	6.66	C			
86	165	251	1826.4	1820.5	12.64	1.77	.96	9.36	9.75	.774	5.90	C			D 5/2
86	166	252	1829.1	1822.9	12.82	2.68	-.16	8.64	9.23	.777	6.14	C			
86	167	253	1830.6	1825.3	13.00	1.57	.00	9.93	8.93	.779	5.36	C			D 5/2
86	168	254	1833.2	1827.5	13.17	2.52	.20	9.16	8.44	.781	5.62	C			
86	169	255	1834.7	1829.7	13.31	1.50	.48	10.37	8.24	.783	4.97	.016	.007		1/2+
86	170	256	1837.0	1831.8	13.49	2.38	.69	9.70	7.78	.786	5.26	.015	.005		
86	171	257	1838.3	1833.8	13.66	1.24	.90	11.01	7.50	.788	4.50	.015	.002		7/2+
86	172	258	1840.5	1835.7	13.84	2.26	1.12	10.17	7.10	.790	4.85	.016	.002		
86	173	259	1841.9	1837.5	14.45	1.40	1.68	11.20	7.15	.793	4.55	.020	-.018		1/2+
86	174	260	1843.6	1839.3	14.22	1.64	1.36	11.16	6.32	.796	4.33	C			
86	175	261	1844.7	1840.9	14.50	1.13	1.83	12.22	6.27	.799	4.88	-.103	.047		13/2-
86	176	262	1847.0	1842.5	14.61	2.29	2.35	11.37	6.27	.802	5.65	-.127	.042		
86	177	263	1848.2	1844.0	14.80	1.17	3.02	12.63	6.42	.805	5.32	-.123	.043		11/2-
86	178	264	1850.3	1845.4	14.98	2.08	3.49	11.90	6.37	.808	6.02	-.127	.044		
86	179	265	1851.3	1846.7	15.15	1.00	3.83	13.10	6.52	.811	5.72	-.132	.044		15/2+
86	180	266	1852.7	1847.9	15.32	1.44	3.54	12.83	6.00	.815	5.90	-.140	.041		
86	181	267	1853.2	1849.1	15.63	.54	3.42	13.93	5.86	.818	5.26	-.148	.037		11/2-
86	182	268	1854.6	1850.1	15.70	1.35	3.68	13.37	5.42	.822	5.48	-.150	.034		

Z	N	A	H.E.	BC	SP	SN	SA	CE	BAR	X	S	A2	A4	P	R
87	93	180	1318.3	1317.0	-4.31	12.45	-9.57-15.13	4.21	.820	3.31	.130	.C66	3/2+	3/2-	
87	94	181	1331.9	1330.0	-4.07	13.53	-9.48-15.91	4.12	.816	3.65	.130	.C63	3/2+		
87	95	182	1343.8	1342.9	-3.81	11.97	-9.46-14.10	4.14	.813	2.74	.144	.C60	3/2+	5/2+	
87	96	183	1356.9	1355.5	-3.56	13.08	-9.42-14.92	4.06	.809	3.11	.146	.C56	3/2+		
87	97	184	1368.5	1367.9	-3.31	11.53	-9.29-13.11	4.07	.806	2.24	.153	.C55	3/2+	5/2-	
87	98	185	1381.1	1380.1	-3.08	12.67	-9.21-13.98	3.99	.804	2.60	.152	.C51	3/2+		
87	99	186	1392.2	1392.0	-2.84	11.04	-9.17-12.11	3.92	.801	1.61	.167	.C45	3/2+	1/2-	
87	100	187	1404.6	1403.8	-2.64	12.40	-8.97-13.21	3.99	.798	2.13	.166	.C41	1/2-		
87	101	188	1415.4	1415.4	-2.40	10.86	-8.64-11.43	4.14	.795	1.44	.185	.C32	5/2+	1/2-	
87	102	189	1427.5	1426.8	-2.16	12.11	-8.51-12.45	4.33	.792	2.20	.195	.C28	5/2+		
87	103	190	1438.2	1437.9	-1.92	10.64	-8.23-10.76	4.67	.789	1.67	.195	.C23	5/2+	5/2-	
87	104	191	1449.7	1448.9	-1.70	11.48	-8.35-11.34	4.61	.787	2.14	.196	.C20	5/2+		
87	105	192	1459.7	1459.7	-1.49	10.04	-8.50-9.67	4.71	.785	1.38	.195	.C14	5/2+	9/2+	
87	106	193	1470.7	1470.3	-1.31	11.02	-8.50-10.40	4.57	.783	1.75	.190	.C09	5/2+		
87	107	194	1480.6	1480.7	-1.11	9.88	-8.22-9.02	4.88	.781	1.25	.186	.C02	1/2+	7/2-	
87	108	195	1491.4	1490.9	-.89	10.76	-8.13-9.64	4.85	.779	1.85	.158	.C12	11/2+		
87	109	196	1500.7	1501.1	-.76	9.30	-8.23-9.05	4.93	.778	.86	.160	.C12	1/2+	1/2-	
87	110	197	1511.5	1511.2	-.19	10.60	-7.84-9.25	5.30	.776	1.95	.152	.C07	11/2+		
87	111	198	1520.4	1521.0	-.05	8.96	-7.75-7.61	5.39	.774	1.19	.145	.C04	11/2+	3/2+	
87	112	199	1530.8	1530.7	.12	10.39	-7.67-8.74	5.69	.772	1.98	.144	.C03	11/2+		
87	113	200	1539.5	1540.2	.27	8.73	-7.48-6.80	5.89	.770	1.30	.138	.C01	11/2+	3/2+	
87	114	201	1549.7	1549.5	-.49	10.19	-7.34-8.08	6.34	.769	2.21	.125	.C04	11/2+		
87	115	202	1559.4	1558.7	.52	9.61	-6.03-7.36	7.74	.768	2.57	.094	.C27	1/2-	3/2-	
87	116	203	1568.2	1567.7	-.48	8.82	-6.98-6.13	7.13	.767	2.67	.115	.C06	11/2+		
87	117	204	1576.3	1576.5	-.62	8.16	-8.14-4.10	7.40	.765	2.29	.125	.C09	7/2-	5/2-	
87	118	205	1587.7	1585.2	1.20	11.31	-6.32-8.15	9.60	.764	4.45	.078	.C04	7/2-		
87	119	206	1595.9	1593.7	1.35	8.26	-6.19-5.07	10.28	.763	4.21	.051	.C12	7/2-	1/2-	
87	120	207	1605.5	1602.1	1.51	9.63	-6.06-6.24	11.11	.762	5.62	.053	.C01	7/2-		
87	121	208	1613.7	1610.3	1.75	8.20	-5.77-4.61	12.02	.761	5.76	.045	.C03	7/2-	1/2-	
87	122	209	1622.9	1618.3	1.90	9.16	-5.85-5.34	12.68	.760	6.94	.015	.C06	13/2+		
87	123	210	1630.9	1626.2	2.10	7.97	-5.61-3.96	13.65	.760	7.20	.022	.C09	13/2+	3/2-	
87	124	211	1639.7	1634.0	2.27	8.80	-5.61-4.56	14.24	.759	8.36	C		† 9/2		
87	125	212	1647.5	1641.6	2.49	7.81	-5.33-3.39	15.34	.758	8.74	C		† 9/2	P 1/2	
87	126	213	1655.9	1649.0	2.71	8.36	-5.39-3.72	15.78	.757	9.82	C		† 9/2		
87	127	214	1661.1	1656.0	2.94	5.29	-7.46-4.43	14.63	.757	7.97	C		† 9/2	G 5/2	
87	128	215	1668.1	1662.8	3.16	6.99	-8.39-1.91	13.98	.756	7.97	C		† 9/2		
87	129	216	1673.2	1669.5	3.38	5.06	-8.19-.25	12.87	.756	6.16	C		† 9/2	G 5/2	
87	130	217	1680.0	1676.1	3.60	6.78	-7.96-1.26	12.28	.755	6.23	C		† 9/2		
87	131	218	1684.8	1682.5	3.81	4.82	-7.75-.91	11.19	.755	4.47	C		† 9/2	G 5/2	
87	132	219	1691.4	1688.8	4.03	6.57	-7.53-.63	10.66	.755	4.60	C		† 9/2		
87	133	220	1696.4	1694.9	4.63	5.00	-6.92-1.16	10.00	.755	3.96	.C58	.C37	3/2-	1/2-	
87	134	221	1703.0	1700.9	4.92	6.61	-6.46-.12	9.76	.754	5.05	.C78	.C53	3/2-		
87	135	222	1708.2	1706.8	5.17	5.25	-5.38-.05	9.61	.754	4.27	.C81	.C53	3/2-	3/2-	
87	136	223	1714.8	1712.6	5.79	6.58	-4.78-.57	9.60	.754	5.23	.C90	.C55	3/2-		
87	137	224	1720.0	1718.2	5.85	5.20	-4.18-2.12	9.64	.754	4.82	.C97	.C62	3/2-	3/2+	
87	138	225	1726.1	1723.7	6.06	6.11	-4.05-.29	9.41	.755	5.15	.C95	.C60	3/2-		
87	139	226	1730.2	1729.0	6.29	4.08	-4.62-2.71	8.56	.755	3.78	.105	.C60	3/2-	5/2-	

Z	N	A	B.E.	BC	SP	SN	SA	CE	BAR	X	S	A2	A4	P	N
87	140	227	1736.2	1734.3	6.49	5.98	-4.33	2.04	8.44	.755	4.25	.107	.C5E	3/2-	
87	141	228	1741.0	1739.4	6.71	4.81	-3.96	3.42	8.56	.755	3.77	.112	.C57	3/2-	5/2+
87	142	229	1746.6	1744.4	6.90	5.65	-3.71	2.80	8.34	.756	4.14	.115	.C54	3/2-	
87	143	230	1751.1	1749.3	7.11	4.50	-2.89	4.23	8.38	.756	3.65	.120	.C56	3/2+	7/2-
87	144	231	1756.5	1754.0	7.35	5.35	-2.80	3.55	8.09	.757	4.00	.120	.C53	3/2+	
87	145	232	1760.6	1758.9	7.49	4.10	-2.72	4.99	7.95	.757	3.21	.122	.C51	3/2+	5/2+
87	146	233	1765.7	1763.6	7.67	5.14	-2.56	4.16	7.65	.758	3.52	.122	.C48	3/2+	
87	147	234	1769.6	1768.1	7.86	3.84	-2.41	5.65	7.50	.759	2.71	.126	.C44	3/2+	1/2+
87	148	235	1774.5	1772.6	8.03	4.93	-2.26	4.75	7.25	.759	3.03	.124	.C40	3/2+	
87	149	236	1778.2	1777.0	8.17	3.76	-1.92	6.11	7.20	.760	2.32	.125	.C34	1/2+	5/2-
87	150	237	1783.0	1781.2	8.33	4.80	-1.77	5.15	7.03	.761	2.76	.127	.C30	1/2+	
87	151	238	1786.6	1785.3	8.51	3.55	-1.65	6.71	6.99	.762	2.11	.131	.C25	1/2+	1/2+
87	152	239	1791.2	1789.4	8.67	4.61	-1.51	5.85	6.84	.763	2.60	.127	.C22	1/2+	
87	153	240	1794.6	1793.3	8.84	3.37	-1.32	7.26	6.83	.764	2.02	.129	.C17	1/2+	7/2+
87	154	241	1799.0	1797.1	8.98	4.40	-1.15	6.43	6.68	.765	2.51	.122	.C15	1/2+	
87	155	242	1802.2	1800.8	9.26	3.22	-.99	7.76	6.71	.766	1.93	.118	.C03	1/2+	11/2-
87	156	243	1806.3	1804.4	9.27	4.12	-.93	7.03	6.49	.767	2.36	.105	.C01	1/2+	
87	157	244	1809.3	1807.9	9.39	3.01	-.78	8.40	6.51	.768	1.82	.C05	-.C07	1/2+	1/2+
87	158	245	1813.3	1811.3	9.44	4.01	-.74	7.40	6.38	.770	2.25	.C02	-.C04	1/2+	
87	159	246	1816.3	1814.6	9.62	2.94	-.55	8.71	6.51	.771	1.85	.C01	-.C10	1/2+	13/2-
87	160	247	1820.5	1817.8	9.62	4.27	-.20	7.39	6.84	.773	2.71	C		† 9/2	
87	161	248	1823.5	1820.9	9.84	2.95	.12	8.73	7.23	.775	2.62	.C21	-.C01	5/2-	13/2-
87	162	249	1827.9	1823.9	9.99	4.38	.44	7.45	7.87	.777	3.58	C		† 9/2	
87	163	250	1830.6	1826.8	10.18	2.72	.53	9.32	8.16	.778	3.80	C		† 9/2	J15/2
87	164	251	1835.0	1829.6	10.36	4.34	.86	7.88	8.97	.780	5.33	C		† 9/2	
87	165	252	1836.9	1832.4	10.54	1.96	.46	10.44	8.71	.782	4.57	C		† 9/2	D 5/2
87	166	253	1839.8	1835.0	10.72	2.86	-.66	9.72	8.21	.784	4.81	C		† 9/2	
87	167	254	1841.5	1837.5	10.90	1.76	-.50	11.00	7.92	.786	4.04	C		† 9/2	D 5/2
87	168	255	1844.2	1839.9	11.08	2.70	-.30	10.24	7.44	.788	4.30	C		† 9/2	
87	169	256	1846.0	1842.3	11.29	1.71	.01	11.41	7.25	.790	3.70	.C20	.C05	5/2-	1/2+
87	170	257	1848.5	1844.6	11.46	2.55	.22	10.75	6.83	.792	3.98	.C15	.C06	5/2-	
87	171	258	1849.9	1846.7	11.65	1.42	.28	12.05	6.57	.795	3.23	.C25	.C02	5/2-	3/2+
87	172	259	1852.4	1848.8	11.82	2.43	.51	11.23	6.19	.798	3.57	.C21	-.C01	5/2-	
87	173	260	1854.0	1850.8	12.02	1.61	1.06	12.22	6.25	.800	3.32	.C22	-.C15	3/2-	1/2+
87	174	261	1856.2	1852.7	12.57	2.15	1.16	11.81	5.84	.803	4.35	-.C93	.C44	7/2-	
87	175	262	1857.6	1854.5	12.88	1.44	1.81	12.72	5.94	.806	4.18	-.102	.C48	7/2-	13/2-
87	176	263	1860.0	1856.3	13.01	2.43	2.36	11.90	5.91	.808	4.86	-.113	.C45	7/2-	
87	177	264	1861.4	1857.9	13.19	1.34	2.86	13.19	6.08	.811	4.57	-.114	.C46	7/2-	11/2-
87	178	265	1863.6	1859.5	13.32	2.20	2.87	12.50	6.00	.814	5.22	-.127	.C44	1/2+	
87	179	266	1864.7	1861.0	13.49	1.18	3.08	13.70	6.17	.817	4.92	-.134	.C43	1/2+	15/2+
87	180	267	1866.4	1862.4	13.69	1.64	2.82	13.41	5.65	.821	5.16	-.148	.C38	1/2+	
87	181	268	1867.2	1863.7	13.93	.75	2.77	14.43	5.64	.824	4.58	-.151	.C36	11/2+	11/2-
87	182	269	1868.7	1864.9	14.11	1.53	3.03	13.82	5.22	.827	4.81	-.154	.C33	11/2+	
87	183	270	1869.1	1866.1	14.30	.42	3.22	15.10	4.96	.829	4.04	-.155	.C36	11/2+	13/2+
87	184	271	1870.6	1867.2	14.47	1.45	3.39	14.24	4.62	.833	4.36	-.160	.C27	11/2+	

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
EE	95	183	1341.2	1339.2	-2.62	12.26	-9.72-16.31	3.96	.825	3.79	.149	.060			5/2+
EE	96	184	1354.6	1352.0	-2.36	13.34	-9.67-17.07	3.86	.822	4.15	.152	.057			
EE	97	185	1366.4	1364.7	-2.10	11.79	-9.59-15.32	3.86	.819	3.30	.156	.055			5/2-
EE	98	186	1379.3	1377.1	-1.85	12.91	-9.51-16.18	3.76	.816	3.65	.157	.051			
EE	99	187	1390.6	1389.4	-1.59	11.30	-9.49-14.35	3.68	.813	2.63	.169	.046			1/2-
EE	100	188	1403.2	1401.4	-1.36	12.64	-9.29-15.48	3.73	.810	3.14	.168	.041			
EE	101	189	1414.3	1413.2	-1.12	11.09	-9.00-13.69	3.86	.807	2.33	.180	.032			7/2+
EE	102	190	1426.6	1424.8	-.89	12.34	-8.86-14.75	4.01	.805	3.11	.193	.028			
EE	103	191	1437.5	1436.3	-.65	10.89	-8.59-13.06	4.32	.802	2.59	.198	.023			5/2-
EE	104	192	1449.3	1447.5	-.41	11.72	-8.74-13.66	4.25	.800	3.06	.195	.020			
EE	105	193	1459.5	1458.5	-.16	10.29	-8.86-12.00	4.35	.797	2.30	.195	.014			5/2+
EE	106	194	1470.8	1469.3	.08	11.26	-8.85-12.75	4.20	.795	2.66	.190	.009			
EE	107	195	1480.9	1480.0	.34	10.14	-8.55-11.41	4.51	.793	2.20	.187	-.002			7/2-
EE	108	196	1491.8	1490.5	.47	10.89	-8.50-12.20	4.36	.790	2.46	.168	-.006			
EE	109	197	1501.4	1500.9	.77	9.61	-8.57-10.53	4.52	.788	1.84	.165	-.012			1/2-
EE	110	198	1512.0	1511.2	.57	10.61	-8.50-11.33	4.45	.787	2.15	.148	-.011			
EE	111	199	1521.3	1521.3	.87	9.26	-8.43-9.67	4.59	.785	1.51	.140	-.018			3/2-
EE	112	200	1532.0	1531.2	1.15	10.67	-7.98-10.83	4.93	.784	2.67	-.147	-.001			
EE	113	201	1540.9	1540.9	1.33	8.92	-7.89-8.84	5.07	.782	1.64	.115	-.024			11/2+
EE	114	202	1551.2	1550.5	1.47	10.33	-7.79-9.98	5.41	.781	2.45	.102	-.024			
EE	115	203	1561.3	1559.9	1.90	10.05	-6.32-9.42	7.01	.779	3.34	.100	-.028			3/2-
EE	116	204	1571.4	1569.1	3.28	10.19	-7.08-10.72	7.54	.778	4.30	.088	-.025			
EE	117	205	1578.7	1578.2	2.39	7.27	-8.40-7.71	6.69	.776	2.88	-.117	-.009			3/2+
EE	118	206	1590.1	1587.1	2.41	11.34	-6.88-10.28	8.69	.775	5.05	-.092	-.001			
EE	119	207	1598.5	1595.8	2.61	8.46	-6.73-8.88	9.33	.774	5.00	-.093	-.003			1/2-
EE	120	208	1608.4	1604.4	2.81	9.63	-6.39-10.19	10.14	.772	6.11	-.058	.002			
EE	121	209	1616.8	1612.9	3.04	8.43	-6.08-6.91	11.06	.771	6.24	-.051	-.004			1/2-
EE	122	210	1626.1	1621.1	3.23	9.35	-6.20-7.65	11.69	.770	7.39	-.023	-.006			
EE	123	211	1634.3	1629.2	3.46	8.20	-5.96-6.39	12.68	.769	7.65	-.025	-.009			3/2-
EE	124	212	1643.3	1637.2	3.64	8.99	-5.98-6.95	13.24	.769	8.77	C				
EE	125	213	1651.4	1645.0	3.66	8.03	-5.72-5.80	14.34	.768	9.15	C			P	1/2
EE	126	214	1659.9	1652.7	4.08	8.58	-5.77-6.12	14.79	.767	10.22	C				
EE	127	215	1665.4	1659.9	4.30	5.51	-7.85-2.84	13.64	.767	8.38	C			G	9/2
EE	128	216	1672.7	1667.0	4.52	7.21	-8.78-4.31	13.00	.766	8.37	C				
EE	129	217	1677.9	1673.9	4.74	5.27	-8.57-2.15	11.89	.766	6.57	C			G	9/2
EE	130	218	1684.9	1680.6	4.95	7.00	-8.35-3.66	11.31	.765	6.63	C				
EE	131	219	1690.0	1687.3	5.17	5.04	-8.15-1.48	10.23	.765	4.87	C			G	9/2
EE	132	220	1696.7	1693.7	5.38	6.79	-7.93-3.01	9.71	.765	5.00	C				
EE	133	221	1702.1	1700.1	5.70	5.32	-7.21-1.17	9.17	.765	4.71	.067	.043			1/2-
EE	134	222	1707.4	1706.3	4.42	5.32	-8.25-.55	7.45	.764	5.18	.104	.074			
EE	135	223	1714.6	1712.4	6.37	7.21	-5.43-.58	9.05	.764	5.31	.087	.059			3/2-
EE	136	224	1721.3	1718.4	6.54	6.75	-5.00-1.42	9.01	.764	6.07	.095	.061			
EE	137	225	1725.6	1724.2	5.62	4.28	-5.72-.02	7.93	.764	4.50	.101	.063			3/2+
EE	138	226	1732.1	1729.9	6.00	6.50	-5.19-.66	7.89	.764	5.03	.104	.061			
EE	139	227	1737.4	1735.5	7.24	5.31	-5.01-.73	8.08	.764	4.65	.109	.061			5/2-
EE	140	228	1743.6	1740.9	7.45	6.19	-4.73-.03	7.98	.765	5.12	.112	.059			
EE	141	229	1748.6	1746.2	7.67	5.03	-3.55-1.41	8.17	.765	4.61	.117	.057			5/2+

Z	N	A	R.E.	BO	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
EE	142	230	1754.6	1751.4	7.95	5.94	-3.39	.83	8.00	.765	5.21	.118	.C58		
EE	143	231	1759.2	1756.5	8.11	4.66	-3.32	2.20	8.01	.765	4.60	.123	.C57		7/2-
EE	144	232	1764.8	1761.5	8.31	5.54	-3.24	1.53	7.73	.766	4.91	.123	.C54		
EE	145	233	1769.1	1766.5	8.51	4.31	-3.22	2.95	7.61	.766	4.13	.126	.C52		5/2+
EE	146	234	1774.4	1771.4	8.71	5.33	-3.00	2.12	7.35	.767	4.45	.126	.C45		
EE	147	235	1778.5	1776.2	8.90	4.03	-2.93	3.60	7.18	.767	3.67	.131	.C47		1/2+
EE	148	236	1783.6	1780.8	9.08	5.12	-2.77	2.72	6.93	.768	3.98	.131	.C43		
EE	149	237	1787.4	1785.4	9.16	3.84	-2.58	4.17	6.77	.769	3.10	.134	.C38		7/2+
EE	150	238	1792.5	1789.6	9.48	5.12	-2.23	3.06	6.74	.769	3.67	.133	.C31		
EE	151	239	1796.3	1794.2	9.68	3.75	-2.10	4.57	6.72	.770	3.02	.137	.C26		1/2+
EE	152	240	1801.1	1798.4	9.85	4.78	-1.95	3.71	6.56	.771	3.50	.134	.C23		
EE	153	241	1804.6	1802.5	10.04	3.56	-1.77	5.09	6.55	.772	2.90	.135	.C18		7/2+
EE	154	242	1809.2	1806.5	10.20	4.55	-1.65	4.27	6.39	.773	2.37	.128	.C16		
EE	155	243	1812.6	1810.4	10.36	3.38	-1.48	5.61	6.41	.775	2.76	.124	.C06		11/2-
EE	156	244	1816.9	1814.2	10.62	4.38	-1.36	4.74	6.27	.776	3.28	.117	.C01		
EE	157	245	1819.9	1817.9	10.63	3.02	-1.28	6.25	6.13	.777	2.57	.112	-.C03		1/2+
EE	158	246	1824.2	1821.5	10.86	4.24	-1.15	5.37	6.06	.779	3.10	.094	-.C07		
EE	159	247	1827.1	1824.9	10.87	2.95	-1.09	6.60	6.05	.780	2.47	.076	-.C10		13/2-
EE	160	248	1831.5	1828.3	10.94	4.33	-.71	5.43	6.27	.781	3.17	.021	.C01		
EE	161	249	1834.6	1831.6	11.09	3.14	-.33	6.46	6.64	.783	3.03	.024	-.C01		13/2-
EE	162	250	1839.2	1834.8	11.26	4.55	-.04	5.18	7.28	.784	4.37	C			
EE	163	251	1842.1	1837.9	11.44	2.90	.09	7.03	7.61	.786	4.18	C			11 5/2
EE	164	252	1846.6	1840.9	11.62	4.52	.38	5.60	8.42	.787	5.71	C			
EE	165	253	1848.7	1843.8	11.80	2.14	-.02	8.16	8.16	.789	4.96	C			0 5/2
EE	166	254	1851.8	1846.6	11.98	3.04	-1.14	7.44	7.67	.791	5.15	C			
EE	167	255	1853.7	1849.3	12.16	1.93	-.98	8.73	7.39	.793	4.42	C			0 5/2
EE	168	256	1856.6	1851.9	12.33	2.88	-.79	8.05	6.93	.796	4.68	C			
EE	169	257	1858.5	1854.4	12.52	1.90	-.47	9.20	6.80	.798	4.10	.C21	.C05		1/2+
EE	170	258	1861.2	1856.9	12.69	2.72	-.26	8.46	6.37	.800	4.37	.C21	.C06		
EE	171	259	1862.8	1859.2	12.88	1.61	-.15	9.75	6.13	.802	3.66	.034	-.C04		3/2+
EE	172	260	1865.4	1861.5	13.05	2.60	.07	8.95	5.76	.805	4.01	.C31	-.C08		
EE	173	261	1867.2	1863.6	13.22	1.76	.62	9.89	5.87	.807	3.73	.C22	-.C20		1/2+
EE	174	262	1869.5	1865.7	13.37	2.34	.70	9.44	5.42	.809	4.77	-.C54	.C44		
EE	175	263	1871.1	1867.7	13.55	1.62	.91	10.84	5.53	.812	4.54	-.107	.C46		13/2-
EE	176	264	1873.8	1869.6	13.75	2.63	1.90	10.02	5.54	.815	5.26	-.127	.C42		
EE	177	265	1875.3	1871.4	13.92	1.51	2.27	11.28	5.72	.818	4.95	-.120	.C44		11/2-
EE	178	266	1877.7	1873.2	14.09	2.38	2.36	10.56	5.66	.820	5.64	-.128	.C44		
EE	179	267	1879.0	1874.8	14.26	1.35	2.54	11.79	5.85	.823	5.34	-.134	.C43		15/2+
EE	180	268	1880.8	1876.4	14.43	1.81	2.27	11.51	5.38	.826	5.57	-.147	.C38		
EE	181	269	1881.7	1877.9	14.56	.92	2.19	12.57	5.31	.829	4.96	-.152	.C35		11/2-
EE	182	270	1883.4	1879.3	14.73	1.70	2.44	11.94	4.90	.832	5.20	-.155	.C32		
EE	183	271	1884.0	1880.6	14.91	.59	2.50	12.23	4.66	.835	4.45	-.160	.C25		13/2+
EE	184	272	1885.7	1881.9	15.08	1.63	2.77	12.38	4.34	.838	4.77	-.162	.C25		
EE	185	273	1886.1	1883.0	15.27	.46	3.00	13.73	4.13	.842	4.06	-.165	.C21		9/2-
EE	186	274	1887.7	1884.1	15.45	1.56	3.28	12.85	3.91	.845	4.51	-.172	.C16		

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	R
89	97	186	1362.3	1361.1	-4.05	12.06	-9.83-14.47	3.62	.831	2.90	.158	.C55	3/2+	5/2-	
89	98	187	1375.4	1373.8	-3.83	13.13	-9.79-15.30	3.48	.828	3.21	.158	.C55	3/2+		
89	99	188	1387.0	1386.3	-3.62	11.51	-9.81-13.43	3.34	.825	2.13	.164	.C50	3/2+	1/2-	
89	100	189	1399.8	1398.5	-3.39	12.87	-9.60-14.54	3.36	.823	2.63	.172	.C44	3/2-		
89	101	190	1411.1	1410.6	-3.19	11.29	-9.35-12.76	3.41	.820	1.73	.183	.C36	11/2-	1/2-	
89	102	191	1423.7	1422.5	-2.95	12.58	-9.17-13.72	3.54	.817	2.46	.194	.C31	11/2-		
89	103	192	1434.8	1434.1	-2.72	11.12	-8.91-12.05	3.82	.814	1.91	.200	.C25	11/2-	5/2	
89	104	193	1446.8	1445.6	-2.49	11.95	-9.08-12.64	3.73	.812	2.37	.198	.C23	11/2-		
89	105	194	1457.3	1456.9	-2.28	10.51	-9.21-10.94	3.79	.809	1.58	.198	.C17	11/2-	9/2+	
89	106	195	1468.7	1468.0	-2.06	11.48	-9.21-11.67	3.60	.807	1.95	.194	.C14	11/2-		
89	107	196	1478.8	1478.9	-2.09	10.11	-9.15-10.05	3.63	.805	1.17	.189	.C01	3/2+	7/2-	
89	108	197	1490.1	1489.6	-1.71	11.27	-8.90-10.73	3.62	.803	1.57	.170	.C02	1/2-		
89	109	198	1499.9	1500.3	-1.51	9.80	-8.97 -9.19	3.70	.801	.90	.167	.C10	1/2-	1/2-	
89	110	199	1510.8	1510.8	-1.19	10.92	-8.81-10.13	3.70	.799	1.81	.161	.C01	7/2-		
89	111	200	1520.3	1521.1	-.95	9.50	-8.61 -8.61	3.84	.797	1.12	.158	.C03	7/2-	5/2+	
89	112	201	1531.3	1531.2	-.71	10.91	-8.50 -9.85	4.18	.795	2.00	.154	.C04	7/2-		
89	113	202	1540.4	1541.2	-.43	9.20	-8.27 -8.14	4.35	.793	1.36	.150	.C07	7/2-	5/2-	
89	114	203	1551.1	1551.0	-.15	10.61	-8.05 -9.30	4.74	.791	2.28	.146	.C08	7/2-		
89	115	204	1559.9	1560.7	-1.31	8.89	-7.90 -7.36	4.95	.789	1.65	.137	.C14	7/2-	1/2-	
89	116	205	1570.2	1570.1	-1.22	10.28	-7.81 -8.47	5.34	.788	2.46	.129	.C11	7/2-		
89	117	206	1579.0	1579.4	.27	8.76	-8.66 -6.77	5.74	.787	2.02	.124	.C12	7/2-	3/2+	
89	118	207	1588.9	1588.5	-1.20	9.87	-7.61 -7.65	6.04	.786	2.71	.113	.C07	11/2+		
89	119	208	1597.4	1597.5	-1.15	8.51	-7.26 -5.97	6.51	.784	2.29	.103	.C05	11/2+	1/2-	
89	120	209	1609.1	1606.3	.74	11.72	-6.85 -8.89	6.98	.783	5.06	.C74	.C01	11/2+		
89	121	210	1617.7	1615.0	.92	8.61	-6.51 -5.75	9.84	.782	5.07	.C58	.C03	11/2+	1/2-	
89	122	211	1627.2	1623.5	1.02	9.46	-6.68 -6.40	10.35	.781	6.07	.C29	.C07	5/2-		
89	123	212	1635.6	1631.8	1.25	8.43	-6.46 -5.16	11.33	.780	6.34	.C28	.C10	5/2-	3/2-	
89	124	213	1644.8	1640.0	1.45	9.19	-6.43 -5.71	11.88	.780	7.43	C		† 9/2		
89	125	214	1653.0	1648.1	1.68	8.26	-6.14 -4.61	12.98	.779	7.81	C		† 9/2 P	1/2	
89	126	215	1661.8	1655.9	1.90	8.80	-6.14 -4.93	13.43	.778	8.88	C		† 9/2		
89	127	216	1667.6	1663.4	2.12	5.74	-8.22 -1.65	12.29	.777	7.04	C		† 9/2 G	9/2	
89	128	217	1675.0	1670.6	2.34	7.43	-9.16 -3.12	11.65	.777	7.04	C		† 9/2		
89	129	218	1680.5	1677.7	2.56	5.49	-8.95 -.97	10.55	.776	5.24	C		† 9/2 G	9/2	
89	130	219	1687.7	1684.7	2.77	7.21	-8.73 -2.48	9.97	.775	5.31	C		† 9/2		
89	131	220	1693.0	1691.6	2.99	5.25	-6.53 -.31	8.90	.775	3.55	C		† 9/2 G	9/2	
89	132	221	1700.1	1698.3	3.37	7.16	-8.16 -2.00	8.55	.775	4.41	.C56	.C33	3/2+		
89	133	222	1706.1	1704.8	3.99	5.95	-7.03 -.50	8.42	.774	5.00	.C92	.C65	3/2+	1/2-	
89	134	223	1713.2	1711.3	5.84	7.17	-6.44 -1.64	8.34	.774	5.15	.C88	.C57	3/2+		
89	135	224	1719.1	1717.6	4.55	5.92	-5.52 .06	8.45	.774	4.88	.C94	.C62	3/2+	3/2-	
89	136	225	1724.8	1723.7	3.47	5.68	-6.44 .54	7.14	.774	4.35	.100	.C64	3/2+		
89	137	226	1730.7	1729.8	5.05	5.86	-5.84 .60	7.43	.774	4.12	.105	.C66	3/2+	3/2+	
89	138	227	1737.4	1735.7	5.25	6.70	-5.72 -.01	7.39	.774	4.64	.107	.C64	3/2+		
89	139	228	1742.9	1741.4	5.44	5.49	-5.43 1.41	7.57	.774	4.14	.108	.C62	3/2+	5/2-	
89	140	229	1749.3	1747.1	5.65	6.40	-5.14 .71	7.48	.774	4.63	.113	.C60	3/2+		
89	141	230	1754.6	1752.6	5.98	5.35	-3.87 2.09	7.76	.774	4.38	.117	.C62	3/2-	5/2+	
89	142	231	1760.7	1758.0	6.08	6.04	-3.81 1.57	7.54	.774	4.77	.120	.C60	3/2-		
89	143	232	1765.5	1763.3	6.28	4.87	-3.75 2.95	7.57	.775	4.16	.124	.C58	3/2-	7/2-	

Z	N	A	B.E.	BC	SP	SN	SA	CE	BAR	X	S	A2	A4	P	A
89	144	233	1771.3	1768.5	6.47	5.73	-3.67	2.30	7.29	.775	4.46	.125	.056	3/2-	
89	145	234	1775.8	1773.7	6.67	4.50	-3.67	3.73	7.17	.775	3.71	.128	.055	3/2-	5/2+
89	146	235	1781.3	1778.8	6.85	5.51	-3.50	2.94	6.90	.776	4.07	.128	.053	3/2-	
89	147	236	1785.5	1783.8	7.05	4.23	-3.37	4.40	6.74	.776	3.23	.133	.050	3/2-	1/2+
89	148	237	1790.8	1788.6	7.23	5.29	-3.22	3.56	6.48	.777	3.52	.132	.046	3/2-	
89	149	238	1794.8	1793.4	7.39	4.00	-3.05	5.04	6.31	.778	2.62	.136	.040	3/2-	7/2+
89	150	239	1800.1	1798.0	7.54	5.26	-2.72	3.99	6.24	.779	3.11	.136	.035	3/2+	
89	151	240	1804.0	1802.5	7.71	3.92	-2.56	5.37	6.21	.779	2.42	.140	.029	3/2+	1/2+
89	152	241	1808.9	1806.9	7.87	4.95	-2.41	4.69	6.04	.780	2.88	.137	.026	3/2+	
89	153	242	1812.7	1811.2	8.04	3.73	-2.23	6.09	6.02	.781	2.22	.136	.020	3/2+	7/2+
89	154	243	1817.4	1815.4	8.20	4.72	-2.12	5.28	5.85	.782	2.67	.131	.019	3/2+	
89	155	244	1820.9	1819.5	8.34	3.52	-1.98	6.65	5.82	.783	2.02	.130	.011	3/2+	11/2-
89	156	245	1825.4	1823.5	8.49	4.52	-1.85	5.83	5.66	.784	2.46	.123	.006	3/2+	
89	157	246	1828.8	1827.4	8.83	3.36	-1.71	7.16	5.68	.785	1.93	.119	.000	3/2+	9/2+
89	158	247	1833.0	1831.1	8.76	4.18	-1.65	6.51	5.37	.786	2.23	.107	.001	3/2+	
89	159	248	1836.1	1834.8	8.98	3.16	-1.50	7.80	5.40	.788	1.65	.092	-.007	3/2+	5/2+
89	160	249	1840.3	1838.4	8.81	4.17	-1.34	6.79	5.28	.789	2.05	.060	-.003	5/2-	
89	161	250	1843.6	1841.8	8.95	3.28	-1.00	7.84	5.61	.790	1.75	.029	-.002	1/2+	13/2-
89	162	251	1848.3	1845.2	9.15	4.75	-.51	6.39	6.28	.792	3.10	C		5/2	
89	163	252	1851.4	1848.5	9.34	3.09	-.41	8.15	6.62	.794	2.92	C		5/2	11 5/2
89	164	253	1856.1	1851.7	9.52	4.70	-.09	6.89	7.44	.796	4.45	C		5/2	
89	165	254	1858.4	1854.7	9.70	2.32	-.49	9.28	7.19	.797	3.69	C		5/2	D 5/2
89	166	255	1861.6	1857.7	9.68	3.22	-1.62	8.56	6.73	.799	3.93	C		5/2	
89	167	256	1863.8	1860.6	10.14	2.20	-1.38	9.76	6.55	.801	3.27	-.013	.007	5/2-	7/2+
89	168	257	1866.9	1863.4	10.31	3.04	-1.20	9.12	6.09	.803	3.53	-.010	.009	5/2-	
89	169	258	1868.9	1866.1	10.41	1.99	-.96	10.38	5.89	.805	2.85	.025	.011	1/2+	1/2+
89	170	259	1871.8	1868.7	10.58	2.90	-.77	9.66	5.47	.807	3.11	.024	.007	1/2+	
89	171	260	1873.6	1871.2	10.76	1.80	-.68	10.94	5.25	.809	2.39	.034	.001	1/2+	3/2+
89	172	261	1876.3	1873.6	10.89	2.73	-.50	10.20	4.83	.811	2.91	-.006	.027	1/2+	
89	173	262	1878.2	1876.0	11.00	1.89	-.03	11.23	4.89	.814	3.04	-.092	.040	11/2+	3/2+
89	174	263	1881.2	1878.2	11.68	3.02	.56	10.17	4.95	.816	3.94	-.120	.038	11/2+	
89	175	264	1883.0	1880.4	11.87	1.81	.75	11.48	5.10	.819	3.64	-.125	.039	11/2+	13/2-
89	176	265	1885.8	1882.5	12.00	2.76	1.33	10.70	5.09	.821	4.45	-.119	.046	11/2+	
89	177	266	1887.4	1884.5	12.15	1.66	1.55	12.01	5.26	.824	4.14	-.118	.047	11/2+	3/2+
89	178	267	1890.0	1886.4	12.36	2.58	1.70	11.25	5.24	.826	4.75	-.130	.044	11/2+	
89	179	268	1891.5	1888.2	12.53	1.52	1.88	12.49	5.44	.828	4.45	-.135	.043	11/2+	15/2+
89	180	269	1893.5	1889.9	12.71	1.99	1.66	12.19	4.99	.831	4.72	-.150	.038	11/2+	
89	181	270	1894.6	1891.6	12.86	1.07	1.55	13.27	4.90	.834	4.08	-.153	.034	7/2-	11/2-
89	182	271	1896.5	1893.2	13.04	1.88	1.79	12.63	4.52	.837	4.34	-.157	.031	7/2-	
89	183	272	1897.3	1894.7	13.22	.78	1.79	13.90	4.31	.840	3.62	-.163	.027	7/2-	13/2+
89	184	273	1899.1	1896.1	13.41	1.81	2.07	13.04	4.03	.843	3.98	-.167	.022	7/2-	
89	185	274	1899.7	1897.4	13.62	.67	2.32	14.35	3.86	.846	3.36	-.176	.017	7/2-	9/2-
89	186	275	1901.5	1898.7	13.81	1.75	2.61	13.45	3.69	.849	3.84	-.179	.012	7/2-	
89	187	276	1902.1	1899.9	14.02	.59	2.93	14.79	3.60	.853	3.36	-.188	.008	7/2-	5/2+
89	188	277	1903.7	1901.0	14.21	1.66	3.22	13.93	3.49	.856	3.83	-.182	.003	7/2-	

Z	N	A	B.E.	BO	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
SC	99	189	1384.5	1382.7	-2.45	11.76	-10.16	-15.55	3.24	.838	3.11	.165	.050		1/2-
SC	100	190	1397.6	1395.3	-2.26	13.06	-10.00	-16.62	3.18	.834	3.52	.167	.044		
SC	101	191	1409.2	1407.6	-1.92	11.62	-9.68	-14.95	3.31	.831	2.71	.178	.035		7/2+
SC	102	192	1422.0	1419.7	-1.71	12.79	-9.53	-15.96	3.40	.828	3.39	.191	.030		
SC	103	193	1433.3	1431.6	-1.47	11.36	-9.26	-14.30	3.67	.826	2.83	.198	.024		5/2-
SC	104	194	1445.5	1443.3	-1.22	12.20	-9.40	-14.91	3.57	.824	3.30	.195	.022		
SC	105	195	1456.3	1454.8	-.97	10.76	-9.54	-13.24	3.62	.821	2.52	.196	.016		5/2+
SC	106	196	1468.0	1466.2	-.72	11.72	-9.53	-13.98	3.43	.819	2.90	.192	.013		
SC	107	197	1478.6	1477.3	-.24	10.59	-9.23	-12.62	3.69	.817	2.41	.190	-.001		7/2-
SC	108	198	1490.0	1488.3	-.16	11.35	-9.14	-13.39	3.51	.814	2.78	.186	-.002		
SC	109	199	1499.9	1499.2	.01	9.98	-9.30	-11.79	3.52	.812	1.97	.170	-.010		1/2-
SC	110	200	1511.0	1509.9	.11	11.03	-9.16	-12.49	3.40	.810	2.27	.156	-.006		
SC	111	201	1520.6	1520.5	.27	9.66	-9.11	-10.90	3.45	.808	1.51	.146	-.013		3/2-
SC	112	202	1531.5	1530.9	.27	10.91	-8.80	-11.95	3.55	.806	2.63	-.154	-.007		
SC	113	203	1541.0	1541.1	.53	9.45	-8.61	-10.20	3.74	.805	1.59	.126	-.022		11/2+
SC	114	204	1551.8	1551.1	.74	10.83	-8.46	-11.36	4.10	.803	2.92	-.146	-.010		
SC	115	205	1561.0	1561.0	1.04	9.18	-8.19	-9.50	4.36	.801	2.03	.108	-.025		3/2-
SC	116	206	1571.4	1570.7	1.21	10.46	-8.06	-10.56	4.70	.800	3.13	-.131	-.013		
SC	117	207	1580.4	1580.2	1.44	8.99	-9.12	-8.92	5.09	.798	2.68	-.125	-.013		3/2+
SC	118	208	1590.6	1589.6	1.77	10.20	-9.12	-9.94	5.49	.797	3.50	-.115	-.005		
SC	119	209	1599.4	1598.8	2.04	8.79	-7.60	-8.36	6.00	.795	3.21	-.111	-.010		1/2+
SC	120	210	1611.2	1607.8	2.07	11.75	-7.19	-11.11	8.28	.794	5.67	-.077	-.002		
SC	121	211	1620.0	1616.7	2.27	8.81	-6.84	-8.03	9.11	.792	5.67	-.063	-.002		1/2-
SC	122	212	1629.6	1625.4	2.48	9.66	-7.01	-8.75	9.62	.791	6.66	-.037	-.006		
SC	123	213	1638.3	1634.0	2.70	8.64	-6.80	-7.48	10.60	.790	6.91	-.032	-.010		3/2-
SC	124	214	1647.6	1642.4	2.87	9.36	-6.79	-8.13	11.10	.789	7.94	C			
SC	125	215	1656.1	1650.6	3.09	8.47	-6.51	-7.04	12.20	.788	8.32	C		P	1/2
SC	126	216	1665.1	1658.7	3.30	9.01	-6.49	-7.36	12.65	.788	9.39	C			
SC	127	217	1671.1	1666.4	3.52	5.96	-6.56	-4.08	11.52	.787	7.55	C		G	5/2
SC	128	218	1678.7	1673.9	3.74	7.64	-9.50	-5.54	10.89	.786	7.54	C			
SC	129	219	1684.4	1681.2	3.95	5.71	-9.30	-3.40	9.79	.786	5.75	C		G	5/2
SC	130	220	1691.9	1688.4	4.17	7.43	-9.08	-4.89	9.22	.785	5.81	C			
SC	131	221	1697.3	1695.4	4.38	5.47	-6.89	-2.72	8.15	.785	4.06	C		G	5/2
SC	132	222	1704.8	1702.4	4.66	7.44	-8.44	-6.17	7.87	.784	5.05	.060	.035		
SC	133	223	1710.8	1709.1	4.75	6.03	-7.45	-4.38	7.63	.784	4.46	.067	.045		1/2-
SC	134	224	1718.4	1715.8	5.20	7.62	-6.62	-3.55	7.80	.784	5.55	.093	.055		
SC	135	225	1724.6	1722.3	5.44	6.15	-5.78	-3.55	7.93	.784	5.65	.098	.063		3/2-
SC	136	226	1730.5	1728.7	5.68	5.92	-5.18	-2.90	6.67	.783	5.17	.105	.065		
SC	137	227	1736.6	1734.9	5.91	6.09	-6.31	-1.32	6.99	.783	4.55	.105	.067		3/2+
SC	138	228	1743.5	1741.0	6.12	6.92	-6.14	-2.00	6.97	.783	5.47	.111	.064		
SC	139	229	1749.2	1747.0	6.33	5.70	-4.72	-.58	7.16	.783	4.93	.112	.062		5/2-
SC	140	230	1755.9	1752.8	6.66	6.73	-4.49	-1.26	7.21	.783	5.65	.117	.062		
SC	141	231	1761.4	1758.6	6.82	5.52	-4.28	.09	7.45	.783	5.27	.121	.062		5/2+
SC	142	232	1767.7	1764.2	7.03	6.25	-4.22	-.43	7.26	.784	5.66	.123	.060		
SC	143	233	1772.8	1769.7	7.25	5.09	-4.16	.93	7.31	.784	5.08	.127	.055		7/2-
SC	144	234	1778.7	1775.0	7.45	5.93	-4.17	.30	7.04	.784	5.35	.128	.057		
SC	145	235	1783.4	1780.4	7.66	4.72	-4.12	1.71	6.95	.784	4.65	.130	.057		5/2+

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
9C	146	236	1789.1	1785.7	7.86	5.70	-3.95	.92	6.68	.785	4.99	.131	.C54		
9C	147	237	1793.6	1790.9	8.07	4.44	-3.82	2.37	6.55	.785	4.15	.135	.C50		1/2+
9C	148	238	1799.1	1796.0	8.26	5.48	-3.66	1.52	6.30	.786	4.45	.136	.C46		
9C	149	239	1803.3	1800.9	8.46	4.21	-3.49	2.98	6.15	.786	3.56	.140	.C40		7/2+
9C	150	240	1808.6	1805.7	8.51	5.31	-3.29	2.06	5.95	.787	3.90	.141	.C35		
9C	151	241	1812.8	1810.4	8.86	4.27	-2.86	3.27	6.07	.788	3.39	.145	.C30		1/2+
9C	152	242	1818.0	1815.0	9.03	5.12	-2.86	2.59	5.91	.788	3.82	.142	.C26		
9C	153	243	1821.9	1819.5	9.22	3.92	-2.69	3.99	5.89	.789	3.15	.142	.C20		7/2+
9C	154	244	1826.6	1823.9	9.39	4.89	-2.59	3.19	5.71	.790	3.59	.136	.C19		
9C	155	245	1830.5	1828.2	9.57	3.70	-2.45	4.53	5.67	.791	2.94	.134	.C13		11/2-
9C	156	246	1835.1	1832.4	9.73	4.68	-2.32	3.69	5.50	.792	3.27	.128	.C08		
9C	157	247	1838.7	1836.4	9.90	3.53	-2.17	5.00	5.51	.793	2.80	.124	.C01		5/2+
9C	158	248	1843.1	1840.4	10.18	4.45	-2.09	4.21	5.31	.795	3.26	.119	-.C01		
9C	159	249	1846.3	1844.2	10.17	3.15	-1.96	5.67	5.15	.796	2.52	.112	-.C06		5/2+
9C	160	250	1850.6	1848.0	10.33	4.33	-1.87	4.75	5.03	.798	3.00	.100	-.C05		
9C	161	251	1853.9	1851.6	10.36	3.31	-1.51	5.79	5.23	.799	2.34	.036	-.C03		17/2-
9C	162	252	1858.8	1855.2	10.46	4.85	-.99	4.36	5.83	.800	3.59	C			
9C	163	253	1862.2	1858.6	10.81	3.43	-.70	5.68	6.34	.802	3.59	.C19	.C03		15/2-
9C	164	254	1866.9	1862.0	10.82	4.71	-.53	4.57	7.01	.804	4.93	C			
9C	165	255	1869.4	1865.2	11.00	2.50	-.94	6.97	6.78	.805	4.17	C			D 5/2
9C	166	256	1872.8	1868.4	11.18	3.40	-2.06	6.26	6.32	.807	4.41	C			
9C	167	257	1875.2	1871.5	11.38	2.40	-1.80	7.44	6.18	.808	3.78	-.C16	.C07		7/2+
9C	168	258	1878.5	1874.4	11.59	3.25	-1.59	6.75	5.76	.810	4.08	.C22	.C10		
9C	169	259	1880.7	1877.3	11.78	2.18	-1.34	8.03	5.58	.812	3.40	.C30	.C10		1/2+
9C	170	260	1883.7	1880.1	11.96	3.07	-1.14	7.34	5.17	.814	3.66	.C33	.C04		
9C	171	261	1885.7	1882.6	12.14	1.98	-1.06	8.81	4.98	.816	2.95	.C34	.C01		3/2+
9C	172	262	1888.6	1885.4	12.34	2.92	-.86	8.11	4.61	.818	3.27	.C34	.C01		
9C	173	263	1890.6	1887.9	12.40	1.96	-.51	8.87	4.57	.821	3.41	-.C86	.C37		3/2+
9C	174	264	1893.7	1890.3	12.50	3.12	.01	8.13	4.57	.823	4.41	-.101	.C46		
9C	175	265	1895.7	1892.7	12.69	1.99	.22	9.47	4.74	.825	4.06	-.116	.C43		13/2-
9C	176	266	1898.7	1894.9	12.89	2.97	.84	8.65	4.77	.827	4.88	-.119	.C45		
9C	177	267	1900.5	1897.1	13.05	1.83	1.05	10.00	4.95	.829	4.57	-.119	.C47		3/2+
9C	178	268	1903.2	1899.2	13.22	2.75	1.17	9.25	4.93	.832	5.22	-.130	.C43		
9C	179	269	1904.9	1901.1	13.39	1.69	1.35	10.49	5.14	.835	4.92	-.136	.C42		15/2+
9C	180	270	1907.1	1903.1	13.56	2.16	1.13	10.20	4.71	.837	5.15	-.150	.C37		
9C	181	271	1908.3	1904.9	13.73	1.24	1.02	11.28	4.63	.840	4.52	-.154	.C34		11/2-
9C	182	272	1910.4	1906.6	13.90	2.04	1.26	10.64	4.26	.843	4.78	-.158	.C30		
9C	183	273	1911.3	1908.3	14.07	.95	1.29	11.91	4.07	.846	4.07	-.164	.C27		13/2+
9C	184	274	1913.3	1909.9	14.24	1.98	1.57	11.08	3.80	.848	4.45	-.169	.C21		
9C	185	275	1914.2	1911.4	14.42	.85	1.83	12.43	3.66	.851	3.88	-.180	.C15		5/2-
9C	186	276	1916.1	1912.8	14.60	1.93	2.13	11.41	3.51	.854	4.39	-.183	.C10		
9C	187	277	1916.9	1914.1	14.80	.80	2.47	12.93	3.48	.858	3.97	-.192	.C04		5/2+
9C	188	278	1918.7	1915.4	14.96	1.82	2.73	12.16	3.38	.861	4.43	-.185	.C00		
9C	189	279	1919.3	1916.6	15.08	.65	3.00	13.49	3.36	.864	4.06	-.194	-.C06		3/2+
9C	190	280	1921.2	1917.7	15.24	1.87	3.40	12.48	3.46	.867	4.57	-.175	-.C05		

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
91	101	192	1405.2	1404.1	-3.96	11.78	-10.01	-14.06	3.08	.844	2.17	.169	.040	5/2-	1/2-
91	102	193	1418.3	1416.5	-3.72	13.02	-9.87	-14.99	3.14	.841	2.79	.186	.033	5/2-	
91	103	194	1429.8	1428.7	-3.50	11.58	-9.57	-13.34	3.37	.838	2.19	.197	.026	5/2-	5/2-
91	104	195	1442.3	1440.6	-3.26	12.43	-9.71	-13.95	3.24	.835	2.66	.196	.024	5/2-	
91	105	196	1453.2	1452.4	-3.04	10.98	-9.85	-12.25	3.26	.833	1.86	.196	.019	5/2-	5/2+
91	106	197	1465.2	1464.0	-2.81	11.95	-9.85	-12.97	3.06	.830	2.23	.193	.017	5/2-	
91	107	198	1475.8	1475.3	-2.83	10.57	-9.78	-11.30	3.05	.828	1.48	.193	.003	5/2+	7/2-
91	108	199	1487.4	1486.5	-2.59	11.58	-9.67	-12.07	2.86	.826	1.82	.184	.002	5/2+	
91	109	200	1497.7	1497.7	-2.24	10.33	-9.45	-10.38	2.57	.824	1.15	.173	-.008	5/2+	1/2-
91	110	201	1508.9	1508.7	-2.02	11.25	-9.47	-11.23	2.81	.822	1.44	.161	-.004	5/2+	
91	111	202	1518.8	1519.5	-1.83	9.85	-9.42	-9.61	2.81	.820	.63	.150	-.010	5/2+	3/2-
91	112	203	1530.0	1530.1	-1.53	11.20	-9.15	-10.74	2.97	.818	2.01	-.160	-.011	5/2+	
91	113	204	1539.7	1540.5	-1.32	9.66	-8.99	-9.17	3.12	.816	1.36	-.156	-.013	5/2+	5/2-
91	114	205	1550.7	1550.8	-1.10	11.05	-8.85	-10.32	3.47	.814	2.26	-.152	-.013	5/2+	
91	115	206	1560.1	1560.9	-.88	9.40	-8.64	-8.69	3.71	.812	1.69	-.147	-.015	5/2+	7/2+
91	116	207	1570.7	1570.8	-.71	10.63	-8.63	-9.58	3.98	.810	2.56	-.143	-.019	5/2+	
91	117	208	1579.9	1580.6	-.52	9.18	-8.33	-7.98	4.33	.809	1.98	-.134	-.017	5/2+	3/2+
91	118	209	1590.3	1590.1	-.35	10.37	-8.25	-7.42	4.68	.807	2.67	-.123	-.012	5/2+	
91	119	210	1599.3	1599.6	-.14	9.00	-8.01	-7.38	5.16	.806	2.33	-.116	-.012	5/2+	1/2+
91	120	211	1611.2	1608.8	-.01	11.88	-6.00	-10.03	7.35	.805	4.77	-.094	-.003	7/2-	
91	121	212	1620.1	1617.9	.13	8.94	-5.57	-6.86	8.09	.804	4.55	-.071	-.003	5/2-	1/2-
91	122	213	1630.0	1626.9	.38	9.91	-7.37	-7.61	8.62	.803	5.63	-.051	-.009	5/2-	
91	123	214	1638.7	1635.7	.45	8.71	-7.27	-6.19	9.44	.802	5.68	-.037	-.011	3/2-	3/2-
91	124	215	1648.3	1644.3	.65	9.56	-7.16	-6.82	9.92	.801	6.67	C		F 9/2	
91	125	216	1657.0	1652.8	.87	8.70	-6.89	-5.66	11.02	.800	7.05	C		F 5/2 P 1/2	
91	126	217	1666.2	1661.1	1.09	9.23	-6.85	-6.12	11.47	.799	8.12	C		F 9/2	
91	127	218	1672.4	1668.9	1.31	6.18	-8.92	-2.85	10.34	.798	6.29	C		F 5/2 G 5/2	
91	128	219	1680.3	1676.6	1.53	7.86	-9.86	-4.31	9.71	.797	6.28	C		F 9/2	
91	129	220	1686.2	1684.2	1.75	5.93	-9.67	-2.17	8.61	.796	4.49	C		F 9/2 G 5/2	
91	130	221	1693.8	1691.6	1.97	7.64	-9.45	-3.66	8.05	.795	4.56	C		F 9/2	
91	131	222	1697.8	1698.9	.49	3.99	-10.96	.20	5.29	.795	3.19	-.190	-.002	5/2+	7/2+
91	132	223	1705.6	1706.0	.87	7.82	-10.35	-3.43	5.18	.794	3.76	-.191	-.005	5/2+	
91	133	224	1714.1	1713.0	3.28	8.45	-7.16	-3.83	7.14	.794	4.55	.092	.059	1/2-	3/2+
91	134	225	1720.2	1719.8	1.82	6.15	-8.17	-1.26	5.64	.793	3.90	.101	.063	1/2-	
91	135	226	1726.8	1726.6	2.23	6.57	-7.54	-1.44	5.99	.793	3.76	.104	.066	1/2-	3/2-
91	136	227	1734.5	1733.1	3.98	7.67	-7.34	-2.32	6.26	.793	4.83	.109	.068	1/2-	
91	137	228	1740.7	1739.6	4.13	6.24	-6.72	-.74	6.54	.792	4.40	.105	.068	1/2-	3/2+
91	138	229	1747.8	1745.9	4.34	7.13	-5.27	-1.37	6.53	.792	4.91	.111	.064	1/2-	
91	139	230	1753.9	1752.1	4.69	6.04	-5.08	.06	6.86	.792	4.67	.114	.066	1/2-	3/2+
91	140	231	1760.8	1758.1	4.82	6.86	-4.92	-.60	6.84	.792	5.23	.119	.064	1/2-	
91	141	232	1766.5	1764.1	5.04	5.73	-4.68	.76	7.10	.792	4.85	.123	.062	1/2-	5/2+
91	142	233	1772.9	1769.9	5.24	6.45	-4.64	.26	6.92	.792	5.26	.126	.061	1/2-	
91	143	234	1778.2	1775.6	5.44	5.30	-4.69	1.62	6.98	.793	4.68	.129	.061	1/2-	7/2-
91	144	235	1784.3	1781.1	5.64	6.12	-4.61	1.01	6.71	.793	5.00	.130	.059	1/2-	
91	145	236	1789.3	1786.7	5.84	4.91	-4.56	2.42	6.63	.793	4.26	.133	.058	1/2-	5/2+
91	146	237	1795.2	1792.2	6.03	5.90	-4.40	1.65	6.37	.794	4.59	.133	.056	1/2-	
91	147	238	1799.8	1797.6	6.22	4.64	-4.26	3.11	6.24	.794	3.75	.137	.053	1/2-	1/2+

Z	N	A	B.E.	BC	SP	SN	SA	GB	EAR	X	S	A2	A4	P	N
51	148	239	1805.5	1802.8	6.40	5.67	-4.11	2.29	5.98	.755	4.04	.138	.045	1/2-	
51	149	240	1809.6	1808.0	6.58	4.39	-3.95	3.77	5.82	.755	3.14	.142	.044	1/2-	7/2+
51	150	241	1815.3	1813.0	6.75	5.48	-3.76	2.88	5.61	.756	3.47	.143	.039	1/2-	
51	151	242	1819.8	1817.6	6.93	4.44	-3.33	4.12	5.72	.757	2.89	.148	.032	1/2-	1/2+
51	152	243	1825.1	1822.7	7.12	5.32	-3.27	3.44	5.57	.758	3.36	.148	.020	1/2-	
51	153	244	1829.2	1827.4	7.30	4.06	-3.10	4.85	5.55	.758	2.65	.146	.026	1/2-	7/2+
51	154	245	1834.2	1832.0	7.45	5.04	-3.01	4.11	5.33	.759	3.08	.144	.023	1/2-	
51	155	246	1838.1	1836.4	7.59	3.84	-2.90	5.48	5.28	.800	2.35	.139	.018	1/2-	11/2-
51	156	247	1842.9	1840.8	7.74	4.83	-2.78	4.68	5.07	.801	2.75	.134	.014	1/2-	
51	157	248	1846.6	1845.0	7.88	3.67	-2.63	6.02	5.05	.802	2.05	.128	.006	1/2-	5/2+
51	158	249	1851.2	1849.2	8.04	4.62	-2.54	5.25	4.84	.803	2.52	.125	.003	1/2-	
51	159	250	1854.6	1853.2	8.30	3.41	-2.48	6.63	4.75	.804	1.87	.121	-.003	1/2-	1/2+
51	160	251	1858.9	1857.1	8.32	4.35	-2.31	5.87	4.46	.806	2.23	.114	-.003	5/2-	
51	161	252	1862.3	1861.0	8.43	3.41	-2.06	6.98	4.61	.807	1.91	.118	-.011	3/2+	7/2+
51	162	253	1867.1	1864.7	8.33	4.75	-1.47	5.85	4.94	.808	2.38	C		† 5/2	
51	163	254	1870.7	1868.3	8.51	3.61	-1.14	6.85	5.45	.809	2.38	.020	.003	7/2-	15/2-
51	164	255	1875.6	1871.9	8.69	4.90	-.99	5.78	6.13	.811	3.73	C		† 9/2	
51	165	256	1878.3	1875.3	8.88	2.68	-1.40	8.14	5.91	.812	2.98	C		† 9/2 D	5/2
51	166	257	1881.9	1878.7	9.06	3.58	-2.52	7.42	5.46	.814	3.22	C		† 9/2	
51	167	258	1884.4	1881.9	9.22	2.56	-2.28	8.62	5.31	.816	2.57	-.017	.007	3/2-	7/2+
51	168	259	1887.9	1885.0	9.42	3.46	-2.04	7.94	4.94	.818	2.94	.025	.013	7/2-	
51	169	260	1890.3	1888.1	9.63	2.39	-1.85	9.18	4.80	.820	3.31	.042	.013	7/2-	1/2+
51	170	261	1893.7	1891.1	10.01	3.45	-1.44	8.30	4.61	.821	2.81	.047	.013	3/2+	
51	171	262	1896.0	1893.9	10.25	2.22	-1.21	9.70	4.49	.823	2.12	.048	-.007	3/2+	7/2+
51	172	263	1898.7	1896.7	10.04	2.71	-1.39	9.40	3.74	.825	2.24	.002	.027	7/2-	
51	173	264	1901.1	1899.4	10.46	2.38	-.81	10.23	3.95	.827	2.52	-.094	.041	5/2-	7/2+
51	174	265	1904.4	1902.0	10.68	3.33	-.21	9.14	4.01	.829	3.43	-.108	.044	5/2-	
51	175	266	1906.5	1904.5	10.83	2.15	.05	10.38	4.17	.831	3.18	-.113	.046	5/2-	17/2-
51	176	267	1909.7	1906.9	11.05	3.18	.21	9.52	4.25	.833	3.94	-.122	.045	5/2-	
51	177	268	1911.7	1909.2	11.22	2.00	.40	10.86	4.43	.836	3.63	-.122	.046	5/2-	7/2+
51	178	269	1914.6	1911.5	11.40	2.93	.57	10.10	4.44	.838	4.28	-.131	.043	5/2-	
51	179	270	1916.5	1913.6	11.57	1.86	.77	11.34	4.66	.841	3.98	-.136	.043	5/2-	15/2+
51	180	271	1918.8	1915.7	11.73	2.32	.50	11.05	4.24	.843	4.70	-.148	.037	5/2-	
51	181	272	1920.2	1917.7	11.90	1.40	.39	12.13	4.17	.846	3.57	-.156	.032	5/2-	11/2-
51	182	273	1922.5	1919.6	12.08	2.23	.63	11.45	3.82	.848	3.86	-.161	.026	5/2-	
51	183	274	1923.6	1921.4	12.28	1.15	.71	12.69	3.66	.851	3.20	-.171	.022	5/2-	17/2+
51	184	275	1925.8	1923.2	12.50	2.20	1.03	11.75	3.45	.854	3.70	-.175	.016	5/2-	
51	185	276	1926.7	1924.8	12.55	.91	1.16	13.24	3.22	.857	3.25	-.194	-.006	5/2+	1/2-
51	186	277	1929.0	1926.4	12.94	2.31	1.66	12.06	3.29	.860	3.62	-.180	.005	5/2+	
51	187	278	1930.1	1927.9	13.20	1.06	2.05	13.42	3.36	.862	3.62	-.204	-.004	5/2+	5/2+
51	188	279	1932.0	1929.4	13.36	1.97	2.27	12.67	3.27	.865	4.00	-.194	-.006	5/2+	
51	189	280	1932.9	1930.7	13.57	.86	2.55	13.98	3.30	.868	3.49	-.194	-.006	5/2+	7/2+
51	190	281	1934.7	1932.0	13.53	1.82	2.71	13.18	3.21	.871	4.01	-.194	-.006	5/2+	
51	191	282	1935.7	1933.2	13.86	.98	3.16	14.18	3.52	.875	3.70	-.178	-.015	5/2+	1/2+
51	192	283	1937.4	1934.3	14.02	1.72	3.18	13.62	3.49	.878	4.30	-.176	-.017	5/2+	

Z	N	A	B.E.	BO	SP	SN	SA	CR	BAR	X	S	A2	A4	P	N
52	103	195	1427.5	1425.3	-2.30	11.83	-9.94-15.51	3.35	.85C	3.12	.195	.025			5/2-
52	104	196	1440.2	1437.5	-2.05	12.68	-10.05-16.16	3.22	.847	3.55	.192	.023			
52	105	197	1451.5	1449.5	-1.79	11.23	-10.18-14.47	3.24	.845	2.81	.194	.017			9/2+
52	106	198	1463.7	1461.3	-1.51	12.24	-10.13-15.25	3.07	.842	3.24	.191	.014			
52	107	199	1474.5	1472.9	-1.27	10.81	-10.08-13.59	3.05	.840	2.50	.191	.002			7/2-
52	108	200	1486.5	1484.4	-.83	12.02	-9.78-14.60	3.05	.837	3.08	.187	-.000			
52	109	201	1496.9	1495.8	-.76	10.40	-9.97-12.95	2.99	.835	2.28	.175	-.005			1/2-
52	110	202	1508.4	1507.0	-.54	11.47	-9.85-13.64	2.81	.833	2.55	.166	-.004			
52	111	203	1518.5	1518.0	-.32	10.07	-9.76-12.01	2.75	.830	1.75	.157	-.011			3/2-
52	112	204	1529.7	1528.9	-.29	11.24	-9.55-12.98	2.75	.828	2.29	.145	-.013			
52	113	205	1539.6	1539.5	-.06	9.89	-9.32-11.44	2.90	.827	1.74	.136	-.021			11/2+
52	114	206	1550.6	1550.0	-.07	11.04	-9.19-12.39	3.00	.825	2.35	.124	-.023			
52	115	207	1560.4	1560.4	.27	9.74	-8.90-10.90	3.34	.823	2.05	.117	-.025			3/2-
52	116	208	1571.1	1570.5	.42	10.78	-8.95-11.77	3.53	.822	2.73	.106	-.028			
52	117	209	1582.1	1580.5	2.17	10.93	-7.20-11.65	5.35	.820	3.77	.096	-.027			5/2-
52	118	210	1591.1	1590.3	.84	9.04	-8.62-9.64	4.18	.819	3.21	-.121	-.013			
52	119	211	1600.3	1600.0	1.07	9.23	-8.38-9.60	4.67	.817	2.97	-.115	-.012			1/2+
52	120	212	1612.5	1609.4	1.30	12.12	-6.46-12.28	6.86	.816	5.46	-.094	-.004			
52	121	213	1621.6	1618.8	1.52	9.17	-6.08-11.14	7.60	.814	5.28	-.071	-.004			1/2-
52	122	214	1631.8	1627.5	1.74	10.13	-7.71-9.97	8.12	.813	6.32	-.052	-.005			
52	123	215	1640.7	1636.9	1.96	8.93	-7.56-8.61	8.93	.812	6.37	-.041	-.010			2/2-
52	124	216	1650.5	1645.8	2.26	9.86	-7.38-9.17	9.50	.810	7.50	-.023	-.011			
52	125	217	1659.3	1654.5	2.33	8.77	-7.25-8.10	10.46	.809	7.67	C				P 1/2
52	126	218	1668.8	1663.0	2.55	9.45	-7.16-8.65	10.92	.809	8.74	C				
52	127	219	1675.2	1671.1	2.77	6.40	-9.24-5.38	9.79	.808	6.91	C				G 5/2
52	128	220	1683.2	1679.0	2.98	8.07	-10.18-6.84	9.16	.807	6.90	C				
52	129	221	1689.4	1686.8	3.20	6.15	-9.99-4.70	8.07	.806	5.11	C				G 5/2
52	130	222	1697.2	1694.4	3.41	7.85	-9.78-6.18	7.51	.806	5.17	C				
52	131	223	1701.4	1701.5	3.61	4.19	-11.30-4.50	4.73	.805	3.81	-.192	-.004			7/2+
52	132	224	1709.5	1709.2	3.83	8.04	-10.69-5.30	4.64	.805	4.41	-.193	-.008			
52	133	225	1718.2	1716.4	4.11	8.73	-7.43-5.75	6.68	.804	5.26	.097	.055			2/2+
52	134	226	1724.6	1723.5	4.35	6.39	-8.48-5.01	5.21	.804	4.62	.105	.063			
52	135	227	1731.4	1730.4	4.56	6.79	-7.73-3.37	5.57	.803	4.46	.108	.066			2/2-
52	136	228	1739.2	1737.2	4.71	7.82	-7.53-4.19	5.80	.803	5.33	.105	.066			
52	137	229	1745.7	1743.8	4.97	6.50	-7.18-2.50	6.13	.803	5.05	.105	.066			3/2+
52	138	230	1753.2	1750.4	5.32	7.47	-5.63-3.24	6.27	.803	5.80	.114	.065			
52	139	231	1759.4	1756.8	5.48	6.20	-5.51-1.82	6.55	.802	5.45	.118	.065			3/2+
52	140	232	1766.5	1763.0	5.71	7.09	-5.34-2.48	6.57	.802	6.04	.123	.063			
52	141	233	1772.4	1769.1	5.93	5.95	-5.09-1.12	6.86	.802	5.68	.126	.063			5/2+
52	142	234	1779.1	1775.2	6.14	6.66	-5.16-1.61	6.65	.802	6.05	.128	.061			
52	143	235	1784.6	1781.0	6.35	5.51	-5.16-2.25	6.77	.803	5.53	.131	.060			7/2-
52	144	236	1790.9	1786.8	6.55	6.32	-5.09-2.85	6.52	.803	5.85	.132	.058			
52	145	237	1796.0	1792.6	6.76	5.12	-5.05-.55	6.45	.803	5.14	.134	.058			5/2+
52	146	238	1802.1	1798.3	6.96	6.10	-4.89-2.22	6.21	.803	5.44	.136	.055			
52	147	239	1807.0	1803.9	7.17	4.85	-4.76-1.27	6.09	.804	4.61	.135	.052			1/2+
52	148	240	1812.8	1809.3	7.37	5.87	-4.59-.40	5.85	.804	4.91	.140	.048			
52	149	241	1817.4	1814.6	7.58	4.60	-4.44-1.86	5.72	.804	4.02	.144	.043			7/2+

Z	N	A	B.E.	BO	SP	SN	SA	CE	BAR	X	S	A2	A4	P	N
92	150	242	1823.1	1819.8	7.78	5.68	-4.24	.96	5.52	.805	4.36	.146	.C38		
92	151	243	1827.7	1824.9	7.97	4.63	-3.82	2.19	5.64	.806	3.75	.150	.C32		1/2+
92	152	244	1833.2	1829.9	8.16	5.51	-3.62	1.54	5.50	.806	4.27	.150	.C29		
92	153	245	1837.5	1834.8	8.36	4.29	-3.60	2.92	5.50	.807	3.61	.150	.C25		7/2+
92	154	246	1842.8	1839.6	8.54	5.22	-3.50	2.07	5.29	.808	4.00	.146	.C23		
92	155	247	1846.8	1844.2	8.73	4.03	-3.39	3.44	5.23	.808	3.27	.141	.C18		11/2-
92	156	248	1851.8	1848.8	8.90	5.01	-3.27	2.62	5.03	.809	3.66	.137	.C14		
92	157	249	1855.6	1853.2	9.08	3.85	-3.12	3.94	5.01	.810	2.99	.131	.C06		9/2+
92	158	250	1860.4	1857.5	9.26	4.79	-3.01	3.13	4.79	.811	3.42	.126	.C03		
92	159	251	1864.0	1861.8	9.44	3.59	-2.95	4.50	4.71	.812	2.78	.125	-.C04		1/2+
92	160	252	1868.5	1865.9	9.61	4.52	-2.88	3.68	4.44	.814	3.22	.129	-.C06		
92	161	253	1872.2	1869.9	9.82	3.62	-2.41	4.82	4.59	.815	2.88	.126	-.C12		3/2+
92	162	254	1876.8	1873.8	9.68	4.62	-2.13	3.93	4.62	.816	2.98	C			
92	163	255	1880.6	1877.6	9.89	3.82	-1.61	4.71	5.18	.817	3.01	.C22	.C03		15/2-
92	164	256	1885.7	1881.3	10.04	5.05	-1.41	3.45	5.84	.819	4.32	C			
92	165	257	1888.5	1885.0	10.22	2.86	-1.98	5.73	5.63	.820	3.57	C			D 5/2
92	166	258	1892.3	1888.5	10.40	3.76	-2.94	5.17	5.19	.822	3.81	C			
92	167	259	1895.1	1891.9	10.61	2.78	-2.66	6.27	5.09	.823	3.20	-.C22	.C06		7/2+
92	168	260	1898.7	1895.2	10.79	3.63	-2.43	5.60	4.73	.825	3.56	.C31	.C12		
92	169	261	1901.3	1898.4	10.97	2.57	-2.26	6.94	4.61	.826	2.92	.C45	.C11		1/2+
92	170	262	1904.9	1901.6	11.14	3.62	-1.89	6.23	4.42	.828	3.42	.C48	.C11		
92	171	263	1907.3	1904.6	11.33	2.41	-1.65	7.44	4.32	.829	2.77	.C48	-.C08		3/2+
92	172	264	1910.5	1907.6	11.83	3.20	-1.52	6.81	3.90	.831	3.05	.C43	-.C12		
92	173	265	1912.7	1910.4	11.69	2.24	-1.26	7.93	3.81	.834	2.54	.038	-.C22		1/2+
92	174	266	1916.1	1913.2	11.75	3.38	-.80	6.88	3.76	.836	3.93	-.107	.C43		
92	175	267	1918.4	1915.9	11.91	2.32	-.44	8.24	3.93	.838	3.68	-.113	.C46		13/2-
92	176	268	1921.8	1918.5	12.08	3.34	-.21	7.39	4.02	.840	4.45	-.122	.C44		
92	177	269	1924.0	1921.0	12.25	2.17	-.04	8.76	4.21	.842	4.14	-.122	.C45		3/2+
92	178	270	1927.1	1923.4	12.41	3.10	.10	8.00	4.23	.844	4.79	-.131	.C43		
92	179	271	1929.1	1925.7	12.58	2.03	.30	9.25	4.45	.847	4.50	-.136	.C42		15/2+
92	180	272	1931.6	1927.9	12.75	2.49	.03	8.96	4.04	.849	4.71	-.146	.C37		
92	181	273	1933.1	1930.1	12.89	1.54	-.11	10.07	3.95	.851	4.06	-.155	.C33		11/2-
92	182	274	1935.5	1932.2	13.05	2.39	.12	5.34	3.61	.854	4.33	-.160	.C28		
92	183	275	1936.6	1934.2	13.21	1.30	.19	8.27	3.45	.857	3.66	-.169	.C23		13/2+
92	184	276	1939.2	1936.1	13.37	2.36	.51	8.07	3.25	.859	4.17	-.180	.C15		
92	185	277	1940.3	1937.9	13.59	1.12	.68	9.01	3.07	.862	3.77	-.194	-.C06		1/2-
92	186	278	1942.7	1939.6	13.69	2.42	1.11	8.59	3.10	.864	4.01	-.174	.C11		
92	187	279	1943.9	1941.3	13.87	1.23	1.49	11.71	3.19	.867	3.51	-.171	.C09		5/2+
92	188	280	1946.1	1942.9	14.06	2.17	1.73	10.95	3.13	.869	4.95	-.212	-.C13		
92	189	281	1947.1	1944.4	14.23	1.03	1.97	12.24	3.17	.873	4.01	-.194	-.C06		3/2+
92	190	282	1949.1	1945.8	14.38	1.98	2.13	11.45	3.09	.876	4.53	-.194	-.C06		
92	191	283	1950.3	1947.2	14.56	1.16	2.64	12.51	3.43	.879	4.30	-.179	-.C17		1/2+
92	192	284	1952.2	1948.5	14.73	1.68	2.66	11.90	3.41	.882	4.90	-.178	-.C15		
92	193	285	1953.0	1949.7	14.89	.83	2.85	13.11	3.57	.886	4.54	-.176	-.C22		9/2-
92	194	286	1954.7	1950.8	15.05	1.72	3.00	12.38	3.54	.888	5.15	-.175	-.C24		

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
93	105	198	1447.7	1446.2	-3.80	11.46-10.47-13.52			3.07	.857	2.22	.193	.021	3/2+	9/2+
93	106	199	1460.1	1458.3	-3.56	12.48-10.43-14.26			2.88	.854	2.64	.190	.017	1/2+	
93	107	200	1471.1	1470.1	-3.36	11.01-10.40-12.56			2.87	.851	1.84	.191	.005	1/2+	7/2-
93	108	201	1483.2	1481.8	-3.33	12.05-10.30-13.32			2.61	.848	2.22	.186	.004	1/2+	
93	109	202	1494.0	1493.4	-2.95	10.78-10.09-11.80			2.68	.846	1.57	.176	-.007	3/2+	1/2-
93	110	203	1505.7	1504.9	-2.72	11.70 -9.98-12.46			2.48	.844	1.89	.168	-.004	3/2+	
93	111	204	1515.9	1516.1	-2.52	10.27-10.04-10.82			2.41	.842	1.06	.160	-.009	3/2+	3/2-
93	112	205	1527.4	1527.2	-2.33	11.43 -9.86-11.75			2.32	.840	1.53	.148	-.010	1/2+	
93	113	206	1537.5	1538.1	-2.14	10.08 -9.63-10.22			2.42	.838	.93	.140	-.018	1/2+	11/2+
93	114	207	1548.7	1548.9	-1.94	11.23 -9.60-11.14			2.48	.836	2.30	-.158	-.019	5/2-	
93	115	208	1558.6	1559.4	-1.77	9.91 -9.35 -9.63			2.75	.834	1.18	.121	-.027	1/2+	7/2-
93	116	209	1569.6	1569.8	-1.50	11.05 -9.36-10.55			2.97	.832	2.49	-.148	-.018	5/2-	
93	117	210	1580.7	1580.0	-1.39	11.05 -7.71-10.44			4.72	.830	2.87	.099	-.027	3/2+	9/2-
93	118	211	1590.0	1590.0	-1.15	9.27 -9.06 -9.92			3.52	.829	2.57	-.130	-.016	5/2-	
93	119	212	1599.4	1599.9	-.95	9.43 -8.81 -8.61			3.98	.827	2.13	-.120	-.014	5/2-	1/2+
93	120	213	1609.7	1609.6	-2.76	10.30 -8.87 -9.25			4.13	.826	2.61	-.103	-.008	5/2-	
93	121	214	1621.0	1619.2	-.62	11.31 -6.56-10.01			6.79	.825	4.29	-.077	-.006	7/2-	1/2-
93	122	215	1631.3	1628.6	-.46	10.29 -8.16 -8.76			7.25	.824	5.25	-.056	-.009	7/2-	
93	123	216	1640.6	1637.8	-.09	9.30 -7.80 -7.55			8.20	.823	5.49	-.050	-.012	7/2-	3/2-
93	124	217	1650.4	1646.9	-.11	9.84 -7.87 -7.87			8.53	.821	6.36	-.031	-.013	11/2+	
93	125	218	1659.3	1655.6	.01	8.89 -7.69 -6.70			9.38	.820	6.40	C		113/2 P	1/2
93	126	219	1669.0	1664.5	.23	9.67 -7.59 -7.20			9.83	.819	7.47	C		113/2	
93	127	220	1675.6	1672.8	.45	6.62 -9.67 -3.93			8.71	.818	5.64	C		113/2 G	9/2
93	128	221	1683.9	1680.9	.67	8.29-10.61 -5.39			8.08	.817	5.63	C		113/2	
93	129	222	1690.3	1688.9	.89	6.36-10.42 -3.25			6.99	.817	3.85	C		113/2 G	9/2
93	130	223	1696.2	1696.8	-1.09	5.88-12.40 -2.55			4.24	.816	3.72	-.191	-.004	5/2-	
93	131	224	1703.4	1704.5	1.96	7.24-11.09 -1.51			4.30	.815	3.27	-.196	-.007	5/2-	7/2+
93	132	225	1711.7	1712.0	2.20	8.28-10.46 -4.77			4.24	.814	3.94	-.197	-.011	5/2-	
93	133	226	1718.8	1719.4	.59	7.12 -7.32 -3.40			4.46	.814	3.03	.109	.062	5/2+	3/2+
93	134	227	1727.7	1726.7	2.63	8.43 -6.72 -4.51			4.82	.813	4.01	.107	.062	5/2+	
93	135	228	1734.2	1733.8	2.85	7.00 -8.16 -2.84			5.19	.813	3.84	.109	.065	5/2+	3/2-
93	136	229	1742.4	1740.8	3.22	8.19 -6.12 -3.84			5.59	.812	4.99	.111	.067	5/2+	
93	137	230	1749.1	1747.7	3.45	6.73 -5.96 -2.23			5.95	.812	4.73	.114	.067	5/2+	5/2-
93	138	231	1756.8	1754.4	3.60	7.62 -6.01 -2.91			6.04	.812	5.38	.120	.065	5/2+	
93	139	232	1763.2	1761.0	3.83	6.43 -5.82 -1.50			6.35	.812	5.05	.123	.065	5/2+	3/2+
93	140	233	1770.5	1767.4	4.05	7.32 -5.63 -2.18			6.39	.811	5.67	.126	.064	5/2+	
93	141	234	1776.7	1773.8	4.27	6.17 -5.51 -.81			6.69	.811	5.32	.129	.062	5/2+	5/2+
93	142	235	1783.5	1780.0	4.48	6.87 -5.50 -1.30			6.54	.811	5.75	.131	.062	5/2+	
93	143	236	1789.3	1786.1	4.69	5.72 -5.51 .06			6.64	.811	5.19	.133	.061	5/2+	7/2-
93	144	237	1795.8	1792.0	4.89	6.52 -5.44 -.53			6.49	.812	5.93	.134	.059	5/2+	
93	145	238	1801.1	1798.0	5.09	5.33 -5.41 .88			6.33	.812	4.81	.136	.059	5/2+	5/2+
93	146	239	1807.4	1803.9	5.29	6.29 -5.24 .13			6.09	.812	5.12	.138	.056	5/2+	
93	147	240	1812.5	1809.7	5.49	5.04 -5.11 1.59			5.98	.812	4.31	.141	.053	5/2+	1/2+
93	148	241	1818.5	1815.3	5.67	6.05 -4.95 .81			5.74	.813	4.61	.142	.050	5/2+	
93	149	242	1823.3	1820.8	5.86	4.78 -4.81 2.31			5.60	.813	3.72	.145	.049	5/2+	7/2+
93	150	243	1829.1	1826.3	6.03	5.86 -4.61 1.47			5.40	.814	4.06	.147	.041	5/2+	
93	151	244	1834.0	1831.5	6.27	4.87 -4.13 2.69			5.56	.814	3.52	.152	.036	1/2+	9/2-

L	N	A	B.E.	BC	SP	SN	SA	CR	BAR	X	S	A2	A4	P	N
93	152	245	1839.7	1836.7	6.43	5.67	-3.95	2.18	5.40	.815	2.96	.152	.034	1/2+	
93	153	246	1844.0	1841.8	6.51	4.37	-4.02	3.68	5.29	.815	3.16	.152	.028	5/2+	7/2+
93	154	247	1849.4	1846.7	6.68	5.39	-3.94	2.86	5.07	.816	3.55	.148	.027	5/2+	
93	155	248	1853.6	1851.6	6.84	4.19	-3.84	4.25	5.00	.817	2.75	.145	.022	5/2+	11/2-
93	156	249	1858.8	1856.3	7.01	5.17	-3.71	3.47	4.77	.818	3.17	.141	.019	5/2+	
93	157	250	1862.8	1860.9	7.14	3.98	-3.57	4.84	4.71	.819	2.42	.135	.011	5/2+	9/2+
93	158	251	1867.7	1865.4	7.30	4.95	-3.45	4.08	4.48	.820	2.82	.132	.008	5/2+	
93	159	252	1871.4	1869.9	7.42	3.71	-3.41	5.51	4.34	.821	2.12	.132	.002	5/2+	1/2+
93	160	253	1876.2	1874.2	7.66	4.76	-3.27	4.67	4.13	.822	2.55	.130	-.000	5/2+	
93	161	254	1879.9	1878.4	7.76	3.73	-2.95	5.89	4.22	.823	2.17	.131	-.012	1/2+	3/2+
93	162	255	1884.5	1882.5	7.75	4.60	-2.70	5.21	4.06	.824	2.65	.127	-.012	1/2+	
93	163	256	1888.3	1886.5	7.71	3.78	-2.33	6.20	4.40	.825	1.85	.027	.003	3/2+	15/2-
93	164	257	1893.5	1890.3	7.81	5.15	-1.93	4.81	4.99	.826	3.12	0		113/2	
93	165	258	1896.7	1894.1	8.15	3.20	-2.34	6.95	4.94	.827	2.54	-.016	.006	11/2+	5/2+
93	166	259	1900.5	1897.8	8.27	3.88	-3.36	6.29	4.46	.829	2.73	-.015	.007	11/2+	
93	167	260	1903.5	1901.4	8.45	2.96	-3.09	7.45	4.37	.830	2.13	-.042	.000	11/2+	7/2+
93	168	261	1907.4	1904.9	8.73	3.91	-2.76	6.70	4.10	.832	2.59	-.048	.010	7/2-	
93	169	262	1910.3	1908.3	9.07	2.91	-2.41	7.82	4.15	.833	2.13	.045	.015	5/2+	3/2+
93	170	263	1914.0	1911.7	9.07	3.62	-2.24	7.34	3.80	.835	2.42	.052	.012	5/2+	
93	171	264	1916.5	1914.5	9.24	2.58	-2.05	8.56	3.70	.837	1.75	.052	-.005	5/2+	3/2+
93	172	265	1919.9	1918.0	9.39	3.36	-2.14	7.98	3.28	.839	2.00	.047	-.010	5/2+	
93	173	266	1922.2	1921.0	9.48	2.33	-2.03	9.18	3.11	.841	1.55	-.095	.038	3/2-	3/2+
93	174	267	1925.9	1924.0	9.77	3.68	-1.07	8.08	3.19	.842	2.93	-.110	.042	3/2-	
93	175	268	1928.4	1926.8	9.95	2.50	-.95	9.25	3.37	.844	2.65	-.115	.045	3/2-	13/2-
93	176	269	1931.9	1929.6	10.14	3.53	-.74	8.38	3.49	.846	2.46	-.124	.043	3/2-	
93	177	270	1934.3	1932.2	10.31	2.34	-.56	9.75	3.68	.848	3.15	-.125	.044	3/2-	3/2+
93	178	271	1937.5	1934.8	10.49	3.28	-.46	8.98	3.72	.850	3.82	-.133	.042	3/2-	
93	179	272	1939.7	1937.3	10.67	2.20	-.26	10.22	3.95	.852	3.53	-.138	.041	3/2-	15/2+
93	180	273	1942.4	1939.7	10.83	2.65	-.54	9.93	3.54	.855	3.73	-.145	.036	5/2+	
93	181	274	1940.1	1942.1	6.94	-2.34	-4.74	11.63	-.59	.857	-1.96	-.035	.005	7/2+	5/2-
93	182	275	1944.3	1944.3	8.80	4.24	-2.81	8.64	.76	.860	0.00	UNSTABLE		113/2	
93	183	276	1946.5	1946.5	9.65	2.16	-2.06	10.31	1.29	.862	0.00	UNSTABLE		113/2 D	3/2
93	184	277	1948.5	1948.5	9.36	2.07	-2.22	10.56	.65	.864	0.00	UNSTABLE		113/2	
93	185	278	1950.5	1950.5	10.22	1.99	-1.38	10.81	1.17	.867	0.00	UNSTABLE		113/2 H	11/2
93	186	279	1954.9	1952.4	12.16	4.35	.77	8.61	2.98	.869	3.78	-.194	-.006	5/2-	
93	187	280	1956.3	1954.2	12.34	1.41	1.28	9.27	3.09	.872	3.34	-.194	-.006	5/2-	5/2+
93	188	281	1958.6	1956.0	12.49	2.32	1.29	11.45	3.03	.875	3.85	-.194	-.006	5/2-	
93	189	282	1959.8	1957.7	12.65	1.18	1.42	12.74	3.07	.878	3.38	-.194	-.006	5/2-	3/2+
93	190	283	1962.0	1959.3	12.88	2.22	1.66	11.87	3.07	.881	4.25	-.198	-.018	5/2-	
93	191	284	1963.3	1960.8	13.00	1.28	2.07	12.89	3.37	.884	3.86	-.185	-.020	5/2-	1/2+
93	192	285	1965.3	1962.2	13.16	2.04	2.29	12.39	3.36	.887	4.45	-.182	-.022	5/2-	
93	193	286	1966.3	1963.6	13.32	.95	2.41	13.60	3.53	.889	4.05	-.180	-.024	5/2-	5/2-
93	194	287	1968.2	1964.8	13.48	1.88	2.46	12.88	3.50	.892	4.65	-.178	-.026	5/2-	
93	195	288	1969.1	1966.0	13.64	.86	2.66	14.05	3.65	.896	4.37	-.176	-.029	5/2-	11/2+
93	196	289	1970.8	1967.2	13.80	1.73	2.83	13.36	3.67	.899	5.00	-.174	-.032	5/2-	

Z	N	A	B.E.	BO	SP	SN	SA	CE	EPR	X	S	A2	A4	P	N
94	107	201	1469.1	1466.9	-2.75	11.29	-10.65	-14.78	2.99	.863	2.92	.190	.CC2		7/2-
94	108	202	1481.4	1478.8	-1.81	12.30	-10.59	-15.57	2.77	.861	3.32	.185	.CC0		
94	109	203	1492.4	1450.7	-1.55	11.03	-10.37	-14.08	2.85	.858	2.73	.178	-.CC5		1/2-
94	110	204	1504.3	1502.3	-1.33	11.92	-10.48	-14.71	2.64	.856	3.05	.171	-.CC6		
94	111	205	1514.8	1513.8	-1.10	10.50	-10.38	-13.14	2.56	.853	2.25	.164	-.C11		3/2-
94	112	206	1526.5	1525.2	-.92	11.61	-10.24	-14.04	2.41	.851	2.63	.152	-.C11		
94	113	207	1536.8	1536.3	-.69	10.31	-10.00	-12.54	2.50	.849	2.08	.144	-.C20		11/2+
94	114	208	1548.2	1547.3	-.50	11.42	-9.82	-13.48	2.52	.847	2.68	.133	-.C22		
94	115	209	1558.3	1558.0	-.29	10.12	-9.58	-11.99	2.77	.845	2.28	.125	-.C28		7/2-
94	116	210	1569.5	1568.6	-.18	11.16	-9.46	-12.84	2.88	.843	2.90	.114	-.C27		
94	117	211	1579.3	1579.1	-1.43	9.80	-9.40	-11.29	3.14	.842	2.39	.102	-.C28		9/2-
94	118	212	1590.0	1589.4	.03	10.73	-9.44	-12.04	3.17	.840	3.16	-.124	-.C15		
94	119	213	1599.7	1599.5	.28	9.67	-10.70	-10.89	3.64	.838	2.79	-.116	-.C14		1/2+
94	120	214	1610.2	1609.4	.51	10.54	-9.19	-11.54	3.80	.837	3.32	-.101	-.C08		
94	121	215	1621.8	1619.2	.74	11.54	-8.89	-12.30	6.46	.835	5.04	-.077	-.C07		1/2-
94	122	216	1632.3	1628.8	.97	10.51	-8.49	-11.12	6.92	.834	6.01	-.056	-.C10		
94	123	217	1641.8	1638.2	1.19	9.52	-8.13	-5.96	7.88	.832	6.26	-.050	-.C13		3/2-
94	124	218	1651.9	1647.5	1.41	10.06	-8.20	-10.30	8.21	.831	7.12	-.028	-.C13		
94	125	219	1661.0	1656.6	1.69	9.17	-7.96	-9.23	9.13	.830	7.22	C		P 1/2	
94	126	220	1670.9	1665.6	1.90	9.88	-7.94	-5.80	9.58	.829	8.29	C			
94	127	221	1677.7	1674.1	2.12	6.83	-9.88	-6.53	8.46	.828	6.46	C		G 9/2	
94	128	222	1686.2	1682.5	2.33	8.50	-10.82	-7.98	7.83	.827	6.46	C			
94	129	223	1692.8	1690.6	2.55	6.58	-10.64	-5.84	6.74	.826	4.67	C		G 9/2	
94	130	224	1701.1	1698.7	4.95	8.26	-10.43	-7.32	6.19	.826	4.74	C			
94	131	225	1706.1	1706.6	2.72	5.01	-11.57	-5.90	3.81	.825	3.81	-.196	-.CC6		7/2+
94	132	226	1714.6	1714.4	2.94	8.50	-10.93	-6.70	3.76	.824	4.52	-.198	-.C13		
94	133	227	1721.9	1722.0	3.13	7.32	-7.60	-5.22	3.96	.824	3.40	.107	.C59		3/2+
94	134	228	1730.6	1729.5	3.37	8.67	-7.17	-6.37	4.36	.823	4.55	.112	.C61		
94	135	229	1737.8	1736.8	3.57	7.20	-6.70	-4.63	4.72	.823	4.34	.114	.C63		3/2-
94	136	230	1746.1	1744.0	3.72	8.34	-6.75	-5.56	5.07	.822	5.38	.112	.C64		
94	137	231	1753.1	1751.1	3.93	6.94	-6.60	-3.99	5.43	.822	5.13	.115	.C65		5/2-
94	138	232	1760.9	1758.0	4.15	7.84	-6.57	-4.68	5.54	.822	5.79	.121	.C63		
94	139	233	1767.5	1764.8	4.36	6.63	-6.44	-3.23	5.86	.821	5.47	.124	.C63		3/2+
94	140	234	1775.1	1771.5	4.57	7.54	-6.38	-3.92	5.93	.821	6.10	.128	.C61		
94	141	235	1781.5	1778.0	4.78	6.38	-6.20	-2.54	6.24	.821	5.77	.130	.C61		5/2+
94	142	236	1788.5	1784.4	5.00	7.08	-6.21	-3.03	6.11	.821	6.20	.132	.C59		
94	143	237	1794.5	1790.7	5.21	5.93	-6.23	-1.67	6.23	.821	5.66	.135	.C58		7/2-
94	144	238	1801.2	1798.8	5.42	6.74	-6.15	-2.26	6.00	.821	6.00	.136	.C57		
94	145	239	1806.8	1803.0	5.64	5.54	-6.12	-.85	5.96	.821	5.28	.138	.C55		5/2+
94	146	240	1813.3	1809.1	5.86	6.51	-5.93	-1.61	5.75	.821	5.61	.140	.C52		
94	147	241	1818.5	1815.1	6.08	5.27	-5.78	-.16	5.68	.821	4.83	.143	.C49		1/2+
94	148	242	1824.8	1820.9	6.30	6.27	-5.61	-.96	5.48	.822	5.16	.145	.C46		
94	149	243	1829.8	1826.6	6.55	5.02	-5.43	.50	5.39	.822	4.32	.148	.C40		7/2+
94	150	244	1835.9	1832.2	6.77	6.09	-5.21	-.36	5.23	.822	4.70	.150	.C36		
94	151	245	1841.1	1837.7	7.06	5.15	-4.65	.95	5.50	.823	4.23	.154	.C33		9/2-
94	152	246	1846.9	1843.1	7.27	5.87	-4.46	.24	5.35	.823	4.78	.154	.C31		
94	153	247	1851.5	1848.3	7.47	4.58	-4.51	1.77	5.27	.824	4.02	.154	.C26		7/2+

L	N	A	B.E.	BC	SP	SN	SA	CB	E/R	X	S	A2	A4	P	N
54	154	248	1857.1	1853.5	7.66	5.58	-4.45	.97	5.06	.824	4.40	.150	.024		
54	155	249	1861.5	1858.5	7.86	4.39	-4.35	2.27	5.00	.825	3.67	.146	.019		11/2-
54	156	250	1866.8	1863.4	8.04	5.36	-4.21	1.47	4.79	.826	4.05	.142	.016		
54	157	251	1871.0	1868.2	8.26	4.19	-4.04	2.81	4.75	.826	3.37	.140	.008		5/2+
54	158	252	1876.2	1872.9	8.43	5.13	-3.92	2.03	4.53	.827	3.78	.138	.006		
54	159	253	1880.1	1877.5	8.65	3.93	-3.84	3.41	4.43	.828	3.11	.137	-.001		1/2+
54	160	254	1885.0	1882.0	8.83	4.94	-3.69	2.55	4.23	.829	3.57	.136	-.005		
54	161	255	1889.0	1886.4	9.03	3.93	-3.36	3.74	4.34	.830	3.22	.136	-.014		3/2+
54	162	256	1893.7	1890.7	9.21	4.78	-3.10	3.02	4.17	.831	3.70	.134	-.015		
54	163	257	1897.5	1894.9	9.17	3.75	-2.97	4.21	4.31	.832	3.36	.133	-.020		13/2-
54	164	258	1902.8	1898.9	9.36	5.34	-2.25	2.79	4.91	.834	3.90	C			
54	165	259	1906.1	1902.9	9.39	3.22	-2.85	4.63	4.72	.835	3.15	C			D 5/2
54	166	260	1910.2	1906.8	9.63	4.11	-3.78	4.06	4.31	.836	3.39	C			
54	167	261	1913.3	1910.6	9.83	3.16	-3.48	5.14	4.25	.838	2.82	-.033	.003		7/2+
54	168	262	1917.4	1914.2	9.95	4.03	-3.21	4.42	3.94	.839	3.27	.046	.015		
54	169	263	1920.5	1917.8	10.18	3.14	-2.84	5.63	4.06	.841	2.83	.050	.013		3/2+
54	170	264	1924.3	1921.3	10.36	3.80	-2.67	5.09	3.72	.842	3.12	.053	.010		
54	171	265	1927.1	1924.7	10.56	2.78	-2.47	6.30	3.65	.844	2.49	.053	-.006		3/2+
54	172	266	1930.6	1928.0	10.73	3.53	-2.55	5.72	3.24	.845	2.74	.048	-.011		
54	173	267	1933.2	1931.2	10.97	2.57	-2.39	6.84	3.15	.847	2.23	.041	-.022		1/2+
54	174	268	1936.9	1934.3	10.97	3.67	-1.92	5.88	3.06	.849	3.53	-.110	.042		
54	175	269	1939.5	1937.3	11.14	2.66	-1.50	7.09	3.24	.850	3.30	-.115	.045		13/2-
54	176	270	1943.2	1940.3	11.31	3.70	-1.18	6.27	3.36	.852	4.07	-.124	.043		
54	177	271	1945.7	1943.1	11.47	2.50	-1.00	7.61	3.57	.855	3.76	-.124	.044		3/2+
54	178	272	1949.2	1945.8	11.63	3.44	-.90	6.85	3.61	.857	4.42	-.132	.042		
54	179	273	1951.5	1948.5	11.80	2.36	-.71	5.30	3.85	.859	4.13	-.136	.042		15/2+
54	180	274	1950.9	1951.1	8.50	-.64	-4.45	7.65	-.02	.861	-.19	C			
54	181	275	1952.2	1953.6	12.10	1.26	-5.22	9.43	-.71	.863	-1.24	-.002	-.022		5/2-
54	182	276	1956.0	1956.0	11.69	3.82	-3.88	7.04	.07	.865	C.00	UNSTABLE			
54	183	277	1958.3	1958.3	11.85	2.32	-3.11	9.72	.60	.867	C.00	UNSTABLE			D 3/2
54	184	278	1960.5	1960.5	12.02	2.24	-3.26	9.97	-.03	.869	C.00	UNSTABLE			
54	185	279	1962.7	1962.7	12.18	2.15	-2.41	10.21	.49	.872	C.00	UNSTABLE			H 11/2
54	186	280	1964.8	1964.8	9.90	2.07	-2.70	10.46	-.14	.875	C.00	UNSTABLE			
54	187	281	1969.3	1966.8	12.99	4.50	.68	8.19	2.91	.878	3.81	-.194	-.006		5/2+
54	188	282	1971.7	1968.7	13.14	2.48	.74	7.86	2.85	.880	4.36	-.194	-.006		
54	189	283	1973.1	1970.5	13.30	1.34	.65	6.59	2.91	.883	3.85	-.194	-.006		3/2+
54	190	284	1975.4	1972.2	13.38	2.30	.99	8.28	2.83	.886	4.27	-.194	-.006		
54	191	285	1976.9	1973.9	13.65	1.54	1.50	8.64	3.24	.888	4.41	-.186	-.022		1/2+
54	192	286	1979.1	1975.5	13.81	2.20	1.72	10.59	3.23	.891	5.00	-.183	-.023		
54	193	287	1980.3	1977.0	13.97	1.16	1.71	11.80	3.41	.894	4.64	-.181	-.025		5/2-
54	194	288	1982.3	1978.5	14.13	2.04	1.87	10.86	3.40	.897	5.25	-.175	-.028		
54	195	289	1983.4	1979.8	14.30	1.03	2.06	12.04	3.60	.899	4.55	-.177	-.031		11/2+
54	196	290	1985.0	1981.1	14.26	1.69	2.03	11.56	3.39	.902	5.41	-.171	-.036		
54	197	291	1986.2	1982.3	14.63	1.12	2.45	12.50	3.84	.905	5.36	-.172	-.037		7/2-
54	198	292	1987.9	1983.5	14.80	1.72	2.61	12.03	3.82	.907	6.07	-.170	-.043		

Z	N	A	B.E.	BC	SP	SN	SA	CE	EAR	X	S	A2	A4	P	N
55	108	203	1477.6	1475.4	-3.82	12.53-10.86-14.61			2.74	.871	2.79	.186	.003	5/2-	
55	109	204	1488.9	1467.5	-3.57	11.28-10.59-12.97			2.83	.869	2.21	.186	-.005	3/2-	1/2-
55	110	205	1500.9	1469.4	-3.42	12.07-10.57-13.65			2.54	.867	2.48	.173	-.004	3/2-	
55	111	206	1511.6	1511.1	-3.21	10.71-10.64-12.05			2.42	.865	1.65	.167	-.005	3/2-	3/2-
55	112	207	1523.4	1522.7	-3.01	11.81-10.52-12.91			2.23	.862	2.02	.156	-.006	3/2-	
55	113	208	1533.9	1534.1	-2.84	10.48-10.32-11.36			2.24	.860	1.40	.146	-.017	1/2-	11/2+
55	114	209	1545.5	1545.2	-2.65	11.61-10.14-12.27			2.22	.858	1.96	.135	-.016	1/2-	
55	115	210	1555.8	1556.3	-2.47	10.31 -9.91-10.76			2.41	.856	1.54	.125	-.027	1/2-	7/2-
55	116	211	1567.2	1567.1	-2.27	11.35 -9.79-11.58			2.48	.854	2.14	.116	-.026	3/2-	
55	117	212	1577.2	1577.8	-2.09	9.98 -9.72-10.06			2.65	.852	1.60	.107	-.027	3/2-	9/2-
55	118	213	1588.0	1588.2	-2.00	10.83 -9.93-10.71			2.58	.850	2.31	-.127	-.017	1/2+	
55	119	214	1597.9	1598.6	-1.78	9.89-11.09 -8.11			3.05	.849	1.90	-.116	-.015	1/2+	1/2+
55	120	215	1606.7	1608.7	-1.55	10.77 -9.59-10.46			3.22	.847	2.46	-.104	-.010	5/2+	
55	121	216	1620.4	1618.7	-1.39	11.69 -7.33-11.17			5.80	.846	4.12	-.082	-.006	5/2+	1/2-
55	122	217	1631.0	1628.5	-1.22	10.66 -6.95 -9.91			6.21	.845	5.02	-.055	-.011	5/2+	
55	123	218	1640.8	1638.2	-1.02	9.73 -8.53 -8.74			7.15	.843	5.24	-.052	-.014	5/2+	3/2-
55	124	219	1651.0	1647.7	-.84	10.24 -8.58 -9.01			7.43	.842	6.05	-.035	-.014	1/2-	
55	125	220	1640.3	1657.1	-.70	9.31 -8.56 -7.87			8.26	.841	6.08	0		113/2 P	1/2
55	126	221	1670.4	1666.3	-.48	10.10 -8.31 -8.39			8.72	.840	7.15	0		113/2	
55	127	222	1677.5	1675.0	-.26	7.05-10.15 -5.14			7.59	.836	5.33	0		113/2 G	9/2
55	128	223	1686.2	1683.5	-.04	8.72-11.10 -6.59			6.97	.837	5.32	0		113/2	
55	129	224	1693.0	1691.9	.17	6.80-10.92 -4.45			5.88	.836	3.55	0		113/2 G	9/2
55	130	225	1699.4	1700.2	-1.67	6.43-12.77 -3.87			3.26	.835	3.57	-.195	-.008	5/2-	
55	131	226	1707.1	1708.3	1.01	7.70-11.44 -2.87			3.36	.835	3.12	-.195	-.010	5/2-	7/2+
55	132	227	1715.9	1716.3	1.31	8.80 -8.53 -6.13			3.40	.834	3.86	.134	.071	5/2-	
55	133	228	1723.4	1724.1	1.51	7.51 -8.25 -4.72			3.59	.833	2.73	.114	.056	5/2-	3/2+
55	134	229	1732.4	1731.8	1.78	8.94 -7.59 -5.86			4.06	.832	3.94	.115	.061	5/2-	
55	135	230	1739.8	1739.3	2.00	7.41 -7.30 -4.20			4.42	.832	3.73	.116	.062	5/2-	1/2-
55	136	231	1748.3	1746.6	2.16	8.51 -7.22 -5.06			4.73	.831	4.65	.116	.063	5/2-	
55	137	232	1755.4	1754.0	2.38	7.15 -7.07 -3.51			5.10	.831	4.45	.120	.064	5/2-	5/2-
55	138	233	1763.5	1761.2	2.62	8.08 -7.17 -4.25			5.25	.830	5.16	.125	.062	5/2-	
55	139	234	1770.4	1768.2	2.83	6.85 -7.06 -2.80			5.59	.830	4.86	.127	.062	5/2-	3/2+
55	140	235	1778.1	1775.0	3.06	7.76 -6.92 -3.51			5.68	.830	5.51	.131	.060	5/2-	
55	141	236	1784.7	1781.8	3.27	6.59 -6.76 -2.13			6.01	.829	5.15	.132	.060	5/2-	5/2+
55	142	237	1792.0	1788.4	3.48	7.30 -6.78 -2.64			5.90	.829	5.64	.135	.058	5/2-	
55	143	238	1798.2	1794.9	3.70	6.14 -6.80 -1.27			6.02	.829	5.11	.136	.058	5/2-	7/2-
55	144	239	1805.1	1801.2	3.90	6.95 -6.72 -1.87			5.81	.829	5.46	.136	.055	5/2-	
55	145	240	1810.9	1807.6	4.12	5.75 -6.69 -.46			5.79	.829	4.76	.141	.054	5/2-	5/2+
55	146	241	1817.6	1813.9	4.32	6.72 -6.50 -1.22			5.60	.829	5.11	.142	.051	5/2-	
55	147	242	1823.1	1820.0	4.53	5.48 -6.34 .24			5.54	.829	4.35	.145	.045	5/2-	1/2+
55	148	243	1829.5	1826.1	4.74	5.48 -6.16 -.53			5.35	.820	4.65	.147	.045	5/2-	
55	149	244	1834.8	1832.0	4.94	5.23 -5.97 .95			5.28	.820	3.88	.150	.041	5/2-	7/2+
55	150	245	1841.2	1837.8	5.32	6.46 -5.56 .15			5.30	.820	4.45	.152	.036	5/2-	
55	151	246	1846.4	1843.4	5.33	5.16 -5.18 1.56			5.39	.821	3.85	.155	.034	5/2-	5/2-
55	152	247	1852.5	1849.0	5.52	6.06 -4.98 .90			5.25	.821	4.35	.156	.032	5/2-	
55	153	248	1857.3	1854.4	5.77	4.83 -5.02 2.33			5.23	.822	3.65	.155	.028	5/2-	7/2+
55	154	249	1863.0	1859.8	5.87	5.69 -5.00 1.70			4.94	.822	3.96	.153	.025	5/2-	

Z	N	A	R.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
95	155	250	1867.5	1865.C	6.05	4.56	-4.81	3.00	4.87	.833	3.72	.145	.021	5/2-	11/2-
95	156	251	1873.1	1870.1	6.22	5.53	-4.67	2.24	4.65	.834	3.60	.146	.019	5/2-	
95	157	252	1877.4	1875.1	6.38	4.35	-4.51	3.63	4.59	.835	2.87	.143	.010	5/2-	9/2+
95	158	253	1882.7	1880.C	6.55	5.31	-4.37	2.90	4.36	.835	3.27	.141	.007	5/2-	
95	159	254	1886.8	1884.8	6.71	4.09	-4.27	4.31	4.24	.836	2.57	.140	.000	5/2-	1/2+
95	160	255	1891.9	1889.4	6.88	5.11	-4.11	3.50	4.04	.837	3.01	.140	-.003	5/2-	
95	161	256	1896.0	1894.C	7.01	4.06	-3.76	4.76	4.10	.838	2.61	.141	-.012	1/2-	3/2+
95	162	257	1900.9	1898.5	7.18	4.95	-3.58	4.08	3.93	.839	3.09	.139	-.014	1/2-	
95	163	258	1904.8	1902.8	7.34	3.91	-3.39	5.30	4.06	.840	2.72	.136	-.020	1/2-	13/2-
95	164	259	1909.9	1907.1	7.07	5.07	-2.93	4.34	4.22	.841	2.82	C		113/2	
95	165	260	1913.5	1911.2	7.40	3.55	-3.16	5.81	4.18	.843	2.24	-.016	.006	1/2-	5/2+
95	166	261	1917.7	1915.3	7.52	4.24	-4.07	5.27	3.71	.844	2.43	-.013	.007	1/2-	
95	167	262	1921.0	1919.2	7.67	3.32	-3.95	6.31	3.63	.845	1.80	-.033	.001	1/2-	7/2+
95	168	263	1925.4	1923.1	8.00	4.35	-3.48	5.51	3.48	.846	2.40	.048	.014	1/2-	
95	169	264	1928.6	1926.5	8.11	3.26	-3.18	6.75	3.54	.848	1.90	.054	.012	1/2-	3/2+
95	170	265	1932.6	1930.5	8.30	3.99	-3.10	6.19	3.22	.849	2.21	.058	.009	1/2-	
95	171	266	1935.6	1934.1	8.47	2.95	-3.06	7.47	3.15	.850	1.57	.057	-.003	1/2-	3/2+
95	172	267	1939.3	1937.6	8.63	3.65	-2.99	6.87	2.73	.852	1.80	.054	-.008	1/2-	
95	173	268	1942.0	1940.9	8.77	2.72	-2.86	8.02	2.62	.854	1.26	.044	-.020	5/2+	1/2+
95	174	269	1945.8	1944.2	8.98	3.88	-2.34	7.04	2.56	.856	2.59	-.112	.041	1/2-	
95	175	270	1948.7	1947.4	9.19	2.88	-1.79	8.04	2.80	.857	2.39	-.120	.043	7/2-	1/2+
95	176	271	1952.6	1950.5	9.34	3.84	-1.62	7.25	2.90	.859	3.14	-.125	.043	7/2-	
95	177	272	1955.2	1953.5	9.51	2.57	-1.44	6.91	3.11	.861	2.83	-.126	.044	7/2-	3/2+
95	178	273	1956.1	1956.4	6.88	.81	-4.17	8.53	.36	.863	-.36	C		113/2	
95	179	274	1957.8	1959.3	6.22	1.71	-4.80	10.07	-.22	.865	-1.41	.046	.010	5/2+	1/2+
95	180	275	1960.8	1962.C	9.91	3.04	-5.03	8.84	-.56	.867	-1.17	.035	.000	5/2+	
95	181	276	1962.2	1964.7	10.08	1.43	-5.80	10.65	-1.24	.868	-2.02	-.006	-.033	5/2-	9/2-
95	182	277	1967.2	1967.2	11.25	5.00	-3.46	7.25	.54	.870	C.00	UNSTABLE		113/2	
95	183	278	1969.7	1969.7	11.42	2.49	1.37	9.12	1.08	.873	C.00	UNSTABLE		113/2	0 3/2
95	184	279	1972.1	1972.1	11.58	2.40	-.47	9.37	.45	.875	C.00	UNSTABLE		113/2	
95	185	280	1974.4	1974.4	11.75	2.32	-.31	9.62	.99	.878	C.00	UNSTABLE		113/2	H11/2
95	186	281	1976.7	1976.7	11.91	2.23	-.15	9.87	.36	.880	C.00	UNSTABLE		113/2	
95	187	282	1978.8	1978.8	9.56	2.15	.02	10.11	.90	.883	C.00	UNSTABLE		113/2	H11/2
95	188	283	1980.9	1980.9	9.15	2.07	-2.26	10.36	.78	.885	C.00	UNSTABLE		113/2	
95	189	284	1982.9	1982.9	9.79	1.99	-1.69	10.60	.82	.888	C.00	UNSTABLE		113/2	H11/2
95	190	285	1984.8	1984.8	9.40	1.91	-2.10	10.84	.20	.890	C.00	UNSTABLE		113/2	
95	191	286	1986.9	1986.6	12.02	4.15	.87	8.75	3.06	.893	3.82	-.185	-.024	5/2-	1/2+
95	192	287	1991.3	1988.4	12.17	2.36	1.01	8.38	3.06	.895	4.41	-.187	-.025	5/2-	
95	193	288	1992.4	1990.C	12.11	1.10	.83	12.59	3.02	.898	4.03	-.190	-.031	7/2+	7/2-
95	194	289	1994.6	1991.6	12.29	2.21	1.00	11.85	3.03	.901	4.58	-.185	-.032	7/2+	
95	195	290	1995.8	1993.2	12.46	1.20	1.20	13.00	3.25	.903	4.25	-.180	-.036	7/2+	1/2-
95	196	291	1997.9	1994.6	12.84	2.06	1.39	12.28	3.27	.906	4.97	-.176	-.040	7/2+	
95	197	292	1999.1	1996.C	12.97	1.26	1.78	13.04	3.70	.908	4.77	-.174	-.035	7/2+	7/2-
95	198	293	2001.0	1997.3	13.14	1.89	1.95	12.57	3.69	.910	5.52	-.171	-.045	7/2+	
95	199	294	2001.9	1998.5	13.31	.87	2.07	13.75	3.88	.913	5.26	-.170	-.046	7/2+	7/2-

L	N	A	B.F.	BC	SP	SN	SA	CE	EAR	X	S	A2	A4	P	N
96	110	206	1495.8	1496.1	-2.13	12.30-10.89-15.89			2.80	.878	3.64	.174	-.C07		
96	111	207	1509.8	1508.0	-1.88	10.95-10.97-14.28			2.69	.876	2.85	.169	-.C12		7/2-
96	112	208	1521.8	1519.8	-1.67	12.03-10.86-15.18			2.48	.873	2.23	.161	-.C11		
96	113	209	1532.5	1531.4	-1.44	10.70-10.66-13.64			2.49	.871	2.62	.151	-.C20		11/2+
96	114	210	1544.3	1542.8	-1.23	11.82-10.45-14.61			2.44	.869	3.17	.142	-.C21		
96	115	211	1554.8	1554.1	-1.01	10.52-10.24-13.08			2.62	.867	2.73	.132	-.C28		7/2-
96	116	212	1566.3	1565.1	-.86	11.51-10.14-13.88			2.62	.865	3.24	.122	-.C26		
96	117	213	1576.5	1576.0	-.67	10.17-10.09-12.35			2.80	.863	2.68	.110	-.C28		5/2-
96	118	214	1589.0	1586.7	1.00	12.49 -8.76-14.49			4.13	.862	4.45	.099	-.C23		
96	119	215	1597.4	1597.3	-.47	8.42-10.14-11.89			2.88	.860	2.65	-.115	-.C15		1/2+
96	120	216	1608.4	1607.7	-.25	10.99 -9.88-12.74			3.05	.858	3.23	-.102	-.C11		
96	121	217	1620.4	1617.6	-.01	11.94 -7.61-11.42			5.65	.857	4.94	-.081	-.C09		1/2-
96	122	218	1631.3	1627.6	.21	10.90 -7.26-12.25			6.06	.855	5.87	-.063	-.C10		
96	123	219	1641.2	1637.8	.45	9.97 -8.82-11.13			7.01	.853	6.10	-.052	-.C14		7/2-
96	124	220	1651.7	1647.5	.66	10.45 -8.89-11.41			7.29	.852	6.93	-.033	-.C14		
96	125	221	1661.2	1657.1	.92	9.57 -8.83-10.36			8.16	.850	6.98	C		P 1/2	
96	126	222	1671.6	1666.5	1.14	10.31 -8.59-10.93			8.62	.849	8.05	C			
96	127	223	1676.8	1675.4	1.35	7.27-10.49 -7.67			7.49	.848	6.22	C		G 5/2	
96	128	224	1687.8	1684.2	1.56	8.93-11.44 -9.11			6.87	.847	6.22	C			
96	129	225	1694.8	1692.8	1.78	7.01-11.26 -6.98			5.78	.846	4.44	C		G 5/2	
96	130	226	1703.5	1701.3	4.05	8.70-11.06 -6.45			5.23	.845	4.50	C			
96	131	227	1709.0	1709.6	1.88	5.53-12.11 -7.21			2.95	.845	3.58	-.198	-.C08		7/2+
96	132	228	1717.9	1717.8	2.02	8.93-11.46 -8.02			2.91	.844	3.62	.113	.C57		
96	133	229	1725.7	1725.8	2.28	7.78 -8.69 -6.58			3.16	.843	3.14	.112	.C55		3/2+
96	134	230	1734.8	1733.7	2.43	9.08 -8.10 -7.63			3.57	.842	4.25	.117	.C57		
96	135	231	1742.4	1741.5	2.66	7.65 -7.77 -5.98			3.96	.842	4.14	.115	.C61		1/2-
96	136	232	1751.2	1749.1	2.86	8.70 -7.73 -6.88			4.26	.841	5.08	.118	.C61		
96	137	233	1758.5	1756.6	3.06	7.35 -7.58 -5.31			4.63	.841	4.84	.120	.C62		5/2-
96	138	234	1766.8	1763.9	3.26	8.29 -7.63 -6.05			4.79	.840	5.55	.125	.C60		
96	139	235	1773.8	1771.1	3.46	7.05 -7.52 -4.57			5.12	.840	5.24	.127	.C60		3/2+
96	140	236	1781.8	1778.2	3.67	7.97 -7.39 -5.28			5.23	.840	5.90	.131	.C58		
96	141	237	1789.6	1785.1	3.88	6.79 -7.23 -3.88			5.55	.839	5.58	.133	.C58		5/2+
96	142	238	1796.1	1791.9	4.09	7.51 -7.26 -4.39			5.46	.839	6.05	.135	.C56		
96	143	239	1802.5	1798.6	4.29	6.35 -7.29 -3.01			5.60	.839	5.51	.137	.C55		7/2-
96	144	240	1809.6	1805.2	4.51	7.16 -7.21 -3.61			5.41	.839	5.86	.140	.C52		
96	145	241	1815.6	1811.8	4.72	5.96 -7.18 -2.19			5.40	.839	5.17	.142	.C51		5/2+
96	146	242	1822.5	1818.2	4.94	6.94 -6.98 -2.96			5.25	.839	5.53	.144	.C47		
96	147	243	1828.2	1824.6	5.17	5.71 -6.61 -1.50			5.23	.839	4.79	.147	.C44		1/2+
96	148	244	1834.9	1830.8	5.40	6.71 -6.62 -2.28			5.04	.839	5.17	.149	.C40		
96	149	245	1840.6	1836.9	5.83	5.66 -6.23 -1.02			5.25	.839	4.64	.152	.C37		7/2+
96	150	246	1847.2	1842.9	5.94	6.57 -5.93 -1.66			5.20	.840	5.17	.154	.C34		
96	151	247	1852.6	1848.8	6.17	5.40 -5.55 -2.28			5.34	.840	4.64	.157	.C30		5/2-
96	152	248	1858.8	1854.5	6.38	6.26 -5.38 -2.94			5.22	.840	5.12	.157	.C28		
96	153	249	1863.9	1860.1	6.60	5.05 -5.48 -2.47			5.24	.841	4.47	.156	.C24		7/2+
96	154	250	1864.8	1865.7	6.78	5.87 -5.49 -2.15			4.95	.841	4.77	.153	.C22		
96	155	251	1874.5	1871.1	6.99	4.77 -5.29 -1.14			4.91	.842	4.04	.149	.C14		11/2-
96	156	252	1880.3	1876.4	7.20	5.74 -5.13 -2.32			4.72	.842	4.45	.147	.C11		

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
96	157	253	1884.8	1881.5	7.42	4.57	-4.94	1.67	4.70	.842	3.81	.145	.006		9/2+
96	158	254	1890.3	1886.6	7.61	5.50	-4.80	.91	4.49	.844	4.22	.144	.004		
96	159	255	1894.6	1851.6	7.83	4.31	-4.69	2.29	4.41	.844	3.60	.142	-.002		1/2+
96	160	256	1900.0	1856.4	8.03	5.31	-4.51	1.45	4.23	.845	4.07	.142	-.007		
96	161	257	1904.2	1901.2	8.25	4.27	-4.17	2.66	4.33	.846	3.72	.144	-.015		3/2+
96	162	258	1909.4	1905.8	8.43	5.13	-3.98	1.93	4.17	.847	4.21	.142	-.017		
96	163	259	1913.5	1910.4	8.62	4.11	-3.80	3.12	4.31	.848	3.85	.140	-.022		13/2-
96	164	260	1916.5	1914.8	8.57	5.02	-3.56	2.37	4.25	.845	3.67	C			
96	165	261	1922.2	1919.1	8.73	3.70	-3.61	3.50	4.19	.845	3.07	-.014	.006		5/2+
96	166	262	1926.5	1923.4	8.84	4.35	-4.59	2.96	3.67	.851	3.16	C			
96	167	263	1930.1	1927.5	9.08	3.55	-4.26	4.07	3.65	.852	2.74	-.060	-.006		7/2+
96	168	264	1934.6	1931.5	9.23	4.50	-3.88	2.23	3.48	.853	3.18	.047	.012		
96	169	265	1938.0	1935.5	9.40	3.44	-3.60	4.50	3.55	.855	2.68	.055	.010		3/2+
96	170	266	1942.2	1939.3	9.58	4.17	-3.47	3.97	3.24	.856	3.00	.055	.007		
96	171	267	1945.3	1943.0	9.78	3.14	-3.47	5.18	3.20	.858	2.35	.057	-.005		3/2+
96	172	268	1949.2	1946.7	9.96	3.87	-3.40	4.62	2.75	.859	2.63	.053	-.010		
96	173	269	1952.1	1950.2	10.14	2.90	-3.28	5.76	2.70	.861	2.10	.045	-.021		1/2+
96	174	270	1956.0	1953.7	10.14	3.88	-2.93	4.93	2.45	.862	3.21	-.111	.040		
96	175	271	1959.0	1957.1	10.31	3.05	-2.45	5.62	2.73	.864	3.02	-.120	.042		1/2+
96	176	272	1961.4	1960.3	8.81	2.34	-3.79	5.87	1.17	.865	1.11	.007	.012		
96	177	273	1963.8	1963.5	8.56	2.43	-4.02	7.05	.96	.867	.40	.016	-.016		7/2+
96	178	274	1967.1	1966.6	11.00	3.25	-4.48	6.18	.49	.869	.46	C			
96	179	275	1968.9	1969.6	11.10	1.81	-5.17	7.76	-.16	.870	-.48	.062	.022		1/2+
96	180	276	1972.1	1972.5	11.30	3.24	-5.37	6.60	-.46	.872	-.35	.045	.004		
96	181	277	1973.7	1975.3	11.46	1.60	-6.14	12.75	-1.14	.875	-1.38	-.002	-.026		9/2-
96	182	278	1978.1	1978.1	10.83	4.36	-1.13	5.75	-.14	.877	C.00	UNSTABLE			
96	183	279	1980.7	1980.7	10.99	2.65	.26	8.52	.40	.879	C.00	UNSTABLE		D 7/2	
96	184	280	1983.3	1983.3	11.15	2.56	-1.00	8.78	-.22	.881	C.00	UNSTABLE			
96	185	281	1985.8	1985.8	11.32	2.48	-.84	9.03	.32	.884	C.00	UNSTABLE		H11/2	
96	186	282	1988.2	1988.2	11.48	2.40	-.68	9.28	-.29	.886	C.00	UNSTABLE			
96	187	283	1990.5	1990.5	11.64	2.31	-.52	9.52	.25	.888	C.00	UNSTABLE		H11/2	
96	188	284	1992.7	1992.7	11.80	2.23	-.36	9.77	-.37	.890	C.00	UNSTABLE			
96	189	285	1994.8	1994.8	11.97	2.15	-2.71	10.01	.17	.892	C.00	UNSTABLE		H11/2	
96	190	286	1996.9	1996.9	12.13	2.07	-3.12	10.25	-.44	.895	C.00	UNSTABLE			
96	191	287	1998.9	1998.9	9.96	1.95	-2.48	10.49	.10	.897	C.00	UNSTABLE		H11/2	
96	192	288	2004.2	2000.8	12.90	5.30	.53	7.34	2.89	.900	4.74	-.183	-.023		
96	193	289	2005.7	2002.6	13.28	1.47	.46	7.93	3.08	.902	4.28	-.180	-.023		5/2-
96	194	290	2008.0	2004.4	13.42	2.35	.61	9.72	3.08	.904	5.00	-.178	-.023		
96	195	291	2009.4	2006.1	13.56	1.34	.80	10.92	3.25	.907	4.70	-.176	-.031		11/2+
96	196	292	2011.4	2007.7	13.52	2.02	.77	10.26	3.11	.909	5.17	-.165	-.036		
96	197	293	2012.8	2009.2	13.68	1.42	1.17	11.26	3.55	.911	5.14	-.171	-.036		7/2-
96	198	294	2014.9	2010.6	13.83	2.04	1.52	10.80	3.54	.914	5.88	-.165	-.042		
96	199	295	2015.9	2012.0	13.98	1.01	1.42	11.99	3.73	.917	5.62	-.168	-.047		7/2-
96	200	296	2017.5	2013.3	14.13	1.65	1.34	11.52	3.45	.920	5.95	-.168	-.046		
97	112	209	1518.1	1516.5	-3.72	12.25	-11.16	-14.12	2.50	.865	2.70	.164	-.005	7/2+	
97	113	210	1528.9	1528.4	-3.58	10.84	-11.02	-12.51	2.40	.863	1.96	.152	-.016	7/2+ 11/2+	

Z	N	A	B.E.	BO	SP	SN	SA	CE	BAR	X	S	A2	A4	P	R
97	114	211	1541.0	1540.C	-3.34	12.05-10.78-12.47			2.35	.880	2.56	.146	-.C18	7/2+	
97	115	212	1551.7	1551.5	-3.16	10.71-10.55-11.92			2.47	.878	2.11	.136	-.C27	7/2+	7/2-
97	116	213	1563.4	1562.8	-2.96	11.71-10.45-12.69			2.44	.876	2.60	.126	-.C25	7/2+	
97	117	214	1573.7	1573.9	-2.78	10.35-10.41-11.15			2.56	.874	2.01	.113	-.C27	1/2+	9/2-
97	118	215	1584.7	1584.8	-4.26	11.02-10.74-11.65			2.18	.872	2.10	.106	-.C22	1/2+	
97	119	216	1594.9	1595.6	-2.54	10.14-10.58-10.59			2.44	.870	1.81	-.116	-.C16	5/2-	1/2+
97	120	217	1608.1	1606.2	-.26	13.26	-8.15-13.75		4.65	.868	4.39	-.C96	-.C11	5/2-	
97	121	218	1618.2	1616.6	-2.13	10.08	-7.96-10.38		5.16	.867	4.10	-.085	-.C10	3/2-	1/2-
97	122	219	1629.3	1626.6	-1.94	11.09	-7.65-11.09		5.53	.865	4.99	-.C67	-.C11	3/2-	
97	123	220	1639.5	1637.C	-1.74	10.17	-9.17	-9.93	6.46	.864	5.19	-.054	-.C15	3/2-	3/2-
97	124	221	1650.1	1646.9	-1.57	10.63	-9.23-10.15		6.70	.863	6.00	-.040	-.C16	9/2+	
97	125	222	1659.9	1656.7	-1.40	9.74	-9.22	-9.03	7.51	.861	5.97	C		113/2 P	1/2
97	126	223	1670.4	1666.3	-1.18	10.53	-8.93	-9.57	7.96	.860	7.03	C		113/2	
97	127	224	1677.9	1675.5	-.97	7.49-10.76	-6.32		6.83	.859	5.22	C		113/2 G	9/2
97	128	225	1687.0	1684.5	-.75	9.15-11.71	-7.76		6.21	.858	5.21	C		113/2	
97	129	226	1694.2	1693.3	-.53	7.23-11.53	-5.63		5.12	.856	3.44	C		113/2 G	9/2
97	130	227	1701.0	1702.C	-2.46	6.78-13.48	-4.97		2.43	.855	3.25	-.197	-.C07	7/2+	
97	131	228	1709.1	1710.5	.13	8.12-12.16	-3.96		2.52	.854	2.79	-.200	-.C05	7/2+	7/2+
97	132	229	1716.4	1718.9	.42	9.23	-9.36	-7.39	2.57	.853	3.06	.124	.C60	3/2-	
97	133	230	1726.4	1727.2	.67	8.03	-9.03	-5.99	2.86	.852	2.51	.117	.C56	3/2-	5/2-
97	134	231	1735.7	1735.3	.88	9.29	-8.53	-7.09	3.27	.852	3.58	.120	.C57	3/2-	
97	135	232	1743.5	1743.2	1.04	7.81	-8.24	-5.36	3.61	.851	3.36	.120	.C55	3/2-	1/2-
97	136	233	1752.4	1751.0	1.26	8.92	-8.26	-6.31	3.92	.850	4.30	.123	.C59	3/2-	
97	137	234	1760.0	1758.7	1.47	7.56	-8.12	-4.75	4.30	.850	4.06	.124	.C60	3/2-	5/2-
97	138	235	1768.5	1766.2	1.70	8.53	-8.10	-5.52	4.49	.849	4.80	.129	.C58	3/2-	
97	139	236	1775.8	1773.7	1.91	7.26	-7.99	-4.05	4.82	.849	4.51	.130	.C58	3/2-	3/2+
97	140	237	1783.9	1780.9	2.13	8.20	-7.68	-4.79	4.96	.848	5.21	.133	.C57	3/2-	
97	141	238	1790.9	1788.1	2.34	7.00	-7.73	-3.38	5.29	.848	4.89	.134	.C57	3/2-	5/2+
97	142	239	1798.7	1795.1	2.56	7.73	-7.76	-3.97	5.22	.848	5.35	.136	.C54	3/2-	
97	143	240	1805.2	1802.C	2.77	6.56	-7.79	-2.54	5.37	.848	4.84	.140	.C53	3/2-	7/2-
97	144	241	1812.6	1808.7	2.99	7.38	-7.71	-3.15	5.21	.847	5.20	.142	.C50	3/2-	
97	145	242	1818.8	1815.5	3.20	6.18	-7.66	-1.73	5.22	.847	4.53	.144	.C49	3/2-	5/2+
97	146	243	1826.0	1822.2	3.42	7.16	-7.46	-2.50	5.09	.847	4.92	.147	.C49	3/2-	
97	147	244	1831.9	1828.7	3.64	5.93	-7.28	-1.04	5.09	.847	4.21	.149	.C42	3/2-	1/2+
97	148	245	1838.8	1835.1	3.86	6.93	-7.08	-1.82	4.97	.847	4.61	.152	.C37	3/2-	
97	149	246	1844.7	1841.4	4.13	5.93	-6.63	-.42	5.22	.846	4.20	.155	.C35	7/2+	7/2+
97	150	247	1851.5	1847.6	4.34	6.78	-6.33	-1.17	5.19	.846	4.75	.156	.C33	7/2+	
97	151	248	1857.1	1853.7	4.54	5.60	-5.95	.23	5.35	.846	4.24	.158	.C29	7/2+	9/2-
97	152	249	1863.6	1859.6	4.74	6.46	-5.96	-.41	5.24	.846	4.73	.158	.C27	7/2+	
97	153	250	1868.8	1865.4	4.93	5.24	-5.88	1.01	5.26	.845	4.09	.158	.C24	7/2+	7/2+
97	154	251	1874.9	1871.1	5.13	6.06	-5.87	.41	4.98	.845	4.40	.159	.C21	7/2+	
97	155	252	1879.8	1876.7	5.28	4.92	-5.78	1.75	4.91	.845	3.64	.151	.C14	7/2+	11/2-
97	156	253	1885.7	1882.2	5.46	5.92	-5.55	.98	4.72	.840	4.06	.150	.C12	7/2+	
97	157	254	1890.5	1887.6	5.63	4.75	-5.36	2.35	4.68	.840	3.61	.147	.C07	7/2+	9/2+
97	158	255	1896.1	1892.8	5.81	5.68	-5.21	1.64	4.47	.831	3.72	.147	.C04	7/2+	
97	159	256	1900.6	1898.C	5.98	4.48	-5.09	3.04	4.38	.832	3.16	.146	-.C02	7/2+	1/2+
97	160	257	1906.1	1903.C	6.15	5.48	-4.91	2.27	4.19	.833	3.63	.146	-.C05	7/2+	

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
97	161	258	1910.5	1907.9	6.27	4.39	-4.61	3.54	4.23	.854	3.20	.148	-.014	7/2+	3/2+
97	162	259	1915.8	1912.8	6.44	5.30	-4.42	2.92	4.07	.854	3.65	.146	-.016	7/2+	
97	163	260	1920.1	1917.5	6.60	4.26	-4.21	4.14	4.19	.855	3.31	.142	-.022	7/2+	13/2-
97	164	261	1924.9	1922.1	6.42	4.83	-4.32	3.77	3.78	.856	3.41	.135	-.018	7/2+	
97	165	262	1928.7	1926.6	6.53	3.82	-4.42	4.94	3.65	.856	2.12	-.015	.006	5/2+	5/2+
97	166	263	1933.4	1931.0	6.84	4.66	-4.83	4.14	3.27	.859	2.66	.058	.026	7/2+	
97	167	264	1937.0	1935.3	6.95	3.66	-4.72	5.26	3.19	.860	1.82	.067	.003	7/2-	1/2+
97	168	265	1941.7	1939.5	7.16	4.71	-4.24	4.35	3.06	.861	2.32	.057	.010	7/2-	
97	169	266	1945.4	1943.7	7.35	3.64	-3.92	5.60	3.15	.862	1.84	.062	.006	7/2-	3/2+
97	170	267	1949.7	1947.7	7.55	4.36	-3.92	5.05	2.86	.863	2.15	.066	.004	7/2-	
97	171	268	1953.1	1951.6	7.71	3.31	-3.87	6.28	2.82	.865	1.57	.061	-.003	7/2-	3/2+
97	172	269	1957.1	1955.4	7.88	4.04	-3.82	5.74	2.41	.866	1.80	.059	-.007	7/2-	
97	173	270	1960.1	1959.1	8.02	3.04	-3.72	6.92	2.29	.867	1.23	.048	-.015	5/2-	1/2+
97	174	271	1963.9	1962.7	7.89	3.74	-3.67	6.40	1.76	.868	1.31	.051	-.018	7/2-	
97	175	272	1966.5	1966.3	7.43	2.60	-3.79	7.72	1.40	.870	.45	.043	-.023	5/2-	5/2+
97	176	273	1970.1	1969.7	8.69	3.60	-4.07	6.89	.92	.871	.45	.050	-.014	7/2-	
97	177	274	1972.5	1973.1	8.64	2.38	-4.57	8.27	.50	.873	-.51	.020	-.017	7/2+	7/2+
97	178	275	1975.8	1976.3	8.79	3.40	-5.02	7.42	.02	.875	-.47	0		113/2	
97	179	276	1977.9	1979.5	9.05	2.67	-5.62	8.93	-.53	.877	-1.53	.043	.003	7/2+	1/2+
97	180	277	1985.7	1982.6	13.57	7.75	1.32	3.37	3.52	.879	3.62	.259	.023	3/2+	
97	181	278	1983.0	1985.6	9.33	-2.64	-3.03	13.77	-1.56	.881	-2.10	-.007	-.034	5/2-	5/2-
97	182	279	1988.5	1988.5	10.40	5.43	-.64	6.04	.35	.883	0.00	UNSTABLE		113/2	
97	183	280	1991.3	1991.3	10.56	2.82	.74	7.94	.90	.885	0.00	UNSTABLE		113/2 D	3/2
97	184	281	1994.0	1994.0	10.73	2.73	-1.53	8.20	.28	.887	0.00	UNSTABLE		113/2	
97	185	282	1996.7	1996.7	10.89	2.64	-1.37	8.44	.83	.889	0.00	UNSTABLE		113/2 H11/2	
97	186	283	1999.2	1999.2	11.06	2.56	-1.21	8.69	.21	.891	0.00	UNSTABLE		113/2	
97	187	284	2001.7	2001.7	11.22	2.48	-1.05	8.94	.75	.893	0.00	UNSTABLE		113/2 H11/2	
97	188	285	2004.1	2004.1	11.38	2.39	-.89	9.18	.14	.895	0.00	UNSTABLE		113/2	
97	189	286	2006.4	2006.4	11.54	2.31	-.73	9.43	.69	.898	0.00	UNSTABLE		113/2 H11/2	
97	190	287	2008.6	2008.6	11.70	2.23	-.57	9.67	.38	.900	0.00	UNSTABLE		113/2	
97	191	288	2010.8	2010.8	11.86	2.15	-.41	9.91	.63	.902	0.00	UNSTABLE		113/2 H11/2	
97	192	289	2012.8	2012.8	8.62	2.07	-.25	10.15	.02	.904	0.00	UNSTABLE		113/2	
97	193	290	2017.0	2014.8	11.29	4.14	-.27	8.24	2.72	.906	2.55	.176	.036	7/2+	5/2-
97	194	291	2019.5	2016.7	11.49	2.55	-.08	10.63	2.76	.908	3.09	.140	.032	7/2+	
97	195	292	2020.9	2018.6	11.49	1.35	.18	11.95	2.82	.910	2.54	.181	.028	7/2+	7/2-
97	196	293	2023.3	2020.3	11.90	2.42	.38	11.23	2.89	.913	3.12	.185	.024	7/2+	
97	197	294	2024.9	2022.0	12.06	1.58	.77	12.24	3.34	.916	4.43	-.171	-.035	5/2-	7/2-
97	198	295	2027.1	2023.6	12.22	2.20	.91	11.45	3.35	.918	5.15	-.166	-.044	5/2-	
97	199	296	2028.3	2025.1	12.36	1.17	.83	12.67	3.54	.920	4.54	-.167	-.046	5/2-	7/2-
97	200	297	2030.1	2026.6	12.54	1.80	.74	12.09	3.31	.923	5.31	-.166	-.045	5/2-	
98	114	212	1539.0	1536.8	-2.00	12.25	-11.11	-15.76	2.70	.851	3.81	.146	-.022		
98	115	213	1549.9	1548.5	-1.77	10.94	-10.68	-14.23	2.83	.869	3.37	.138	-.029		7/2-
98	116	214	1561.8	1560.0	-1.58	11.89	-10.80	-14.99	2.75	.867	3.82	.129	-.027		
98	117	215	1572.3	1571.3	-1.41	10.52	-10.81	-13.42	2.81	.865	3.17	.115	-.029		5/2-
98	118	216	1583.5	1582.5	-1.23	11.20	-11.12	-13.90	2.39	.883	3.23	.109	-.024		
98	119	217	1593.6	1593.5	-1.27	10.10	-11.19	-12.60	2.37	.881	2.55	-.112	-.015		1/2+

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
98	120	218	1607.1	1604.3	-1.08	13.45-10.23-14.02			4.55	.879	5.20	-.100	-.012		
98	121	219	1617.4	1614.9	-.78	10.38 -8.27-14.59			5.14	.878	4.95	-.082	-.011		1/2-
98	122	220	1628.8	1625.4	-.54	11.33 -7.94-13.40			5.53	.876	5.87	-.065	-.012		
98	123	221	1639.2	1635.8	-.31	10.40 -9.48-12.28			6.46	.874	6.10	-.053	-.015		3/2-
98	124	222	1650.0	1645.9	-.07	10.86 -9.51-12.54			6.72	.872	6.92	-.037	-.015		
98	125	223	1660.0	1655.9	.18	9.99 -9.49-11.48			7.56	.871	6.94	C		P	1/2
98	126	224	1670.8	1665.8	.39	10.74 -9.20-12.05			8.02	.869	8.00	C			
98	127	225	1678.5	1675.1	.60	7.70-11.08 -8.80			6.89	.868	6.19	C		G	5/2
98	128	226	1687.8	1684.3	.81	9.36-12.03-10.24			6.26	.867	6.18	C			
98	129	227	1695.3	1693.4	1.03	7.44-11.86 -8.10			5.17	.866	4.41	C		G	9/2
98	130	228	1704.4	1702.3	3.37	9.12-11.67 -9.57			4.62	.865	4.47	C			
98	131	229	1710.2	1711.0	1.05	5.80-12.88 -6.04			2.18	.864	3.24	-.200	-.007		7/2+
98	132	230	1719.6	1719.6	1.26	9.43-12.15 -7.96			2.23	.863	3.11	.105	.048		
98	133	231	1727.8	1728.0	1.43	8.20 -9.49 -6.19			2.48	.862	2.81	.114	.051		3/2+
98	134	232	1737.4	1736.4	1.67	9.54 -8.88 -8.94			2.92	.862	4.17	.111	.058		
98	135	233	1745.3	1744.5	1.83	7.97 -8.69 -7.22			3.22	.861	3.77	.118	.057		1/2-
98	136	234	1754.4	1752.5	2.03	9.12 -8.66 -8.13			3.53	.860	4.70	.121	.057		
98	137	235	1762.2	1760.4	2.22	7.75 -8.55 -6.56			3.89	.860	4.46	.123	.058		5/2-
98	138	236	1770.9	1768.2	2.43	8.73 -8.53 -7.34			4.09	.859	5.19	.128	.056		
98	139	237	1778.4	1775.8	2.63	7.45 -8.42 -5.83			4.42	.859	4.90	.130	.056		3/2+
98	140	238	1786.8	1783.3	2.83	8.40 -8.31 -6.58			4.56	.858	5.59	.132	.055		
98	141	239	1794.0	1790.6	3.03	7.20 -8.17 -5.14			4.89	.858	5.28	.135	.055		5/2+
98	142	240	1801.9	1797.8	3.24	7.94 -8.19 -5.69			4.64	.857	5.74	.136	.052		
98	143	241	1808.7	1804.9	3.45	6.77 -8.22 -4.28			5.00	.857	5.23	.141	.051		7/2-
98	144	242	1816.3	1811.8	3.66	7.60 -8.13 -4.90			4.86	.857	5.61	.143	.047		
98	145	243	1822.7	1818.8	3.88	6.39 -8.10 -3.46			4.89	.857	4.94	.146	.045		5/2+
98	146	244	1830.1	1825.7	4.10	7.39 -7.87 -4.24			4.79	.856	5.35	.146	.041		
98	147	245	1836.2	1832.4	4.33	6.16 -7.68 -2.78			4.83	.856	4.67	.151	.037		1/2+
98	148	246	1843.5	1839.0	4.73	7.32 -7.29 -3.57			4.92	.856	5.34	.154	.035		
98	149	247	1849.6	1845.5	4.83	6.03 -6.97 -2.15			5.08	.857	4.82	.156	.032		7/2+
98	150	248	1856.6	1851.9	5.05	7.00 -6.68 -2.90			5.09	.857	5.41	.157	.029		
98	151	249	1862.4	1858.1	5.27	5.82 -6.52 -1.52			5.28	.857	4.94	.159	.026		5/2-
98	152	250	1869.0	1864.3	5.47	6.66 -6.42 -2.16			5.19	.857	5.44	.159	.024		
98	153	251	1874.5	1870.3	5.69	5.46 -6.36 -1.76			5.24	.857	4.84	.158	.020		7/2+
98	154	252	1880.8	1876.2	5.89	6.26 -6.36 -1.37			4.98	.856	5.18	.159	.019		
98	155	253	1885.9	1881.9	6.12	5.15 -6.26 -1.07			4.95	.858	4.48	.152	.011		11/2-
98	156	254	1892.0	1887.6	6.32	6.12 -6.01 -1.87			4.78	.859	4.92	.151	.008		
98	157	255	1897.0	1893.2	6.54	4.96 -5.81 .47			4.79	.859	4.31	.148	.002		5/2+
98	158	256	1902.9	1898.6	6.74	5.88 -5.67 -.27			4.60	.860	4.75	.148	.000		
98	159	257	1907.6	1903.9	6.97	4.71 -5.54 1.08			4.57	.860	4.17	.148	-.006		1/2+
98	160	258	1913.3	1909.2	7.15	5.66 -5.36 .30			4.38	.861	4.65	.147	-.010		
98	161	259	1917.9	1914.3	7.43	4.68 -5.01 1.66			4.53	.862	4.35	.150	-.018		3/2+
98	162	260	1923.4	1919.3	7.62	5.49 -4.83 1.00			4.38	.862	4.85	.150	-.019		
98	163	261	1927.9	1924.2	7.82	4.46 -4.64 2.17			4.53	.863	4.50	.145	-.025		13/2-
98	164	262	1932.9	1929.0	7.97	4.98 -4.78 1.62			4.09	.864	4.57	.139	-.022		
98	165	263	1936.7	1933.7	8.02	3.86 -5.03 2.91			3.84	.865	3.66	.130	-.021		5/2+
98	166	264	1941.5	1938.3	8.14	4.78 -5.26 2.16			3.40	.866	3.74	.123	-.017		

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
SE	167	265	1945.3	1942.7	8.28	3.80	-5.16	3.30	3.29	.867	2.68	.067	.002		1/2+
SE	168	266	1950.2	1947.1	8.45	4.86	-4.63	2.18	3.16	.868	3.16	.057	.008		
SE	169	267	1954.0	1951.4	8.63	3.81	-4.38	3.42	3.26	.869	2.69	.063	.005		3/2+
SE	170	268	1958.6	1955.6	8.81	4.55	-4.33	2.87	3.00	.870	3.05	.062	-.001		
SE	171	269	1962.0	1959.7	9.00	3.50	-4.27	4.09	2.96	.871	2.46	.059	-.006		3/2+
SE	172	270	1966.3	1963.7	9.18	4.22	-4.22	3.53	2.56	.872	2.70	.057	-.010		
SE	173	271	1969.5	1967.6	9.36	3.23	-4.14	4.69	2.46	.874	2.14	.048	-.020		1/2+
SE	174	272	1973.4	1971.4	9.53	3.92	-4.09	4.35	1.95	.876	2.24	.050	-.019		
SE	175	273	1976.2	1975.1	9.70	2.77	-4.23	6.31	1.58	.877	1.37	.044	-.024		5/2+
SE	176	274	1979.9	1978.7	9.87	3.77	-4.34	4.79	1.11	.879	1.41	.049	-.017		
SE	177	275	1982.5	1982.2	10.04	2.55	-4.84	6.06	.70	.880	.38	.020	-.016		7/2+
SE	178	276	1986.1	1985.6	10.22	3.58	-3.61	5.11	.23	.882	.44	C			
SE	179	277	1988.3	1989.0	10.33	2.19	-3.84	6.66	-.36	.884	-.47	.071	.022		1/2+
SE	180	278	1996.0	1992.2	10.35	7.76	.67	5.52	3.54	.885	4.24	.254	.025		
SE	181	279	1993.7	1995.4	10.69	-2.30	-3.45	11.78	-1.36	.887	-1.42	-.002	-.025		5/2-
SE	182	280	1998.4	1998.4	9.98	4.72	-1.96	4.56	-.32	.889	C.CC	UNSTABLE			
SE	183	281	2001.4	2001.4	10.14	2.98	-.58	10.65	.23	.890	C.CC	UNSTABLE		D 3/2.	
SE	184	282	2004.3	2004.3	10.31	2.69	-2.04	10.40	-.38	.892	C.CC	UNSTABLE			
SE	185	283	2007.1	2007.1	10.47	2.81	-1.89	11.19	.17	.895	C.CC	UNSTABLE		H11/2	
SE	186	284	2009.8	2009.8	10.63	2.72	-1.73	8.11	-.44	.897	C.CC	UNSTABLE			
SE	187	285	2012.5	2012.5	10.79	2.64	-1.57	8.36	.11	.899	C.CC	UNSTABLE		H11/2	
SE	188	286	2015.0	2015.0	10.96	2.55	-1.42	8.60	-.49	.900	C.CC	UNSTABLE			
SE	189	287	2017.5	2017.5	11.12	2.47	-1.26	8.85	.05	.902	C.CC	UNSTABLE		H11/2	
SE	190	288	2019.9	2019.9	11.28	2.39	-1.10	9.09	-.55	.904	C.CC	UNSTABLE			
SE	191	289	2022.2	2022.2	11.44	2.31	-.94	9.33	.00	.906	C.CC	UNSTABLE		H11/2	
SE	192	290	2024.4	2024.4	11.59	2.23	-.78	9.57	-.60	.908	C.CC	UNSTABLE			
SE	193	291	2029.4	2026.6	12.40	4.95	2.17	9.67	2.75	.910	3.36	.246	-.022		1/2-
SE	194	292	2032.0	2028.6	12.52	2.67	-.46	9.20	2.75	.912	3.51	.199	.020		
SE	195	293	2033.7	2030.6	12.86	1.70	-.24	10.42	3.01	.915	3.21	.189	.020		7/2-
SE	196	294	2036.3	2032.5	13.04	2.59	.00	9.51	3.10	.917	3.87	.189	.020		
SE	197	295	2037.8	2034.4	12.87	1.42	.07	10.85	3.23	.919	3.42	.189	.017		5/2+
SE	198	296	2040.1	2036.1	13.06	2.39	.45	10.03	3.29	.922	4.03	.189	.016		
SE	199	297	2041.4	2037.8	13.11	1.22	.25	11.37	3.37	.924	5.29	-.165	-.047		7/2-
SE	200	298	2043.6	2039.4	13.54	2.24	.44	10.53	3.42	.926	4.15	.186	.013		
SS	116	215	1556.1	1556.8	-3.68	12.10	-11.14	-13.79	2.73	.898	3.29	.133	-.027	3/2-	
SS	117	216	1568.8	1568.4	-3.49	10.71	-11.13	-12.22	2.75	.896	2.60	.118	-.029	1/2-	5/2-
SS	118	217	1580.2	1579.8	-3.28	11.40	-11.44	-12.75	2.30	.894	2.65	.113	-.023	1/2-	
SS	119	218	1592.3	1591.0	-1.35	12.04	-9.76	-13.21	3.99	.892	3.54	.095	-.022	1/2-	13/2+
SS	120	219	1602.1	1602.0	-4.99	9.80	-10.97	-10.81	2.30	.890	2.49	-.100	-.013	7/2+	
SS	121	220	1614.6	1612.9	-2.85	12.52	-8.59	-11.52	4.81	.888	4.19	-.085	-.012	1/2-	1/2-
SS	122	221	1626.1	1623.6	-2.66	11.52	-10.35	-12.27	5.17	.886	5.08	-.067	-.013	1/2-	
SS	123	222	1636.7	1634.1	-2.46	10.60	-9.81	-11.10	6.08	.885	5.28	-.054	-.015	1/2-	3/2-
SS	124	223	1647.8	1644.5	-2.27	11.05	-9.85	-11.31	6.30	.883	6.10	-.042	-.017	7/2-	
SS	125	224	1657.9	1654.7	-2.09	10.17	-9.84	-10.19	7.10	.882	6.05	C		113/2 P	1/2
SS	126	225	1668.9	1664.8	-1.88	10.95	-9.52	-10.73	7.55	.880	7.11	C		113/2	
SS	127	226	1676.8	1674.3	-1.66	7.92	-11.34	-7.48	6.41	.879	5.30	C		113/2 G	5/2

Z	N	A	R.E.	BC	SP	SN	SA	QB	BAR	X	S	A2	A4	P	N
99	128	227	1686.4	1683.8	-1.45	9.57-12.29	-8.92	5.79	.878	5.30	C			113/2	
99	129	228	1694.0	1693.0	-1.23	7.65-12.13	-6.79	4.70	.876	3.53	C			113/2	G 9/2
99	130	229	1703.4	1702.1	-1.02	9.34-11.94	-8.26	4.14	.875	3.55	C			113/2	
99	131	230	1710.9	1711.1	.69	7.51-11.65	-6.23	3.20	.874	2.71	.C34	.C42	13/2+	1/2+	
99	132	231	1720.8	1719.9	1.23	9.97 -8.46	-8.56	3.58	.873	3.85	.C67	.C45	3/2-		
99	133	232	1727.6	1728.5	-.19	6.78 -9.80	-5.14	2.19	.871	2.23	.115	.C54	7/2+	5/2-	
99	134	233	1737.3	1737.0	-.03	9.70 -9.33	-7.93	2.59	.870	3.23	.122	.C54	7/2+		
99	135	234	1745.5	1745.4	.20	8.21 -9.16	-6.58	2.93	.870	3.02	.116	.C57	7/2+	1/2-	
99	136	235	1754.9	1753.6	.41	9.32 -9.13	-7.50	3.24	.869	3.89	.126	.C55	7/2+		
99	137	236	1762.8	1761.7	.61	7.95 -8.98	-5.95	3.59	.868	3.63	.126	.C56	7/2+	5/2-	
99	138	237	1771.8	1769.7	.84	8.96 -8.94	-6.76	3.82	.868	4.40	.132	.C54	7/2+		
99	139	238	1779.4	1777.5	1.04	7.66 -8.84	-5.27	4.15	.867	4.12	.132	.C55	7/2+	3/2+	
99	140	239	1788.0	1785.2	1.27	8.63 -8.74	-6.05	4.31	.867	4.80	.137	.C52	7/2+		
99	141	240	1795.4	1792.7	1.48	7.40 -8.60	-4.61	4.65	.866	4.51	.136	.C52	7/2+	5/2+	
99	142	241	1803.6	1800.1	1.71	8.17 -8.62	-5.19	4.63	.866	5.00	.141	.C46	7/2+		
99	143	242	1810.6	1807.4	1.92	6.98 -8.64	-3.79	4.80	.866	4.51	.143	.C46	7/2+	7/2-	
99	144	243	1818.4	1814.5	2.14	7.82 -8.55	-4.43	4.69	.865	4.51	.146	.C44	7/2+		
99	145	244	1825.0	1821.7	2.36	6.61 -8.50	-2.99	4.74	.865	4.27	.146	.C42	7/2+	5/2+	
99	146	245	1832.6	1828.8	2.60	7.62 -8.26	-3.79	4.69	.865	4.72	.151	.C38	7/2+		
99	147	246	1839.2	1835.7	2.97	6.53 -7.91	-2.38	4.91	.865	4.28	.152	.C36	3/2-	1/2+	
99	148	247	1846.6	1842.5	3.10	7.46 -7.61	-3.16	4.94	.865	4.87	.156	.C32	3/2-		
99	149	248	1852.9	1849.2	3.31	6.25 -7.30	-1.72	5.12	.865	4.39	.157	.C30	3/2-	7/2+	
99	150	249	1860.1	1855.7	3.52	7.20 -7.02	-2.46	5.14	.865	4.99	.159	.C28	3/2-		
99	151	250	1866.1	1862.2	3.72	6.03 -6.92	-1.07	5.34	.865	4.54	.160	.C25	3/2-	5/2-	
99	152	251	1873.0	1868.5	3.92	6.86 -6.84	-1.69	5.26	.865	5.06	.161	.C23	3/2-		
99	153	252	1879.6	1874.7	4.11	5.65 -6.79	-.28	5.32	.865	4.47	.159	.C20	3/2-	7/2+	
99	154	253	1885.1	1880.8	4.30	6.45 -6.80	-.86	5.06	.866	4.81	.157	.C18	3/2-		
99	155	254	1890.4	1886.8	4.47	5.32 -6.73	.47	5.02	.866	4.10	.154	.C11	3/2-	11/2-	
99	156	255	1896.7	1892.6	4.65	6.30 -6.49	-.25	4.85	.866	4.53	.153	.C08	3/2-		
99	157	256	1901.8	1898.3	4.83	5.14 -6.26	1.12	4.85	.867	3.92	.150	.C04	3/2-	9/2+	
99	158	257	1907.9	1904.0	5.01	6.06 -6.12	.42	4.66	.867	4.36	.150	.C01	3/2-		
99	159	258	1912.8	1909.5	5.18	4.88 -5.99	1.82	4.62	.868	3.76	.150	-.C05	3/2-	1/2+	
99	160	259	1918.8	1914.9	5.55	6.04 -5.63	1.13	4.62	.868	4.40	.152	-.C06	1/2+		
99	161	260	1923.6	1920.2	5.71	4.83 -5.28	2.40	4.74	.869	4.00	.153	-.C11	1/2+	3/2+	
99	162	261	1929.3	1925.4	5.84	5.63 -5.14	1.83	4.56	.869	4.46	.153	-.C12	1/2+		
99	163	262	1933.7	1930.5	5.82	4.44 -5.09	3.21	4.50	.870	4.00	.147	-.C24	3/2-	13/2-	
99	164	263	1938.9	1935.4	5.99	5.16 -5.23	2.70	4.35	.871	4.08	.140	-.C22	3/2-		
99	165	264	1942.9	1940.3	6.16	4.03 -5.47	3.98	3.78	.872	3.16	.132	-.C21	3/2-	9/2+	
99	166	265	1947.5	1945.1	6.32	4.95 -5.36	3.21	3.35	.873	3.25	.127	-.C17	3/2-		
99	167	266	1951.6	1949.7	6.28	3.76 -5.41	4.55	3.02	.874	1.96	.C67	.C03	7/2+	1/2+	
99	168	267	1956.6	1954.3	6.45	5.05 -5.02	3.42	2.89	.875	2.47	.C76	-.C00	7/2+		
99	169	268	1960.6	1958.8	6.64	4.00 -4.68	4.47	3.00	.876	2.01	.C75	-.C01	7/2+	3/2+	
99	170	269	1965.4	1963.1	6.80	4.71 -4.68	3.93	2.73	.878	2.34	.C68	.C00	7/2+		
99	171	270	1969.0	1967.4	6.97	3.66 -4.66	5.17	2.70	.879	1.73	.C63	-.C05	7/2+	3/2+	
99	172	271	1973.4	1971.5	7.14	4.39 -4.63	4.63	2.30	.880	1.57	.C62	-.C08	7/2+		
99	173	272	1977.0	1975.6	7.48	3.57 -4.37	5.62	2.37	.881	2.05	.216	.C37	3/2-	5/2+	
99	174	273	1981.7	1979.6	8.29	4.73 -3.68	4.47	2.51	.883	2.76	.222	.C36	3/2-		

Z	N	A	B.E.	BC	SP	SA	SA	CE	EAR	X	S	A2	A4	P	N
99	175	274	1984.0	1983.5	7.78	2.25	-4.48	7.14	1.45	.884	.75	.051	-.022	3/2+	1/2+
99	176	275	1987.8	1987.2	7.82	3.81	-4.41	5.91	.86	.885	.68	.061	-.015	7/2+	
99	177	276	1990.4	1990.9	7.91	2.64	-4.37	7.35	.37	.887	-.43	.025	-.016	5/2-	7/2+
99	178	277	1994.1	1994.5	8.07	3.74	-4.23	6.33	-.10	.888	-.35	C		113/2	
99	179	278	2000.8	1998.0	12.51	6.63	.02	3.61	3.58	.890	3.15	.244	.028	1/2+	7/2+
99	180	279	2004.7	2001.4	8.70	3.95	.57	2.24	2.50	.891	3.64	.247	.026	1/2+	
99	181	280	2002.2	2004.8	8.50	-2.49	-3.99	12.80	-1.76	.893	-.82	.025	-.068	1/2-	5/2-
99	182	281	2011.3	2008.0	12.85	9.07	-2.68	1.73	3.47	.895	3.57	.255	.021	1/2+	
99	183	282	2013.9	2011.1	12.51	2.64	2.60	7.98	3.52	.897	3.02	.270	.015	1/2+	5/2-
99	184	283	2017.5	2014.2	13.21	3.60	.77	7.14	3.45	.898	3.54	.282	.010	1/2+	
99	185	284	2017.2	2017.2	10.05	-.36	-2.40	11.22	.68	.900	0.00	UNSTABLE		113/2	H11/2
99	186	285	2020.1	2020.1	10.21	2.89	-2.25	7.53	.07	.902	0.00	UNSTABLE		113/2	
99	187	286	2022.9	2022.9	10.37	2.80	-2.09	7.78	.62	.903	0.00	UNSTABLE		113/2	H11/2
99	188	287	2025.6	2025.6	10.54	2.72	-1.93	8.02	.02	.905	0.00	UNSTABLE		113/2	
99	189	288	2028.2	2028.2	10.70	2.63	-1.78	8.27	.57	.907	0.00	UNSTABLE		113/2	H11/2
99	190	289	2030.8	2030.8	10.86	2.55	-1.62	8.51	-.02	.909	0.00	UNSTABLE		113/2	
99	191	290	2033.2	2033.2	11.02	2.47	-1.47	8.76	.52	.910	0.00	UNSTABLE		113/2	H11/2
99	192	291	2038.5	2035.6	14.03	5.24	1.55	9.12	2.78	.913	2.84	.244	.021	1/2+	
99	193	292	2040.5	2037.5	11.09	2.00	1.40	10.32	3.03	.915	2.72	.185	.026	3/2-	5/2-
99	194	293	2043.4	2040.1	11.33	2.92	2.25	9.38	3.13	.917	3.34	.186	.022	3/2-	
99	195	294	2045.1	2042.3	11.32	1.69	-.20	10.78	3.22	.919	2.86	.187	.021	3/2-	7/2-
99	196	295	2047.8	2044.3	11.48	2.76	-.00	10.03	3.32	.921	3.51	.188	.019	3/2-	
99	197	296	2049.4	2046.3	11.65	1.58	.23	11.37	3.46	.923	3.07	.189	.016	3/2-	5/2+
99	198	297	2052.0	2048.2	11.80	2.55	.36	10.56	3.52	.925	3.65	.188	.015	3/2-	
99	199	298	2053.3	2050.1	11.98	1.40	.17	11.87	3.63	.927	3.23	.185	.013	3/2-	1/2+
99	200	299	2055.7	2051.8	12.12	2.37	.34	11.06	3.66	.929	3.82	.187	.012	3/2-	
100	118	218	1578.3	1576.6	-1.95	11.58	-11.81	-14.95	2.66	.904	3.87	.115	-.027		
100	119	219	1590.5	1588.1	-1.78	12.20	-10.13	-15.39	4.25	.902	4.70	.097	-.024		13/2+
100	120	220	1602.3	1599.3	.21	11.80	-9.52	-16.69	4.37	.900	5.33	-.096	-.013		
100	121	221	1613.1	1610.4	-1.54	10.77	-8.85	-13.81	4.90	.899	5.08	-.082	-.012		1/2-
100	122	222	1624.8	1621.3	-1.28	11.78	-10.53	-14.57	5.30	.897	6.02	-.064	-.013		
100	123	223	1635.7	1632.1	-1.05	10.84	-10.07	-13.43	6.23	.895	6.26	-.053	-.015		3/2-
100	124	224	1647.0	1642.7	-.80	11.29	-10.11	-13.68	6.47	.893	7.08	-.038	-.015		
100	125	225	1657.4	1653.1	-.55	10.42	-10.09	-12.61	7.31	.892	7.10	C		P	1/2
100	126	226	1668.5	1663.4	-.34	11.16	-9.79	-13.16	7.76	.890	8.16	C			
100	127	227	1676.7	1673.2	-.13	8.13	-11.64	-9.92	6.62	.889	8.35	C		G	5/2
100	128	228	1686.5	1682.8	.08	9.78	-12.60	-11.35	5.95	.888	8.34	C			
100	129	229	1694.3	1692.3	.29	7.87	-12.44	-9.23	4.90	.886	4.57	C		G	5/2
100	130	230	1703.9	1701.6	.50	9.54	-12.25	-10.69	4.34	.885	4.64	C			
100	131	231	1711.5	1710.7	.62	7.63	-12.06	-8.57	3.31	.884	3.66	.034	.042		1/2+
100	132	232	1721.7	1719.7	.85	10.19	-10.99	-10.87	3.71	.883	4.97	.093	.048		
100	133	233	1728.6	1728.6	.98	6.91	-9.87	-7.36	2.25	.882	1.83	C		G	5/2
100	134	234	1738.2	1737.3	.84	9.55	-9.75	-9.10	2.30	.881	3.59	.117	.050		
100	135	235	1746.6	1745.9	1.04	8.40	-9.55	-8.47	2.62	.880	3.56	.111	.057		1/2-
100	136	236	1756.1	1754.3	1.22	9.50	-9.58	-9.39	2.91	.879	4.35	.122	.054		
100	137	237	1764.2	1762.6	1.42	8.15	-9.40	-7.83	3.26	.878	4.13	.122	.056		5/2-

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
1CC	138	238	1773.4	1770.8	1.60	9.15	-9.37	-8.63	3.47	.878	4.81	.130	.052		
1CC	139	239	1781.2	1778.8	1.80	7.85	-9.27	-7.11	3.75	.877	4.52	.131	.053		3/2+
1CC	140	240	1790.1	1786.7	2.00	8.83	-9.16	-7.89	3.97	.876	5.15	.137	.050		
1CC	141	241	1797.6	1794.4	2.20	7.60	-9.02	-6.43	4.30	.876	4.90	.138	.050		5/2+
1CC	142	242	1806.0	1802.0	2.41	8.38	-9.04	-7.02	4.29	.875	5.39	.142	.047		
1CC	143	243	1813.2	1809.5	2.61	7.18	-9.06	-5.58	4.47	.875	4.90	.143	.046		7/2-
1CC	144	244	1821.3	1816.8	2.83	8.04	-8.96	-6.24	4.35	.874	5.31	.147	.041		
1CC	145	245	1828.1	1824.2	3.04	6.82	-8.91	-4.77	4.46	.874	4.68	.145	.038		5/2+
1CC	146	246	1836.0	1831.5	3.36	7.93	-8.57	-5.60	4.53	.874	5.25	.152	.035		
1CC	147	247	1842.7	1838.6	3.52	6.69	-8.27	-4.12	4.71	.874	4.80	.154	.033		1/2+
1CC	148	248	1850.4	1845.6	3.74	7.68	-7.97	-4.89	4.78	.873	5.42	.157	.025		
1CC	149	249	1856.8	1852.4	3.96	6.46	-7.67	-3.45	4.99	.873	4.98	.158	.027		7/2+
1CC	150	250	1864.2	1859.2	4.17	7.41	-7.58	-4.19	5.04	.873	5.61	.160	.024		
1CC	151	251	1870.5	1865.8	4.39	6.24	-7.37	-2.80	5.26	.873	5.15	.161	.022		5/2-
1CC	152	252	1877.6	1872.3	4.59	7.07	-7.30	-3.42	5.20	.873	5.73	.161	.015		
1CC	153	253	1883.4	1878.7	4.81	5.67	-7.25	-2.01	5.25	.874	5.17	.155	.016		7/2+
1CC	154	254	1890.1	1885.0	5.01	6.65	-7.27	-2.55	5.05	.874	5.53	.157	.014		
1CC	155	255	1895.7	1891.2	5.27	5.58	-7.15	-1.33	5.08	.874	4.92	.155	.007		11/2-
1CC	156	256	1902.2	1897.2	5.48	6.51	-6.90	-2.03	4.94	.875	5.35	.153	.004		
1CC	157	257	1907.5	1903.1	5.70	5.37	-6.68	-.69	4.98	.875	4.83	.151	-.001		5/2+
1CC	158	258	1913.8	1908.5	5.91	6.27	-6.53	-1.40	4.33	.875	5.31	.151	-.004		
1CC	159	259	1919.2	1914.6	6.39	5.35	-6.14	-.14	5.08	.876	5.00	.152	-.008		1/2+
1CC	160	260	1925.3	1920.2	6.45	6.10	-5.92	-.81	4.97	.876	5.54	.153	-.010		
1CC	161	261	1930.3	1925.7	6.67	5.05	-5.58	.42	5.14	.877	5.18	.154	-.014		3/2+
1CC	162	262	1936.1	1931.1	6.86	5.82	-5.42	-.15	4.97	.878	5.66	.154	-.016		
1CC	163	263	1940.8	1936.3	7.07	4.65	-5.45	1.20	4.94	.875	5.25	.150	-.028		13/2-
1CC	164	264	1946.1	1941.5	7.22	5.30	-5.64	.71	4.48	.875	5.33	.144	-.026		
1CC	165	265	1950.3	1946.5	7.38	4.18	-5.92	1.99	4.15	.880	4.40	.136	-.025		5/2+
1CC	166	266	1955.4	1951.5	7.52	5.10	-5.80	1.22	3.73	.881	4.47	.132	-.022		
1CC	167	267	1955.3	1956.3	7.68	3.92	-5.75	2.57	3.35	.882	3.40	.116	-.018		3/2+
1CC	168	268	1964.3	1961.0	7.69	5.06	-5.47	1.54	3.09	.883	3.41	.078	-.004		
1CC	169	269	1968.5	1965.7	7.86	4.17	-5.11	2.55	3.20	.884	2.92	.071	-.002		3/2+
1CC	170	270	1973.4	1970.2	8.05	4.91	-5.08	1.80	2.98	.885	3.25	.072	-.004		
1CC	171	271	1977.2	1974.7	8.23	3.84	-5.05	3.03	2.94	.886	2.65	.061	-.008		3/2+
1CC	172	272	1981.8	1979.0	8.41	4.57	-5.03	2.45	2.55	.887	2.94	.055	-.011		
1CC	173	273	1985.4	1983.2	8.41	3.57	-4.96	3.64	2.45	.888	2.38	.051	-.021		1/2+
1CC	174	274	1990.3	1987.4	8.61	4.93	-4.25	2.62	2.63	.885	2.48	.222	.034		
1CC	175	275	1992.9	1991.4	8.94	2.58	-4.89	5.11	1.73	.850	1.74	.052	-.023		1/2+
1CC	176	276	1997.0	1995.4	9.20	4.07	-4.74	4.82	1.23	.852	1.75	.055	-.015		
1CC	177	277	1999.7	1999.2	9.28	2.72	-4.79	5.16	.66	.853	.55	.023	-.016		7/2+
1CC	178	278	2003.6	2003.0	9.46	3.91	-4.64	4.05	.20	.855	.60	C			
1CC	179	279	2006.2	2006.7	5.41	2.58	-4.61	5.54	-.33	.856	-.43	.044	-.005		1/2+
1CC	180	280	2014.2	2010.2	9.53	8.07	-.12	4.37	3.56	.858	4.28	.246	.027		
1CC	181	281	2012.2	2013.7	10.02	-2.00	-4.31	10.65	-1.38	.859	-1.31	-.001	-.022		5/2-
1CC	182	282	2021.1	2017.1	9.84	8.89	-3.18	-.33	3.51	.501	4.15	.251	.023		
1CC	183	283	2023.9	2020.4	9.96	2.76	1.88	6.21	3.52	.502	3.58	.261	.015		5/2-
1CC	184	284	2027.6	2023.7	10.08	3.72	.87	5.37	3.41	.504	4.04	.265	.016		

Z	N	A	B.E.	BC	SP	SN	SA	CE	BAR	X	S	A2	A4	P	N
100	185	285	2026.8	2026.9	9.63	-0.80	-2.91	10.05	.03	.905	C.CC	UNSTABLE			H11/2
100	186	286	2029.9	2029.9	9.80	3.05	-2.76	9.69	-.57	.907	C.CC	UNSTABLE			
100	187	287	2032.8	2032.8	9.96	2.96	-2.60	10.48	-.01	.908	C.CC	UNSTABLE			H11/2
100	188	288	2035.7	2035.7	10.12	2.88	-2.45	10.18	-.61	.909	C.CC	UNSTABLE			
100	189	289	2038.5	2038.5	10.28	2.75	-2.29	10.97	-.06	.911	C.CC	UNSTABLE			H11/2
100	190	290	2041.2	2041.2	10.44	2.71	-2.14	10.46	-.65	.912	C.CC	UNSTABLE			
100	191	291	2046.8	2046.8	13.59	5.61	1.00	8.32	2.85	.916	2.92	.244	.021		3/2+
100	192	292	2050.0	2046.4	11.54	3.20	1.81	7.32	2.95	.917	3.84	.178	.025		
100	193	293	2052.0	2048.8	11.51	1.97	1.48	8.78	3.01	.919	3.27	.182	.025		7/2-
100	194	294	2055.1	2051.2	11.68	3.09	2.34	7.79	3.12	.921	4.05	.165	.031		
100	195	295	2057.1	2053.5	12.00	2.01	-.60	9.12	3.39	.923	3.56	.192	.016		7/2-
100	196	296	2060.0	2055.7	12.16	2.92	-.36	8.33	3.50	.925	4.22	.192	.015		
100	197	297	2061.7	2057.9	12.33	1.74	-.31	9.67	3.65	.927	3.81	.192	.012		5/2+
100	198	298	2064.4	2059.9	12.48	2.71	-.20	8.87	3.71	.928	4.42	.191	.012		
100	199	299	2066.0	2061.9	12.65	1.56	-.05	10.17	3.84	.930	3.95	.191	.010		1/2+
100	200	300	2068.5	2063.8	12.81	2.52	.08	9.38	3.87	.932	4.58	.185	.005		
101	120	221	1598.5	1556.2	-3.83	13.65	-10.07	-15.35	4.15	.905	4.54	.092	-.020	7/2-	
101	121	222	1609.5	1607.5	-3.58	11.02	-11.09	-12.52	4.71	.908	4.27	-.082	-.012	7/2+	1/2-
101	122	223	1621.5	1618.7	-3.38	11.98	-8.91	-12.47	5.08	.906	5.30	-.066	-.012	7/2+	
101	123	224	1632.5	1629.7	-3.17	11.05	-10.39	-12.27	6.00	.905	5.52	-.052	-.016	7/2+	3/2-
101	124	225	1644.0	1640.5	-2.97	11.49	-10.42	-12.68	6.22	.903	6.25	-.041	-.016	7/2+	
101	125	226	1654.6	1651.1	-2.78	10.61	-10.41	-11.35	7.02	.902	6.22	C		113/2	P 1/2
101	126	227	1666.0	1661.6	-2.57	11.38	-10.08	-11.86	7.46	.900	7.28	C		113/2	
101	127	228	1674.3	1671.6	-2.35	8.35	-11.91	-8.62	6.32	.899	5.58	C		113/2	G 5/2
101	128	229	1684.3	1681.4	-2.14	9.99	-12.86	-10.05	5.69	.898	5.57	C		113/2	
101	129	230	1692.4	1691.1	-1.93	8.08	-12.70	-7.92	4.59	.896	3.80	C		113/2	G 5/2
101	130	231	1702.2	1700.6	-1.72	9.75	-12.52	-5.39	4.04	.895	3.87	C		113/2	
101	131	232	1710.0	1710.0	-1.46	7.89	-12.29	-7.32	3.05	.894	2.94	.034	.042	7/2-	1/2+
101	132	233	1720.5	1719.2	-1.23	10.43	-11.20	-9.72	3.47	.892	3.97	.085	.040	7/2-	
101	133	234	1728.3	1728.3	-.33	7.82	-10.89	-7.16	2.70	.891	1.82	C		113/2	G 5/2
101	134	235	1737.3	1737.2	-.84	9.03	-11.83	-8.98	2.02	.890	2.22	.244	.021	1/2-	
101	135	236	1745.9	1746.0	-.67	8.58	-10.02	-8.43	2.32	.889	2.48	.115	.050	7/2-	3/2-
101	136	237	1755.6	1754.6	-.46	9.72	-10.01	-8.63	2.62	.888	3.41	.126	.050	7/2-	
101	137	238	1764.0	1763.1	-.27	8.34	-9.87	-7.07	2.95	.888	3.20	.125	.052	7/2-	5/2-
101	138	239	1773.3	1771.5	-.04	9.38	-9.82	-7.95	3.19	.887	3.90	.132	.045	7/2-	
101	139	240	1781.4	1779.7	.16	8.05	-9.72	-6.42	3.50	.886	3.62	.134	.050	7/2-	3/2+
101	140	241	1790.4	1787.8	.39	9.06	-9.62	-7.25	3.70	.886	4.22	.135	.046	7/2-	
101	141	242	1798.2	1795.7	.58	7.75	-9.48	-5.78	4.02	.885	4.02	.140	.047	7/2-	5/2+
101	142	243	1806.8	1803.5	.81	8.62	-9.50	-6.41	4.06	.885	4.54	.144	.042	7/2-	
101	143	244	1814.2	1811.2	1.02	7.39	-9.51	-4.98	4.25	.884	4.07	.145	.042	7/2-	7/2-
101	144	245	1822.5	1818.7	1.27	8.28	-9.40	-5.68	4.21	.884	4.51	.145	.036	7/2-	
101	145	246	1829.6	1826.3	1.55	7.11	-9.27	-4.32	4.37	.883	4.02	.150	.035	7/2-	5/2+
101	146	247	1837.8	1833.7	1.79	8.17	-8.92	-5.16	4.46	.882	4.67	.154	.031	7/2-	
101	147	248	1844.7	1841.0	2.01	6.91	-8.62	-3.65	4.69	.882	4.22	.155	.025	7/2-	1/2+
101	148	249	1852.6	1848.2	2.23	7.90	-8.34	-4.45	4.75	.882	4.85	.156	.026	7/2-	
101	149	250	1859.3	1855.3	2.44	6.68	-8.19	-3.05	5.02	.882	4.47	.155	.024	7/2-	7/2+

L	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
101	150	251	1866.9	1862.2	2.65	7.63	-8.02	-3.80	5.04	.882	5.13	.160	.C21	7/2-	
101	151	252	1873.4	1869.1	2.86	6.45	-7.82	-2.42	5.33	.882	4.74	.161	.C19	7/2-	9/2-
101	152	253	1880.6	1875.8	3.07	7.28	-7.74	-3.04	5.30	.882	5.30	.161	.C16	7/2-	
101	153	254	1886.7	1882.3	3.28	6.07	-7.70	-1.64	5.40	.883	4.77	.160	.C14	7/2-	7/2+
101	154	255	1893.5	1888.8	3.47	6.85	-7.71	-2.21	5.17	.883	5.14	.158	.C11	7/2-	
101	155	256	1899.3	1895.1	3.69	5.80	-7.56	-.96	5.24	.883	4.58	.156	.C05	7/2-	11/2-
101	156	257	1906.1	1901.4	3.89	6.71	-7.30	-1.60	5.11	.883	5.07	.155	.C02	7/2-	
101	157	258	1911.6	1907.5	4.09	5.57	-7.06	-.24	5.17	.883	4.54	.153	-.C02	7/2-	9/2+
101	158	259	1918.2	1913.5	4.43	6.61	-6.75	-.95	5.17	.884	5.17	.154	-.C04	7/2-	
101	159	260	1923.7	1919.4	4.51	5.43	-6.46	.37	5.31	.884	4.75	.154	-.C08	7/2-	1/2+
101	160	261	1930.0	1925.1	4.69	6.29	-6.24	-.27	5.21	.885	5.30	.154	-.C11	7/2-	
101	161	262	1935.2	1930.8	4.88	5.24	-5.88	.97	5.39	.885	4.95	.155	-.C15	7/2-	3/2+
101	162	263	1941.2	1936.3	5.06	6.00	-5.91	.42	5.22	.886	5.42	.155	-.C16	7/2-	
101	163	264	1946.0	1941.8	5.24	4.82	-5.92	1.80	5.19	.886	5.09	.154	-.C25	7/2-	13/2-
101	164	265	1951.5	1947.1	5.39	5.46	-6.09	1.42	4.70	.887	5.11	.148	-.C27	7/2-	
101	165	266	1955.8	1952.3	5.54	4.33	-6.20	2.72	4.39	.887	4.15	.140	-.C26	7/2-	5/2+
101	166	267	1961.1	1957.5	5.70	5.26	-6.09	1.97	3.92	.888	4.23	.139	-.C24	7/2-	
101	167	268	1965.1	1962.5	5.81	4.03	-6.09	3.38	3.51	.889	3.12	.127	-.C21	7/2-	3/2+
101	168	269	1970.3	1967.4	5.93	5.18	-5.86	2.41	3.16	.890	3.26	.118	-.C17	7/2-	
101	169	270	1974.4	1972.2	5.92	4.16	-5.47	3.59	3.07	.890	2.35	.079	-.C05	3/2-	3/2+
101	170	271	1979.5	1976.9	6.10	5.08	-5.44	2.78	2.84	.891	2.72	.078	-.C06	3/2-	
101	171	272	1983.5	1981.5	6.23	3.98	-5.45	4.06	2.78	.893	2.06	.064	-.C07	3/2-	3/2+
101	172	273	1988.2	1986.0	6.42	4.76	-5.41	3.47	2.42	.894	2.69	.212	.C32	5/2+	
101	173	274	1992.2	1990.4	6.77	3.91	-5.16	4.49	2.49	.895	2.19	.218	.C34	5/2+	5/2+
101	174	275	1997.2	1994.8	6.91	5.07	-4.47	3.33	2.64	.896	2.91	.220	.C33	5/2+	
101	175	276	2001.0	1999.0	8.10	3.77	-4.27	4.63	2.77	.897	2.43	.226	.C33	5/2+	3/2-
101	176	277	2004.1	2003.1	7.09	3.06	-5.94	4.72	1.10	.898	1.19	.069	-.C18	1/2-	
101	177	278	2006.9	2007.1	7.18	2.81	-5.38	6.32	.45	.900	-.15	.029	-.C18	1/2-	7/2+
101	178	279	2010.9	2011.1	7.34	4.07	-5.13	5.23	-.02	.901	-.12	0		113/2	
101	179	280	2017.8	2014.9	11.66	6.90	-.86	2.59	3.60	.902	3.18	.241	.C29	1/2-	7/2+
101	180	281	2022.1	2018.6	7.86	4.27	-.32	1.26	3.53	.903	3.67	.242	.C27	1/2-	
101	181	282	2020.0	2022.3	7.78	-2.08	-9.03	11.56	-1.65	.905	-1.22	.021	-.C53	5/2+	9/2-
101	182	283	2023.3	2025.4	8.18	9.29	-3.70	.71	3.48	.906	3.57	.245	.C24	1/2-	
101	183	284	2032.2	2029.3	8.31	2.89	1.68	6.92	3.45	.907	2.93	.251	.C21	1/2-	5/2-
101	184	285	2036.1	2032.7	8.47	3.67	-3.51	6.11	3.34	.908	3.40	.250	.C19	1/2-	
101	185	286	2038.8	2036.0	11.96	2.69	-3.46	7.45	3.29	.910	2.73	.258	.C17	1/2-	7/2-
101	186	287	2042.5	2039.2	12.66	3.75	-3.31	6.56	3.22	.911	3.25	.255	.C15	1/2-	
101	187	288	2045.1	2042.4	12.27	2.58	-.38	7.88	3.23	.913	2.63	.273	.C11	1/2-	5/2+
101	188	289	2048.7	2045.4	12.98	3.58	.31	7.04	3.18	.915	3.18	.267	.C09	1/2-	
101	189	290	2050.9	2048.3	12.39	2.20	-.26	8.58	2.99	.917	2.44	.244	.C21	1/2-	1/2-
101	190	291	2054.3	2051.2	13.16	3.48	.48	4.23	3.01	.919	3.16	.207	.C20	5/2+	
101	191	292	2056.5	2054.0	9.73	2.19	.04	9.09	2.96	.920	2.70	.179	.C29	5/2+	5/2+
101	192	293	2060.0	2056.7	9.97	3.44	.93	7.77	3.11	.922	3.25	.207	.C20	5/2+	
101	193	294	2062.1	2059.3	10.09	2.09	.55	9.23	3.14	.924	2.70	.207	.C20	5/2+	7/2-
101	194	295	2065.4	2061.9	10.35	3.34	-1.35	8.13	3.36	.925	3.49	.244	-.C04	5/2+	
101	195	296	2067.5	2064.3	10.47	2.12	-1.23	9.39	3.57	.927	3.16	.193	.C13	7/2-	7/2-
101	196	297	2070.6	2066.7	10.63	3.08	-1.06	8.71	3.69	.928	3.84	.193	.C12	7/2-	

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
101	197	298	2072.5	2069.0	10.79	1.91	-.84	10.04	3.85	.930	3.43	.193	.011	7/2-	5/2+
101	198	299	2075.4	2071.2	10.95	2.87	-.73	9.24	3.92	.932	4.07	.191	.010	7/2-	
101	199	300	2077.1	2073.4	11.12	1.73	-.58	10.54	4.05	.934	3.64	.191	.008	7/2-	1/2+
101	200	301	2079.8	2075.4	11.28	2.69	-.44	9.75	4.10	.936	4.25	.189	.007	7/2-	
102	122	224	1619.4	1615.6	-2.01	12.24-11.14-15.64			5.33	.916	6.31	-.061	-.013		
102	123	225	1630.5	1626.8	-1.97	11.08-10.82-14.36			6.07	.914	6.28	-.057	-.015		3/2-
102	124	226	1642.5	1637.8	-1.53	11.93-10.66-14.99			6.52	.912	7.40	-.035	-.015		
102	125	227	1653.3	1648.7	-1.26	10.67-10.63-13.73			7.37	.910	7.46	C			P 1/2
102	126	228	1664.9	1659.4	-1.05	11.59-10.33-14.29			7.81	.909	8.52	C			
102	127	229	1673.5	1669.6	-.84	8.56-12.19-11.05			6.67	.906	6.71	C			C 5/2
102	128	230	1683.7	1679.7	-.63	10.20-13.15-12.48			6.04	.906	6.70	C			
102	129	231	1692.0	1689.5	-.42	8.29-13.00-10.36			4.94	.905	4.94	C			G 5/2
102	130	232	1701.9	1699.3	-.22	9.96-12.82-11.81			4.38	.904	5.00	C			
102	131	233	1710.0	1708.9	-.08	8.03-12.66 -9.67			3.32	.903	3.30	.034	.001		5/2+
102	132	234	1720.3	1718.3	-.13	10.38-11.82-11.76			3.49	.902	4.59	.073	.035		
102	133	235	1727.6	1727.6	-.73	7.22-12.24 -8.38			1.92	.901	1.83	C			G 5/2
102	134	236	1736.7	1736.7	-.63	9.13-13.31 -9.82			1.13	.900	1.67	C			
102	135	237	1746.2	1745.7	.30	9.51-10.70 -9.27			2.15	.899	3.00	.114	.048		3/2-
102	136	238	1756.1	1754.5	.49	9.90-10.35-10.45			2.43	.898	3.91	.119	.048		
102	137	239	1764.6	1763.2	.65	8.50-10.26 -8.96			2.71	.897	3.70	.121	.053		5/2-
102	138	240	1774.2	1771.8	.84	9.56-10.20 -9.81			2.94	.896	4.37	.132	.048		
102	139	241	1782.4	1780.2	1.03	8.24-10.11 -8.35			3.25	.896	4.08	.132	.049		3/2+
102	140	242	1791.7	1788.4	1.23	9.26-10.00 -9.17			3.45	.895	4.77	.136	.045		
102	141	243	1799.7	1796.6	1.42	7.99 -9.86 -7.68			3.77	.894	4.48	.139	.046		5/2+
102	142	244	1808.5	1804.6	1.63	8.82 -9.87 -8.32			3.81	.893	5.00	.143	.041		
102	143	245	1816.1	1812.5	1.83	7.59 -9.68 -6.84			4.00	.893	4.52	.145	.040		7/2-
102	144	246	1824.5	1820.2	2.00	8.46 -9.81 -7.51			3.95	.892	4.97	.146	.036		
102	145	247	1831.8	1828.0	2.22	7.33 -9.66 -6.06			4.13	.892	4.47	.150	.033		5/2+
102	146	248	1840.2	1835.6	2.43	8.38 -9.32 -6.89			4.26	.892	5.14	.153	.029		
102	147	249	1847.3	1843.1	2.63	7.11 -9.03 -5.38			4.48	.891	4.70	.155	.027		1/2+
102	148	250	1855.4	1850.5	2.84	8.11 -8.86 -6.17			4.59	.891	5.38	.157	.024		
102	149	251	1862.3	1857.7	3.04	6.88 -8.67 -4.72			4.84	.891	4.98	.158	.021		7/2+
102	150	252	1870.1	1864.9	3.25	7.63 -8.52 -5.46			4.92	.891	5.65	.160	.019		
102	151	253	1876.8	1871.9	3.45	6.66 -8.32 -4.08			5.19	.890	5.29	.160	.016		5/2-
102	152	254	1884.3	1878.8	3.65	7.47 -8.26 -4.69			5.16	.890	5.86	.160	.014		
102	153	255	1890.6	1885.5	3.85	6.27 -8.23 -3.28			5.28	.890	5.36	.159	.011		7/2+
102	154	256	1897.6	1892.2	4.06	7.05 -8.25 -3.85			5.07	.890	5.75	.157	.008		
102	155	257	1903.7	1898.7	4.33	6.07 -8.04 -2.57			5.23	.891	5.29	.155	.001		11/2-
102	156	258	1910.6	1905.1	4.54	6.92 -7.77 -3.26			5.13	.891	5.81	.154	-.002		
102	157	259	1916.5	1911.4	4.88	5.91 -7.44 -1.95			5.35	.891	5.44	.152	-.005		5/2+
102	158	260	1923.2	1917.6	5.01	6.74 -7.21 -2.65			5.30	.891	6.03	.153	-.008		
102	159	261	1928.9	1923.7	5.23	5.64 -6.93 -1.36			5.48	.892	5.66	.153	-.012		1/2+
102	160	262	1935.4	1929.6	5.43	6.49 -6.72 -2.00			5.40	.892	6.23	.154	-.014		
102	161	263	1940.8	1935.5	5.64	5.45 -6.62 -.77			5.61	.893	5.91	.154	-.018		3/2+
102	162	264	1947.0	1941.2	5.83	6.19 -6.53 -1.32			5.46	.893	6.41	.155	-.019		
102	163	265	1952.1	1946.8	6.10	5.08 -6.50 -.02			5.51	.894	6.17	.154	-.032		13/2-

Z	N	A	B.E.	BC	SP	SN	SA	CE	EAR	X	S	A2	A4	P	N
102	164	266	1957.7	1952.3	6.27	5.63	-6.68	-.43	5.02	.854	6.20	.146	-.030		
102	165	267	1962.2	1957.7	6.45	4.51	-6.82	.93	4.72	.855	5.24	.140	-.025		5/2+
102	166	268	1967.7	1963.0	6.62	5.43	-6.69	.17	4.24	.856	5.31	.135	-.027		
102	167	269	1971.9	1968.2	6.80	4.21	-6.67	1.56	3.84	.856	4.21	.126	-.025		3/2+
102	168	270	1977.2	1973.3	6.96	5.34	-6.42	.56	3.48	.857	4.34	.117	-.021		
102	169	271	1981.5	1978.3	7.08	4.27	-6.07	1.76	3.35	.858	3.34	.080	-.005		3/2+
102	170	272	1986.8	1983.2	7.26	5.26	-5.87	.76	3.12	.859	3.72	.076	-.010		
102	171	273	1990.9	1988.0	7.45	4.17	-5.87	2.02	3.08	.900	3.08	.073	-.005		3/2+
102	172	274	1995.9	1992.7	7.62	4.93	-5.84	1.41	2.73	.900	3.35	.055	-.014		
102	173	275	1999.8	1997.2	7.62	3.91	-5.77	2.59	2.63	.901	2.78	.053	-.022		1/2+
102	174	276	2004.8	2001.7	7.62	5.07	-5.27	1.57	2.61	.902	3.46	.225	.033		
102	175	277	2008.0	2006.1	7.00	3.15	-5.69	3.68	1.95	.903	2.17	.056	-.024		1/2+
102	176	278	2012.4	2010.4	8.34	4.41	-6.21	3.40	1.46	.904	2.24	.060	-.021		
102	177	279	2015.4	2014.6	8.52	2.98	-5.81	4.19	.82	.905	.90	.035	-.016		7/2+
102	178	280	2019.6	2018.7	8.71	4.26	-5.61	3.02	.38	.906	.94	0			
102	179	281	2022.6	2022.7	4.76	2.94	-5.38	7.54	-.11	.907	.07	.070	-.017		1/2+
102	180	282	2030.8	2026.6	8.69	8.21	-1.09	3.22	3.59	.908	4.27	.244	.027		
102	181	283	2029.2	2030.4	9.22	-1.56	-5.23	9.39	-1.23	.910	-1.21	0			0 3/2
102	182	284	2036.3	2034.2	9.03	9.10	-4.20	-1.14	3.54	.911	4.18	.247	.024		
102	183	285	2041.4	2037.8	9.20	3.07	.87	5.09	3.52	.913	3.55	.253	.023		5/2-
102	184	286	2045.4	2041.4	9.36	4.03	-3.99	4.28	3.41	.914	4.00	.252	.015		
102	185	287	2048.3	2044.8	9.52	2.85	-3.90	5.62	3.37	.916	3.34	.255	.018		7/2-
102	186	288	2052.2	2048.2	9.68	3.90	-3.71	4.72	3.31	.917	3.86	.256	.015		
102	187	289	2054.9	2051.5	9.83	2.73	-.18	6.07	3.31	.919	3.25	.267	.012		5/2+
102	188	290	2058.7	2054.7	10.00	3.74	.52	5.20	3.26	.920	3.81	.260	.005		
102	189	291	2057.8	2057.8	6.93	-.86	-3.31	9.99	-.15	.922	0.00	UNSTABLE			H11/2
102	190	292	2064.8	2060.8	10.49	7.04	.86	5.69	3.28	.923	3.87	.253	.003		
102	191	293	2067.0	2063.8	10.42	2.11	.18	7.13	3.00	.925	3.13	.207	.020		5/2+
102	192	294	2070.5	2066.6	10.54	3.55	1.02	6.12	3.11	.926	3.80	.207	.020		
102	193	295	2072.8	2069.4	10.69	2.25	-2.34	7.58	3.14	.927	3.25	.207	.020		7/2-
102	194	296	2076.1	2072.1	10.73	3.38	-2.16	6.61	3.24	.929	3.91	.207	.020		
102	195	297	2078.5	2074.7	11.01	2.40	-1.73	8.02	3.58	.930	3.71	.197	.005		7/2-
102	196	298	2081.8	2077.3	11.17	3.24	-1.58	7.15	3.70	.932	4.40	.196	.006		
102	197	299	2083.8	2079.7	11.33	2.07	-1.51	8.48	3.87	.934	4.00	.196	.007		5/2+
102	198	300	2086.9	2082.1	11.49	3.03	-1.40	7.69	3.95	.936	4.65	.194	.006		
102	199	301	2086.8	2084.4	11.65	1.89	-1.25	8.98	4.10	.938	4.23	.193	.004		1/2+
102	200	302	2091.6	2086.6	11.81	2.84	-1.12	8.02	4.15	.939	4.85	.191	.003		
103	124	227	1638.8	1634.8	-3.64	12.13	-10.93	-13.88	6.43	.922	6.78	-.035	-.016		5/2+
103	125	228	1649.8	1645.9	-3.49	11.03	-10.95	-12.52	7.21	.920	6.77	0		113/2 P	1/2
103	126	229	1661.6	1656.8	-3.28	11.80	-10.64	-13.00	7.64	.919	7.82	0		113/2	
103	127	230	1670.4	1667.2	-3.06	8.78	-12.47	-9.77	6.50	.917	6.02	0		113/2 G	9/2
103	128	231	1680.8	1677.5	-2.85	10.41	-13.43	-11.20	5.87	.916	6.01	0		113/2	
103	129	232	1689.3	1687.6	-2.64	9.50	-13.28	-9.08	4.77	.914	4.25	0		113/2 G	5/2
103	130	233	1699.5	1697.5	-2.43	10.17	-13.10	-10.54	4.21	.913	4.31	0		113/2	
103	131	234	1707.8	1707.3	-2.17	8.28	-12.90	-8.44	3.15	.911	2.66	.034	.001	5/2+	5/2+
103	132	235	1718.4	1717.0	-1.94	10.60	-12.05	-10.60	3.38	.910	3.86	.076	.032	7/2+	

Z	N	A	B.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
103	133	236	1726.1	1726.4	-1.47	7.69-12.25	-7.69	2.07	.906	1.56	.244	.021	9/2+	7/2-	
103	134	237	1736.2	1735.8	-.49	10.11-12.56	-8.88	2.07	.908	2.23	.244	.021	9/2+		
103	135	238	1744.9	1745.0	-1.33	8.67-11.71	-9.63	2.03	.907	1.56	.244	.021	9/2+	1/2+	
103	136	239	1754.9	1754.0	-1.24	9.99-10.75	-10.23	2.20	.906	3.00	.118	.044	9/2-		
103	137	240	1763.6	1762.9	-1.03	8.71-10.62	-8.17	2.45	.906	2.74	.119	.047	9/2-	3/2+	
103	138	241	1773.3	1771.7	-.89	9.71-10.63	-8.98	2.66	.905	3.40	.134	.043	9/2-		
103	139	242	1781.7	1780.3	-.70	8.43-10.54	-7.54	2.95	.904	3.11	.134	.045	9/2-	3/2	
103	140	243	1791.2	1788.7	-.47	9.49-10.43	-8.40	3.18	.903	3.82	.140	.041	9/2-		
103	141	244	1799.4	1797.1	-.28	8.18-10.30	-6.91	3.49	.903	3.54	.141	.042	9/2-	5/2+	
103	142	245	1808.4	1805.3	-.04	9.06-10.30	-7.60	3.57	.902	4.09	.145	.037	9/2-		
103	143	246	1816.2	1813.3	.17	7.80-10.29	-6.14	3.77	.902	3.63	.147	.035	9/2-	7/2-	
103	144	247	1825.0	1821.3	.49	8.77-10.13	-6.93	3.84	.901	4.22	.149	.031	9/2+		
103	145	248	1832.6	1829.2	.71	7.55 -9.97	-5.55	4.05	.901	3.77	.151	.025	9/2+	5/2+	
103	146	249	1841.2	1837.1	.94	8.61 -9.65	-6.42	4.22	.900	4.45	.154	.025	9/2+		
103	147	250	1848.5	1844.8	1.16	7.32 -9.43	-4.93	4.46	.900	4.09	.155	.023	9/2+	1/2+	
103	148	251	1856.8	1852.3	1.38	8.33 -9.27	-5.74	4.60	.900	4.81	.157	.020	9/2+		
103	149	252	1863.9	1859.8	1.59	7.09 -9.09	-4.29	4.86	.899	4.43	.158	.018	9/2+	7/2+	
103	150	253	1871.9	1867.1	1.80	8.04 -8.95	-5.05	4.97	.899	5.14	.159	.015	9/2+		
103	151	254	1878.8	1874.3	2.00	6.86 -8.76	-3.67	5.25	.899	4.75	.160	.013	9/2+	9/2-	
103	152	255	1886.5	1881.4	2.21	7.68 -8.71	-4.28	5.24	.899	5.35	.160	.011	9/2+		
103	153	256	1893.0	1888.3	2.42	6.48 -8.68	-2.88	5.37	.899	4.51	.159	.008	9/2+	7/2+	
103	154	257	1900.3	1895.2	2.73	7.36 -8.60	-3.55	5.29	.899	5.43	.157	.002	9/2+		
103	155	258	1906.6	1901.9	2.88	6.23 -8.44	-2.19	5.41	.899	4.96	.155	-.001	9/2+	11/2-	
103	156	259	1913.8	1908.5	3.17	7.21 -8.07	-2.86	5.42	.899	5.58	.154	-.003	9/2+		
103	157	260	1919.8	1915.0	3.31	6.04 -7.83	-1.52	5.59	.899	5.18	.153	-.007	9/2+	9/2+	
103	158	261	1926.8	1921.3	3.51	6.94 -7.60	-2.20	5.56	.899	5.79	.154	-.005	9/2+		
103	159	262	1932.6	1927.6	3.71	5.85 -7.32	-.90	5.75	.900	5.44	.154	-.013	9/2+	1/2+	
103	160	263	1939.3	1933.7	3.90	6.68 -7.26	-1.52	5.69	.900	6.01	.154	-.015	9/2+		
103	161	264	1944.9	1939.7	4.09	5.65 -7.04	-.45	5.91	.900	5.70	.155	-.019	9/2+	3/2+	
103	162	265	1951.3	1945.6	4.28	6.38 -6.95	-.89	5.77	.901	6.21	.155	-.020	9/2+		
103	163	266	1956.5	1951.5	4.42	5.23 -6.96	.42	5.79	.901	5.76	.150	-.027	9/2+	13/2-	
103	164	267	1962.4	1957.1	4.66	5.87 -7.09	.12	5.36	.902	6.08	.152	-.032	9/2+		
103	165	268	1967.1	1962.7	4.81	4.67 -7.24	1.47	5.03	.902	5.10	.144	-.031	9/2+	9/2+	
103	166	269	1972.7	1968.2	4.99	5.60 -7.10	.77	4.55	.903	5.18	.144	-.030	9/2+		
103	167	270	1977.0	1973.6	5.12	4.34 -7.09	2.21	4.10	.903	4.06	.134	-.028	9/2+	3/2+	
103	168	271	1982.5	1978.8	5.26	5.48 -6.87	1.25	3.71	.904	4.18	.129	-.025	9/2+		
103	169	272	1986.7	1984.0	5.24	4.25 -6.64	2.65	3.39	.904	2.96	.090	-.015	9/2+	3/2+	
103	170	273	1992.2	1989.1	5.40	5.42 -6.40	1.67	3.15	.905	3.29	.086	-.014	9/2+		
103	171	274	1996.5	1994.0	5.56	4.32 -6.23	2.92	3.09	.906	2.62	.078	-.012	9/2+	3/2+	
103	172	275	2001.6	1998.9	5.72	5.09 -6.22	2.33	2.73	.907	2.86	.078	-.014	9/2+		
103	173	276	2005.6	2003.6	5.85	4.05 -6.15	3.59	2.60	.907	2.23	.056	-.021	3/2+	1/2+	
103	174	277	2010.9	2008.3	6.05	5.26 -5.65	2.57	2.60	.908	2.84	.224	.032	7/2-		
103	175	278	2015.0	2012.8	7.03	4.13 -5.43	3.43	2.75	.909	2.38	.231	.033	7/2-	3/2-	
103	176	279	2018.8	2017.3	6.39	3.77 -6.73	3.24	1.46	.910	1.75	.071	-.021	1/2+		
103	177	280	2021.9	2021.7	6.50	3.10 -7.40	5.24	.76	.911	.40	.050	-.020	9/2+	7/2+	
103	178	281	2029.3	2025.9	9.70	7.46 -3.00	1.06	3.35	.912	3.49	.238	.030	9/2+		
103	179	282	2033.2	2030.1	10.65	3.89 -1.92	1.74	3.64	.913	3.16	.243	.029	9/2+	7/2+	

Z	N	A	B.E.	BC	SP	SN	SA	GE	BFR	X	S	A2	A4	P	N
103	180	283	2037.8	2034.2	7.05	4.61	-1.38	.34	3.57	.915	3.65	.244	.027	9/2+	
103	181	284	2036.4	2038.2	7.17	-1.44	-9.72	10.07	-1.29	.916	-1.61	.001	-.020	3/2-	9/2-
103	182	285	2045.7	2042.1	7.38	9.30	-4.69	-.13	3.53	.917	3.56	.246	.024	5/2+	
103	183	286	2046.9	2045.9	7.53	3.21	.61	5.76	3.50	.918	2.92	.246	.022	5/2+	5/2-
103	184	287	2053.1	2049.6	7.69	4.20	-4.48	4.95	3.39	.920	3.40	.246	.020	5/2+	
103	185	288	2056.1	2053.2	7.84	3.00	-4.36	6.30	3.33	.921	2.72	.251	.017	5/2+	7/2-
103	186	289	2060.2	2056.8	8.02	4.08	-4.16	5.40	3.29	.922	3.27	.247	.015	5/2+	
103	187	290	2063.1	2060.2	8.15	2.87	-3.98	6.76	3.27	.924	2.65	.253	.012	5/2+	9/2+
103	188	291	2067.0	2063.6	8.35	3.93	-3.79	5.87	3.26	.925	3.25	.245	.005	5/2+	
103	189	292	2069.8	2066.8	11.95	2.74	-3.63	7.21	3.28	.926	2.71	.247	.005	5/2+	1/2-
103	190	293	2073.3	2070.0	8.46	3.55	-3.66	6.57	3.06	.927	3.18	.207	.020	7/2-	
103	191	294	2075.3	2073.1	8.89	2.54	-3.32	8.00	3.06	.929	2.60	.207	.020	7/2-	5/2+
103	192	295	2079.6	2076.2	9.05	3.71	-3.09	7.19	3.17	.930	3.27	.207	.020	7/2-	
103	193	296	2082.0	2079.1	9.21	2.41	-2.86	8.03	3.19	.931	2.72	.207	.020	7/2-	7/2-
103	194	297	2085.8	2081.9	9.63	3.81	-2.49	6.79	3.57	.933	3.66	.233	-.004	7/2-	
103	195	298	2088.1	2084.7	9.61	2.37	-2.21	8.57	3.72	.935	3.28	.200	.005	5/2+	7/2-
103	196	299	2091.5	2087.4	9.77	3.40	-2.16	7.62	3.86	.937	3.58	.198	.005	5/2+	
103	197	300	2093.8	2090.0	9.93	2.23	-2.05	8.89	4.03	.938	3.59	.197	.004	5/2+	9/2+
103	198	301	2097.0	2092.5	10.09	3.19	-1.94	8.11	4.12	.940	4.25	.194	.003	5/2+	
103	199	302	2098.9	2095.0	10.08	1.88	-1.96	9.50	4.11	.941	3.67	.200	-.001	7/2-	11/2+
103	200	303	2101.9	2097.4	10.25	3.01	-1.82	8.71	4.17	.943	4.32	.194	-.002	7/2-	

104	126	230	1659.9	1653.8	-1.78	12.01-10.89-15.39	8.11	.927	5.02	0					
104	127	231	1668.9	1664.5	-1.57	8.99-12.77-12.16	6.96	.926	7.22	0				G	9/2
104	128	232	1679.5	1674.9	-1.36	10.62-13.74-13.58	6.33	.925	7.21	0					
104	129	233	1688.2	1685.2	-1.15	8.71-13.59-11.46	5.22	.923	5.45	0				G	9/2
104	130	234	1698.6	1695.4	-.94	10.38-13.41-12.91	4.66	.922	5.51	0					
104	131	235	1707.0	1705.4	-.78	8.44-13.26-10.77	3.60	.921	3.79	0				G	9/2
104	132	236	1717.6	1715.2	-.78	10.61-12.62-12.61	3.57	.920	4.66	.061	.026				
104	133	237	1726.5	1724.9	.46	8.93-11.72-10.78	3.30	.919	3.97	.081	.035			3/2+	
104	134	238	1734.5	1734.5	-1.74	7.92-14.18 -9.63	.89	.917	1.67	0					
104	135	239	1743.8	1743.8	-1.02	9.39-12.00 -9.61	1.37	.916	1.50	0				G	9/2
104	136	240	1754.6	1753.1	-.25	10.77-10.37-11.49	2.11	.915	3.60	.114	.044				
104	137	241	1763.5	1762.2	-.06	8.90-10.98-10.00	2.38	.914	3.34	.117	.047			3/2+	
104	138	242	1773.4	1771.1	.11	9.87-11.01-10.91	2.52	.913	3.99	.129	.044				
104	139	243	1782.0	1780.0	.30	8.62-10.89 -9.41	2.80	.912	3.69	.131	.046			3/2+	
104	140	244	1791.7	1788.6	.49	9.67-10.78-10.35	3.02	.911	4.37	.136	.041				
104	141	245	1800.1	1797.2	.68	8.37-10.65 -8.82	3.33	.910	4.08	.139	.042			5/2+	
104	142	246	1809.3	1805.6	.87	9.25-10.65 -9.51	3.42	.910	4.61	.144	.036				
104	143	247	1817.3	1813.8	1.07	7.99-10.65 -8.37	3.61	.909	4.15	.149	.035			7/2-	
104	144	248	1826.2	1821.9	1.22	8.93-10.54 -8.77	3.63	.909	4.68	.146	.030				
104	145	249	1834.0	1830.1	1.41	7.75-10.39 -7.23	3.85	.908	4.22	.150	.028			5/2+	
104	146	250	1842.8	1838.1	1.61	8.81-10.03 -8.07	4.02	.908	4.95	.153	.023				
104	147	251	1850.3	1846.0	1.81	7.52 -9.84 -6.56	4.27	.908	4.55	.154	.021			1/2+	
104	148	252	1858.8	1853.8	2.01	8.53 -9.69 -7.36	4.43	.907	5.29	.156	.017				
104	149	253	1866.1	1861.4	2.21	7.28 -9.51 -5.90	4.69	.907	4.93	.157	.016			7/2+	
104	150	254	1874.4	1869.0	2.41	8.25 -9.37 -6.72	4.82	.907	5.64	.158	.012				

Z	N	A	B.E.	BC	SP	SN	SA	CB	EAR	X	S	A2	A4	P	A
104	151	255	1881.4	1876.3	2.61	7.06	-9.19	-5.32	5.11	.907	5.32	.155	.C11		5/2-
104	152	256	1889.3	1883.6	2.62	7.88	-9.14	-5.92	5.12	.906	5.93	.155	.CC8		
104	153	257	1896.0	1850.7	3.02	6.69	-9.11	-4.52	5.27	.906	5.48	.158	.CC5		7/2+
104	154	258	1903.6	1857.8	3.26	7.60	-8.98	-5.13	5.25	.906	6.07	.156	-.CC1		
104	155	259	1910.1	1904.7	3.57	6.54	-8.72	-3.79	5.45	.906	5.71	.154	-.CC3		7/2+
104	156	260	1917.5	1911.4	3.74	7.39	-8.38	-4.47	5.49	.906	6.35	.154	-.CC7		
104	157	261	1923.8	1918.1	3.96	6.26	-8.20	-3.13	5.69	.906	5.96	.152	-.C10		5/2+
104	158	262	1930.9	1924.7	4.16	7.14	-7.98	-3.81	5.68	.906	6.62	.153	-.C12		
104	159	263	1937.0	1931.1	4.37	6.06	-7.83	-2.52	5.91	.907	6.30	.153	-.C16		1/2+
104	160	264	1943.7	1937.4	4.42	6.72	-7.85	-3.13	5.71	.907	6.85	.155	-.C24		
104	161	265	1949.6	1943.6	4.71	5.94	-7.56	-1.94	6.04	.907	6.80	.160	-.C30		3/2+
104	162	266	1956.2	1949.7	4.86	6.53	-7.51	-2.41	5.89	.907	7.07	.154	-.C25		
104	163	267	1961.7	1955.7	5.21	5.57	-7.39	-1.22	6.07	.908	6.77	.145	-.C30		12/2-
104	164	268	1967.8	1961.6	5.36	6.02	-7.56	-1.46	5.61	.908	6.90	.145	-.C30		
104	165	269	1972.7	1967.3	5.59	4.90	-7.74	-.17	5.34	.908	6.13	.143	-.C33		5/2+
104	166	270	1976.4	1973.0	5.76	5.77	-7.61	-.88	4.86	.909	6.20	.143	-.C32		
104	167	271	1983.0	1978.5	5.95	4.53	-7.59	.57	4.43	.909	5.10	.133	-.C30		3/2+
104	168	272	1988.6	1984.0	6.12	5.65	-7.37	-.40	4.04	.910	5.21	.127	-.C28		
104	169	273	1993.0	1989.3	6.31	4.44	-7.13	.97	3.72	.910	4.13	.095	-.C23		3/2+
104	170	274	1998.6	1994.5	6.46	5.57	-6.90	-.01	3.46	.911	4.36	.088	-.C15		
104	171	275	2003.1	1999.7	6.64	4.50	-6.68	1.14	3.41	.912	3.65	.078	-.C18		3/2+
104	172	276	2008.4	2004.7	6.85	5.31	-6.63	.36	3.09	.913	3.91	.065	-.C15		
104	173	277	2012.7	2009.6	7.05	4.24	-6.55	1.60	2.99	.914	3.32	.054	-.C22		1/2+
104	174	278	2017.7	2014.4	6.78	4.99	-6.49	.97	2.56	.915	3.50	.068	-.C23		
104	175	279	2021.2	2019.2	6.22	3.58	-6.83	2.59	1.98	.916	2.65	.034	-.C35		5/2+
104	176	280	2026.3	2023.8	7.56	5.10	-6.79	1.53	1.86	.917	2.84	.064	-.C24		
104	177	281	2029.6	2028.3	7.73	3.28	-6.67	3.20	1.18	.918	1.47	.046	-.C20		7/2+
104	178	282	2034.2	2032.8	4.85	4.58	-6.49	2.03	.73	.919	1.42	C			
104	179	283	2037.4	2037.1	4.17	3.21	-6.27	6.11	.16	.920	.30	.034	.CC1		1/2+
104	180	284	2045.7	2041.4	7.85	8.25	-2.24	-1.41	3.62	.921	4.21	.247	.C27		
104	181	285	2044.8	2045.5	8.39	-.90	-6.09	7.90	-.87	.922	-.72	C			D 3/2
104	182	286	2053.9	2049.6	8.19	9.10	-5.19	-1.93	3.59	.923	4.12	.250	.C24		
104	183	287	2057.3	2053.6	8.36	3.39	-.24	3.94	3.57	.924	3.49	.253	.C23		5/2-
104	184	288	2061.6	2057.4	8.52	4.35	-4.99	3.14	3.46	.925	3.96	.251	.C20		
104	185	289	2064.8	2061.2	8.69	3.18	-4.87	4.48	3.42	.926	3.25	.256	.C17		7/2-
104	186	290	2069.1	2064.9	8.85	4.23	-4.67	3.55	3.37	.927	3.84	.252	.C14		
104	187	291	2072.1	2068.5	9.02	3.04	-4.48	4.96	3.36	.928	3.22	.257	.C11		5/2+
104	188	292	2076.2	2072.0	9.17	4.09	-4.30	4.07	3.34	.929	3.84	.245	.CC8		
104	189	293	2079.1	2075.5	9.34	2.91	-4.12	5.44	3.37	.930	3.34	.245	.CC3		1/2-
104	190	294	2083.1	2078.8	9.76	3.97	-3.89	4.57	3.42	.932	4.05	.234	-.CC1		
104	191	295	2086.0	2082.1	10.12	2.90	-.13	5.90	3.62	.933	3.67	.243	-.CC3		5/2+
104	192	296	2089.2	2085.3	9.66	3.25	-3.92	5.66	3.11	.935	3.75	.207	.C20		
104	193	297	2091.8	2088.4	9.82	2.56	-3.47	6.41	3.14	.936	3.20	.207	.C20		7/2-
104	194	298	2095.9	2091.4	10.16	4.15	-2.87	5.57	3.71	.938	4.42	.252	-.C13		
104	195	299	2098.4	2094.3	10.73	2.44	-2.68	6.99	3.78	.939	3.93	.235	-.C11		1/2+
104	196	300	2101.9	2097.1	10.34	3.51	-2.55	6.14	3.87	.941	4.54	.225	-.CC7		
104	197	301	2104.3	2099.9	10.51	2.40	-2.54	7.42	4.06	.942	4.18	.202	-.CC1		5/2+

Z	N	A	B.E.	BC	SP	SN	SA	CE	EAR	X	S	A2	A4	P	N
104	198	302	2107.6	2102.6	10.60	3.28	-2.50	6.67	4.09	.943	4.77	.211	-.006		
104	199	303	2109.8	2105.2	10.93	2.21	-2.36	7.96	4.25	.945	4.38	.205	-.006		11/2+
104	200	304	2112.9	2107.7	11.09	3.17	-2.22	7.18	4.33	.946	5.03	.195	-.007		
105	128	233	1675.9	1672.0	-3.53	10.83-13.99-12.29			6.29	.923	6.62	C		113/2	
105	129	234	1684.9	1682.5	-3.32	8.92-13.84-10.17			5.19	.921	4.86	C		113/2 G 5/2	
105	130	235	1695.5	1692.5	-3.11	10.58-13.68-11.62			4.63	.920	4.92	C		113/2	
105	131	236	1704.2	1703.1	-2.79	8.76-13.41	-9.60		3.68	.929	3.47	.046	.019	3/2-	5/2+
105	132	237	1715.0	1713.1	-2.64	10.76-12.83-11.50			3.60	.928	4.10	.059	.024	13/2+	
105	133	238	1724.0	1723.0	-2.50	9.07-12.04	-9.97		3.25	.927	3.30	.076	.033	5/2+	3/2+
105	134	239	1733.5	1732.8	-1.00	9.41-13.23-10.01			2.14	.926	2.16	.244	.021	7/2-	
105	135	240	1742.3	1742.3	-1.50	8.89-12.03	-8.26		1.90	.925	1.50	C		113/2 G 5/2	
105	136	241	1752.7	1751.8	-1.89	10.38-11.77	-9.43		2.06	.924	2.10	.244	.021	7/2-	
105	137	242	1761.7	1761.1	-1.82	8.97-11.47-10.81			2.20	.923	2.47	.115	.043	5/2+	3/2+
105	138	243	1771.8	1770.2	-1.56	10.13-11.34-11.44			2.39	.922	3.16	.122	.040	5/2+	
105	139	244	1780.6	1779.3	-1.46	8.73-11.31	-8.56		2.57	.921	2.76	.132	.042	5/2+	3/2+
105	140	245	1790.5	1788.1	-1.23	9.90-11.12-10.20			2.82	.920	3.47	.135	.037	5/2+	
105	141	246	1799.0	1796.9	-1.04	8.56-10.99	-8.68		3.11	.920	3.18	.140	.038	5/2+	5/2+
105	142	247	1808.1	1805.5	-1.17	9.13-11.35	-8.46		2.87	.919	3.20	.172	.021	1/2-	
105	143	248	1816.7	1813.9	-.62	8.53-11.00	-7.42		3.41	.918	3.29	.147	.031	5/2-	7/2-
105	144	249	1826.0	1822.2	-.27	9.28-10.78	-8.26		3.59	.918	3.96	.150	.023	5/2-	
105	145	250	1833.9	1830.6	-.04	7.97-10.60	-6.77		3.83	.917	3.56	.151	.021	5/2-	5/2+
105	146	251	1843.0	1838.8	.18	9.03-10.34	-7.64		4.04	.916	4.33	.153	.017	5/2-	
105	147	252	1850.7	1846.9	.39	7.73-10.16	-6.14		4.30	.916	3.97	.154	.015	5/2-	7/2+
105	148	253	1859.4	1854.9	.60	8.74-10.03	-6.96		4.47	.915	4.73	.155	.012	5/2-	
105	149	254	1866.9	1862.7	.74	7.43	-9.92	-5.45	4.69	.915	4.34	.156	.013	1/2-	7/2+
105	150	255	1875.3	1870.4	.97	8.47	-9.79	-6.24	4.85	.915	5.11	.158	.009	1/2-	
105	151	256	1882.6	1878.0	1.17	7.27	-9.60	-4.89	5.16	.914	4.80	.158	.007	1/2-	5/2-
105	152	257	1890.7	1885.4	1.39	8.10	-9.55	-5.52	5.19	.914	5.46	.159	.003	1/2-	
105	153	258	1897.7	1892.7	1.68	6.98	-9.43	-4.21	5.45	.914	5.11	.157	-.001	5/2-	7/2+
105	154	259	1905.6	1900.0	1.96	7.88	-9.23	-4.88	5.52	.914	5.80	.155	-.004	5/2-	
105	155	260	1912.3	1907.0	2.13	6.71	-9.00	-3.53	5.75	.914	5.45	.154	-.007	5/2-	7/2+
105	156	261	1919.9	1914.0	2.34	7.60	-8.77	-4.22	5.78	.914	6.12	.153	-.010	5/2-	
105	157	262	1926.3	1920.9	2.55	6.47	-8.53	-2.89	6.00	.914	5.78	.152	-.013	5/2-	5/2+
105	158	263	1933.7	1927.6	2.76	7.35	-8.39	-3.58	6.01	.914	6.44	.152	-.015	5/2-	
105	159	264	1939.8	1934.2	2.81	6.11	-8.32	-2.30	6.11	.914	6.11	.153	-.023	5/2-	1/2+
105	160	265	1946.9	1940.7	3.21	7.12	-8.14	-2.93	6.13	.914	6.82	.155	-.026	5/2-	
105	161	266	1953.0	1947.1	3.34	6.07	-7.92	-1.68	6.41	.914	6.45	.154	-.025	5/2-	3/2+
105	162	267	1959.7	1953.4	3.57	6.77	-7.83	-2.21	6.31	.915	7.00	.153	-.027	5/2-	
105	163	268	1965.5	1959.5	3.77	5.77	-7.71	-1.03	6.51	.915	6.71	.145	-.031	5/2-	13/2-
105	164	269	1971.7	1965.6	3.95	6.19	-7.89	-1.24	6.05	.915	6.84	.146	-.031	5/2-	
105	165	270	1976.8	1971.5	4.11	5.07	-8.05	.07	5.77	.916	5.99	.140	-.033	5/2-	5/2+
105	166	271	1982.7	1977.3	4.31	5.97	-7.95	-.64	5.31	.916	6.18	.146	-.034	5/2-	
105	167	272	1987.4	1983.1	4.47	4.69	-7.93	.79	4.86	.917	5.08	.137	-.033	5/2-	3/2+
105	168	273	1993.2	1988.7	4.63	5.81	-7.73	-.12	4.45	.917	5.19	.134	-.031	5/2-	
105	169	274	1997.8	1994.2	4.78	4.59	-7.47	1.27	4.12	.916	4.80	.143	-.045	5/2-	3/2+
105	170	275	2003.5	1999.6	4.85	5.65	-7.30	.44	3.77	.918	4.59	.122	-.035	5/2-	

Z	N	A	R.E.	BC	SP	SN	SA	CE	PAR	X	S	B2	B4	P	N
105	171	276	2008.0	2004.9	4.89	4.53	-7.02	1.79	3.58	.919	3.39	.086	-.021	5/2-	5/2+
105	172	277	2013.5	2010.1	5.06	5.48	-6.97	1.13	3.26	.920	3.69	.085	-.022	5/2-	
105	173	278	2017.9	2015.2	5.18	4.36	-6.93	2.43	3.10	.920	2.86	.066	-.019	5/2-	15/2-
105	174	279	2023.0	2020.2	5.38	5.19	-6.83	1.83	2.70	.921	3.10	.086	-.020	5/2-	
105	175	280	2027.1	2025.1	5.85	4.05	-6.83	3.13	2.43	.922	2.37	.066	-.026	5/2-	1/2+
105	176	281	2032.0	2029.9	5.69	4.94	-7.14	2.46	1.98	.923	2.45	.077	-.026	5/2-	
105	177	282	2035.4	2034.6	5.82	3.40	-7.67	3.75	1.26	.923	1.18	.060	-.027	3/2-	7/2+
105	178	283	2042.7	2039.2	8.53	7.29	-4.35	.45	3.35	.924	3.38	.242	.030	7/2-	
105	179	284	2043.5	2043.7	6.10	.78	-6.67	4.60	.15	.925	-.15	.034	.001	3/2-	1/2+
105	180	285	2051.9	2048.1	6.22	8.41	-5.72	-.29	3.60	.926	3.55	.247	.027	7/2-	
105	181	286	2051.2	2052.5	6.39	-.73	-10.35	5.33	-.85	.927	-1.27	C		113/2 D	3/2
105	182	287	2060.5	2056.7	6.55	9.27	-5.69	-.74	3.57	.927	3.47	.248	.024	7/2-	
105	183	288	2064.0	2060.8	6.71	3.55	-.70	4.64	3.55	.928	2.84	.251	.022	7/2-	5/2-
105	184	289	2068.5	2064.9	6.88	4.52	-5.48	-1.05	3.45	.929	3.33	.247	.019	7/2-	
105	185	290	2071.9	2068.8	7.04	3.34	-5.36	5.18	3.39	.930	2.67	.251	.016	7/2-	7/2-
105	186	291	2076.3	2072.7	7.22	4.41	-5.15	4.28	3.36	.931	3.23	.245	.013	7/2-	
105	187	292	2079.5	2076.4	7.37	3.19	-4.95	5.66	3.35	.933	2.64	.245	.010	7/2-	5/2+
105	188	293	2083.8	2080.1	7.57	4.28	-4.75	.98	3.36	.934	3.32	.240	.005	7/2-	
105	189	294	2086.9	2083.7	7.76	3.10	-4.52	6.06	3.43	.935	2.90	.233	-.001	7/2-	1/2-
105	190	295	2091.1	2087.2	8.02	4.24	-4.22	1.25	3.58	.937	3.59	.238	-.001	7/2-	
105	191	296	2094.1	2090.6	8.12	3.00	-3.96	6.55	3.72	.938	3.19	.240	-.005	7/2-	5/2+
105	192	297	2097.4	2094.0	8.20	3.32	-4.18	6.41	3.13	.939	3.17	.207	.020	1/2-	
105	193	298	2100.7	2097.2	8.95	3.31	-3.41	7.23	3.75	.941	3.35	.236	-.012	1/2-	5/2+
105	194	299	2104.6	2100.4	8.65	3.86	-3.27	6.24	3.87	.942	3.59	.228	-.010	1/2-	
105	195	300	2107.2	2103.5	8.86	2.66	-3.02	7.53	4.00	.943	3.58	.223	-.010	1/2-	1/2+
105	196	301	2110.9	2106.5	9.04	3.69	-3.14	6.61	4.11	.944	4.24	.217	-.005	1/2-	
105	197	302	2113.5	2109.4	9.16	2.53	-2.99	7.90	4.27	.945	3.84	.212	-.005	1/2-	11/2+
105	198	303	2117.0	2112.2	9.39	3.51	-2.88	7.06	4.37	.947	4.51	.207	-.005	1/2-	
105	199	304	2119.3	2115.0	9.56	2.36	-2.73	8.32	4.55	.948	4.14	.203	-.010	1/2-	11/2+
105	200	305	2122.7	2117.7	9.73	3.33	-2.58	7.52	4.64	.949	4.81	.198	-.011	1/2-	
106	130	236	1693.6	1690.0	-1.62	10.79	-13.94	-13.89	5.21	.939	6.21	C			
106	131	237	1702.7	1700.4	-1.53	8.86	-13.79	-11.75	4.15	.937	4.50	C		G	9/2
106	132	238	1713.3	1710.6	-1.68	10.60	-13.57	-13.29	3.71	.936	4.79	.046	.016		
106	133	239	1722.7	1720.7	-1.38	9.37	-12.64	-11.87	3.45	.935	4.18	.066	.032		1/2-
106	134	240	1733.3	1730.7	-.16	10.64	-12.61	-12.98	3.36	.933	4.72	.084	.033		
106	135	241	1742.5	1740.5	.16	9.21	-12.33	-11.46	3.25	.932	4.17	.095	.041		3/2-
106	136	242	1750.1	1750.1	-2.62	7.59	-12.65	-9.69	.41	.931	1.33	C			
106	137	243	1759.6	1759.6	-2.09	9.50	-12.54	-9.88	.89	.930	1.17	C		111/2	
106	138	244	1771.2	1769.0	-.61	11.60	-11.70	-12.70	2.36	.929	3.61	.246	-.022		
106	139	245	1779.5	1778.2	-1.09	8.26	-12.34	-9.06	1.87	.928	2.11	.188	.017		5/2-
106	140	246	1789.5	1787.2	-.90	10.08	-12.13	-11.36	2.10	.928	2.77	.213	-.001		
106	141	247	1798.9	1796.2	-.11	9.35	-11.41	-10.33	2.99	.927	3.74	.137	.040		5/2+
106	142	248	1808.5	1805.0	.33	9.57	-11.51	-11.19	3.00	.926	4.18	.144	.033		
106	143	249	1816.9	1813.6	.23	8.43	-11.45	-9.23	3.24	.926	3.78	.145	.031		7/2-
106	144	250	1826.4	1822.1	.42	9.47	-11.23	-10.07	3.42	.925	4.43	.145	.023		
106	145	251	1834.5	1830.7	.61	8.16	-11.06	-8.52	3.66	.925	4.02	.150	.021		5/2+

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
106	146	252	1843.8	1839.1	.81	9.23-10.75	-9.37	3.87	.924	4.79	.152	.C16			
106	147	253	1851.7	1847.4	1.00	7.92-10.58	-7.83	4.13	.924	4.43	.153	.C15			7/2+
106	148	254	1860.6	1855.5	1.20	8.94-10.45	-8.64	4.31	.923	5.20	.155	.C10			
106	149	255	1868.3	1863.5	1.45	7.68-10.29	-7.16	4.59	.923	4.86	.157	.C09			5/2-
106	150	256	1876.9	1871.4	1.59	8.62-10.21	-7.89	4.71	.923	5.60	.158	.C07			
106	151	257	1884.4	1879.2	1.75	7.47-10.02	-6.48	5.02	.922	5.30	.158	.C05			5/2-
106	152	258	1892.7	1886.8	1.99	8.29 -9.98	-7.15	5.07	.922	5.97	.158	.C02			
106	153	259	1899.9	1894.4	2.22	7.71 -9.82	-5.73	5.38	.922	5.67	.157	-.C02			11/2-
106	154	260	1908.0	1901.7	2.40	8.06 -9.65	-6.40	5.44	.922	6.37	.155	-.C06			
106	155	261	1914.9	1909.0	2.60	6.90 -9.43	-5.04	5.68	.921	6.04	.153	-.C09			7/2+
106	156	262	1922.7	1916.2	2.79	7.80 -9.23	-5.72	5.72	.921	6.73	.153	-.C12			
106	157	263	1929.3	1923.2	2.99	6.66 -9.11	-4.38	5.96	.921	6.40	.152	-.C14			5/2+
106	158	264	1936.7	1930.1	3.03	7.39 -9.10	-4.91	5.84	.921	7.00	.153	-.C20			
106	159	265	1943.2	1936.9	3.40	6.48 -8.88	-3.79	6.12	.921	6.81	.153	-.C25			1/2+
106	160	266	1950.5	1943.6	3.60	7.32 -8.70	-4.40	6.17	.921	7.55	.155	-.C29			
106	161	267	1956.7	1950.2	3.77	6.24 -8.52	-3.18	6.43	.922	7.17	.152	-.C27			3/2+
106	162	268	1963.7	1956.6	3.96	6.96 -8.29	-3.68	6.34	.922	7.72	.152	-.C29			
106	163	269	1969.7	1962.9	4.17	5.98 -8.25	-2.51	6.58	.922	7.46	.148	-.C33			13/2-
106	164	270	1976.1	1969.2	4.35	6.37 -8.41	-2.70	6.13	.922	7.60	.144	-.C33			
106	165	271	1981.3	1975.3	4.55	5.26 -8.71	-1.42	5.86	.922	6.78	.139	-.C35			5/2+
106	166	272	1987.4	1981.3	4.70	6.12 -8.61	-2.08	5.38	.923	6.87	.138	-.C34			
106	167	273	1992.3	1987.2	4.91	4.90 -8.62	-.68	4.97	.923	5.87	.136	-.C35			3/2+
106	168	274	1998.3	1993.0	5.08	5.98 -8.41	-1.56	4.56	.924	5.96	.130	-.C33			
106	169	275	2003.1	1998.7	5.30	4.82 -8.12	-.23	4.28	.924	5.13	.115	-.C35			3/2+
106	170	276	2009.0	2004.3	5.54	5.89 -7.88	-1.07	3.99	.924	5.18	.098	-.C27			
106	171	277	2013.8	2009.7	5.83	4.82 -7.50	.13	3.92	.925	4.28	.072	-.C17			5/2+
106	172	278	2019.5	2015.1	6.01	5.66 -7.41	-.63	3.62	.925	4.60	.071	-.C19			
106	173	279	2024.1	2020.4	6.24	4.59 -7.32	.61	3.52	.926	4.00	.054	-.C25			1/2+
106	174	280	2029.4	2025.6	6.40	5.35 -7.28	-.04	3.11	.926	4.20	.066	-.C25			
106	175	281	2033.7	2030.6	6.62	4.28 -7.25	1.20	2.89	.927	3.45	.060	-.C27			1/2+
106	176	282	2038.4	2035.6	6.38	4.70 -7.55	.93	2.03	.928	3.45	.034	-.C36			
106	177	283	2042.4	2040.5	6.96	3.98 -7.14	1.70	1.72	.928	2.18	.045	-.C23			7/2+
106	178	284	2047.3	2045.2	4.60	4.93 -7.31	.83	1.29	.929	2.09	C				
106	179	285	2050.8	2049.9	7.33	3.51 -7.07	2.54	.70	.930	.54	.034	.C01			1/2+
106	180	286	2055.7	2054.5	3.81	4.89 -6.76	1.34	.42	.930	1.23	C				
106	181	287	2058.9	2059.0	7.75	3.20 -6.77	3.19	-.30	.931	-.05	C				D 3/2
106	182	288	2067.9	2063.4	7.41	8.93 -6.14	-2.37	3.65	.933	4.03	.253	.C25			
106	183	289	2066.7	2067.7	2.69	-1.17 -6.41	7.66	-1.25	.934	-.98	C				D 3/2
106	184	290	2076.3	2071.9	7.74	9.57 -5.94	-2.68	3.54	.935	3.87	.254	.C20			
106	185	291	2079.8	2076.0	7.91	3.51 -5.81	3.32	3.50	.936	3.21	.259	.C18			7/2-
106	186	292	2084.4	2080.0	8.08	4.58 -5.59	2.44	3.48	.937	3.79	.257	.C12			
106	187	293	2084.0	2084.0	4.48	-.40 -9.17	7.59	-.29	.938	C.00	UNSTABLE				H11/2
106	188	294	2092.1	2087.8	8.38	8.18 -5.22	-.28	3.47	.939	3.55	.240	.C02			
106	189	295	2091.6	2091.6	4.70	-.58 -8.84	8.32	-.31	.940	C.00	UNSTABLE				H11/2
106	190	296	2099.9	2095.2	8.78	8.31 -4.62	-.09	3.77	.941	4.22	.252	-.C03			
106	191	297	2103.0	2098.8	8.95	3.18 -4.35	4.85	3.93	.942	3.85	.252	-.C06			5/2+
106	192	298	2107.2	2102.3	9.76	4.13 -4.19	4.10	3.99	.943	4.57	.238	-.C08			

Z	N	A	B.E.	BC	SP	SN	SA	CR	EAR	X	S	A2	A4	P	N
106	193	299	2110.0	2105.7	9.31	2.86	-4.23	5.44	4.00	.944	4.07	.245	-.C13		9/2+
106	194	300	2114.0	2109.0	9.40	3.95	-3.53	4.64	4.06	.946	4.70	.238	-.C13		
106	195	301	2116.8	2112.3	9.51	2.77	-3.32	6.00	4.14	.947	4.30	.232	-.C16		1/2+
106	196	302	2120.6	2115.4	9.64	3.81	-3.66	5.14	4.23	.948	4.51	.224	-.C13		
106	197	303	2123.2	2118.5	9.78	2.67	-3.44	6.45	4.38	.949	4.51	.219	-.C13		11/2+
106	198	304	2126.9	2121.5	9.92	3.65	-3.29	5.63	4.47	.950	5.16	.213	-.C13		
106	199	305	2129.4	2124.4	10.07	2.53	-3.17	6.91	4.64	.951	4.78	.208	-.C13		11/2+
106	200	306	2132.9	2127.2	10.22	3.48	-2.97	6.12	4.73	.952	5.45	.204	-.C14		
107	132	239	1710.0	1707.7	-3.29	10.78	-13.74	-12.21	3.88	.944	4.22	.C32	-.C10	11/2+	
107	133	240	1719.5	1718.0	-3.13	9.53	-12.98	-10.79	3.58	.943	3.64	.C62	-.C25	9/2+	1/2-
107	134	241	1730.3	1728.2	-3.03	10.74	-13.00	-12.48	3.38	.942	4.10	.C75	-.C31	9/2+	
107	135	242	1739.6	1738.2	-2.88	9.36	-12.71	-10.51	3.21	.941	3.47	.C94	-.C35	9/2-	3/2-
107	136	243	1748.9	1748.0	-1.17	9.31	-12.82	-10.36	1.88	.940	2.72	.103	-.C36	9/2-	
107	137	244	1757.7	1757.7	-1.87	8.75	-12.91	-8.37	1.44	.939	1.17	C		F 7/2	11 1/2
107	138	245	1769.6	1767.3	-1.59	11.89	-11.40	-12.00	3.00	.938	2.09	.265	-.C10	9/2-	
107	139	246	1777.4	1776.7	-2.06	7.78	-12.58	-11.40	1.83	.937	1.53	.172	-.C22	9/2-	9/2-
107	140	247	1787.8	1786.0	-1.76	10.38	-12.33	-10.95	2.17	.936	2.41	.175	-.C16	9/2-	
107	141	248	1796.5	1795.1	-2.40	8.72	-12.35	-8.62	2.22	.935	1.67	.206	-.C02	9/2-	7/2-
107	142	249	1806.9	1804.1	-1.58	10.39	-11.86	-9.87	2.84	.934	3.33	.145	-.C27	1/2-	
107	143	250	1815.5	1812.9	-1.38	8.64	-11.78	-8.54	3.09	.933	2.95	.146	-.C27	1/2-	7/2-
107	144	251	1825.2	1821.6	-1.14	9.71	-11.20	-9.43	3.32	.932	3.67	.150	-.C16	1/2-	
107	145	252	1833.6	1830.4	-.93	8.38	-11.36	-7.94	3.57	.931	3.29	.151	-.C16	1/2-	9/2+
107	146	253	1843.1	1839.0	-.69	9.46	-11.18	-8.84	3.82	.931	4.12	.154	-.C12	1/2-	
107	147	254	1851.2	1847.4	-.49	8.13	-11.02	-7.32	4.09	.930	3.78	.154	-.C10	1/2-	7/2+
107	148	255	1860.4	1855.8	-.26	9.17	-10.89	-8.17	4.32	.930	4.60	.157	-.C06	1/2-	
107	149	256	1868.3	1864.0	-.05	7.88	-10.73	-6.71	4.61	.929	4.28	.158	-.C05	1/2-	9/2-
107	150	257	1877.1	1872.1	.20	8.87	-10.60	-7.51	4.75	.929	5.05	.159	-.C01	1/2-	
107	151	258	1884.8	1880.0	.37	7.63	-10.40	-6.08	5.08	.929	4.75	.159	-.C01	9/2-	9/2-
107	152	259	1893.4	1887.9	.70	8.63	-10.24	-6.88	5.28	.928	5.59	.159	-.C03	1/2-	
107	153	260	1900.8	1895.6	.87	7.38	-10.13	-5.47	5.57	.928	5.30	.157	-.C05	1/2-	11/2-
107	154	261	1909.0	1903.1	1.09	8.27	-9.95	-6.17	5.66	.928	6.04	.156	-.C09	1/2-	
107	155	262	1916.1	1910.6	1.29	7.11	-9.82	-4.82	5.92	.928	5.73	.154	-.C11	1/2-	7/2+
107	156	263	1924.1	1917.9	1.50	8.00	-9.70	-5.53	5.98	.928	6.45	.154	-.C14	1/2-	
107	157	264	1931.0	1925.2	1.70	6.86	-9.54	-4.21	6.23	.928	6.14	.153	-.C17	1/2-	9/2+
107	158	265	1938.6	1932.3	1.91	7.60	-9.54	-4.76	6.14	.928	6.81	.154	-.C24	11/2+	
107	159	266	1945.3	1939.2	2.13	6.71	-9.30	-3.69	6.47	.928	6.66	.155	-.C28	11/2+	1/2+
107	160	267	1952.8	1946.1	2.27	7.46	-9.19	-4.28	6.47	.928	7.15	.152	-.C26	11/2+	
107	161	268	1959.2	1952.8	2.50	6.46	-8.84	-3.08	6.78	.928	7.01	.151	-.C30	11/2+	3/2+
107	162	269	1966.4	1959.5	2.69	7.15	-8.81	-3.58	6.70	.928	7.57	.152	-.C32	11/2+	
107	163	270	1972.6	1966.0	2.89	6.18	-8.70	-2.43	6.95	.928	7.33	.147	-.C35	11/2+	13/2-
107	164	271	1979.1	1972.4	3.07	6.55	-8.91	-2.62	6.51	.928	7.48	.144	-.C36	11/2+	
107	165	272	1984.6	1978.7	3.26	5.46	-9.23	-1.34	6.26	.928	6.65	.138	-.C38	11/2+	9/2+
107	166	273	1990.9	1984.9	3.43	6.29	-9.13	-1.99	5.77	.928	6.78	.137	-.C37	11/2+	
107	167	274	1996.0	1990.9	3.64	5.11	-9.09	-.63	5.39	.929	5.84	.130	-.C35	11/2+	3/2+
107	168	275	2002.1	1996.9	3.81	6.15	-8.91	-1.47	4.98	.929	5.97	.126	-.C38	11/2+	
107	169	276	2007.2	2002.8	4.03	5.04	-8.56	-.25	4.74	.929	5.30	.124	-.C42	11/2+	3/2+

L	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
107	170	277	2013.2	2008.5	4.17	6.02	-8.34	-.94	4.42	.930	5.31	.111	-.036	11/2+	
107	171	278	2018.1	2014.2	4.24	4.90	-8.04	.45	4.24	.930	4.26	.089	-.026	11/2+	5/2+
107	172	279	2023.9	2019.7	4.41	5.83	-7.85	-.39	3.94	.931	4.55	.086	-.026	11/2+	
107	173	280	2028.6	2025.2	4.52	4.70	-7.69	1.06	3.77	.931	3.72	.073	-.023	11/2+	15/2-
107	174	281	2034.1	2030.5	4.69	5.52	-7.65	.66	3.37	.932	3.55	.076	-.027	11/2+	
107	175	282	2038.6	2035.8	4.84	4.42	-7.59	1.92	3.13	.933	3.22	.067	-.030	11/2+	1/2+
107	176	283	2043.3	2040.9	4.91	4.76	-8.02	1.78	2.17	.933	2.44	C		F 7/2	
107	177	284	2047.4	2045.9	4.98	4.06	-8.01	3.14	1.76	.934	1.46	.034	.001	11/2+	7/2+
107	178	285	2052.6	2050.9	5.28	5.23	-7.73	1.86	1.46	.935	1.73	C		F 7/2	
107	179	286	2056.3	2055.7	5.44	3.68	-7.45	3.52	.87	.936	.56	.012	.003	11/2+	1/2+
107	180	287	2061.3	2060.5	5.61	5.05	-9.69	2.29	.59	.937	.88	C		F 7/2	
107	181	288	2064.7	2065.1	5.75	3.37	-7.09	4.17	-.12	.937	-.40	C		F 7/2 D 3/2	
107	182	289	2073.6	2069.7	5.71	8.86	-6.65	-1.15	3.60	.938	3.22	.253	.024	5/2-	
107	183	290	2072.8	2074.1	6.11	-.77	-6.68	4.72	-1.06	.939	-1.34	C		F 7/2 D 3/2	
107	184	291	2082.3	2078.5	6.05	9.51	-6.44	-1.48	3.50	.940	3.15	.253	.016	5/2-	
107	185	292	2086.0	2082.8	6.24	3.70	-6.28	4.11	3.49	.941	2.56	.255	.014	5/2-	7/2-
107	186	293	2090.8	2087.0	6.41	4.75	-6.06	-.80	3.47	.942	3.16	.256	.009	5/2-	
107	187	294	2091.1	2091.1	7.11	.30	-9.10	3.24	.25	.943	C.00	UNSTABLE		F 7/2 H11/2	
107	188	295	2099.1	2095.1	6.96	8.03	-5.48	-.53	3.69	.944	3.49	.251	.000	5/2-	
107	189	296	2099.0	2099.0	7.43	-.10	-8.78	3.74	.23	.944	C.00	UNSTABLE		F 7/2 H11/2	
107	190	297	2107.1	2102.8	7.25	8.12	-4.94	-.30	3.96	.945	3.66	.247	-.007	5/2-	
107	191	298	2110.5	2106.6	7.45	3.38	-4.66	.30	4.16	.946	3.55	.236	-.009	5/2-	5/2+
107	192	299	2114.7	2110.2	7.52	4.20	-4.69	-.00	4.14	.947	4.15	.242	-.014	5/2-	
107	193	300	2117.8	2113.8	7.81	3.15	-4.54	5.76	4.28	.948	3.75	.236	-.014	5/2-	5/2+
107	194	301	2122.0	2117.3	7.99	4.13	-3.73	4.93	4.36	.949	4.45	.233	-.015	5/2-	
107	195	302	2124.9	2120.7	8.17	2.95	-4.09	6.20	4.47	.950	4.08	.225	-.016	5/2-	1/2+
107	196	303	2128.9	2124.0	8.33	3.98	-3.97	5.37	4.57	.951	4.71	.222	-.016	5/2-	
107	197	304	2131.7	2127.2	8.50	2.83	-3.80	6.62	4.73	.952	4.31	.216	-.016	5/2-	11/2+
107	198	305	2135.5	2130.3	8.66	3.81	-3.68	5.80	4.82	.953	4.57	.213	-.016	5/2-	
107	199	306	2138.2	2133.4	8.82	2.69	-3.51	7.07	5.00	.954	4.60	.205	-.016	5/2-	11/2+
107	200	307	2141.9	2136.4	8.98	3.64	-3.38	6.27	5.10	.955	5.27	.205	-.017	5/2-	
108	134	242	1728.3	1725.3	-1.93	11.33	-13.25	-14.27	3.63	.946	4.97	.064	.026		
108	135	243	1737.8	1735.5	-1.83	9.46	-13.16	-12.25	3.36	.947	4.28	.083	.036		3/2-
108	136	244	1748.6	1745.6	-.36	10.78	-13.02	-13.48	3.31	.946	4.85	.097	.039		
108	137	245	1756.8	1755.5	-.84	8.27	-13.96	-10.80	2.14	.946	3.13	.104	.042		3/2+
108	138	246	1765.2	1765.2	-4.40	8.38	-13.17	-9.66	-.01	.945	1.00	C			
108	139	247	1776.1	1774.8	-1.35	10.83	-11.84	-10.81	1.67	.944	1.95	.174	.022		5/2-
108	140	248	1787.1	1784.3	-.68	11.05	-12.40	-12.97	2.48	.943	3.86	.129	.036		
108	141	249	1796.2	1793.6	-.27	9.13	-11.53	-11.17	2.75	.942	3.52	.133	.035		5/2+
108	142	250	1806.2	1802.8	-.69	9.97	-11.64	-11.74	2.75	.942	3.92	.140	.030		
108	143	251	1815.0	1811.8	-.50	8.82	-12.17	-10.37	2.49	.941	3.51	.142	.025		7/2-
108	144	252	1824.9	1820.7	-.34	9.87	-11.88	-11.22	3.18	.940	4.17	.146	.020		
108	145	253	1833.5	1829.7	-.16	8.56	-11.75	-9.65	3.43	.940	3.78	.148	.017		5/2+
108	146	254	1843.1	1838.5	.02	9.64	-11.57	-10.57	3.67	.939	4.56	.152	.012		
108	147	255	1851.4	1847.1	.21	8.32	-11.42	-9.02	3.94	.938	4.24	.153	.011		7/2+
108	148	256	1860.8	1855.7	.40	9.35	-11.30	-9.86	4.16	.938	5.05	.155	.006		

Z	N	A	B.E.	BC	SP	SN	SA	CP	EAR	X	S	A2	A4	P	N
108	149	257	1868.8	1864.1	.58	8.07-11.15	-8.35	4.44	.937	4.72	.157	.005			5/2-
108	150	258	1877.9	1872.3	.77	9.06-11.03	-9.14	4.63	.937	5.53	.156	.001			
108	151	259	1885.7	1880.5	.97	7.83-10.87	-7.66	4.93	.936	5.23	.156	-.001			1/2+
108	152	260	1894.5	1888.5	1.13	8.75-10.70	-8.39	5.10	.936	6.03	.156	-.003			
108	153	261	1902.1	1896.4	1.32	7.57-10.60	-6.95	5.35	.936	5.73	.157	-.006			11/2-
108	154	262	1910.5	1904.2	1.50	8.46-10.44	-7.64	5.46	.935	6.48	.156	-.006			
108	155	263	1917.8	1911.8	1.69	7.30-10.36	-6.27	5.74	.935	6.17	.154	-.012			7/2+
108	156	264	1926.0	1919.3	1.87	8.19-10.22	-6.96	5.81	.935	6.86	.154	-.015			
108	157	265	1933.1	1926.7	2.06	7.05-10.08	-5.62	6.06	.935	6.56	.152	-.017			5/2+
108	158	266	1940.8	1934.0	2.23	7.78-10.10	-6.15	5.97	.934	7.25	.155	-.024			
108	159	267	1947.7	1941.2	2.39	6.87-9.90	-4.89	6.27	.934	6.96	.153	-.025			1/2+
108	160	268	1955.4	1948.2	2.60	7.66-9.62	-5.67	6.30	.934	7.65	.152	-.027			
108	161	269	1962.0	1955.1	2.78	6.65-9.46	-4.47	6.67	.934	7.48	.151	-.031			3/2+
108	162	270	1969.4	1961.9	2.97	7.33-9.45	-4.95	6.54	.934	8.05	.152	-.033			
108	163	271	1975.7	1968.6	3.15	6.36-9.32	-3.80	6.80	.935	7.82	.147	-.036			13/2-
108	164	272	1982.5	1975.2	3.33	6.73-9.55	-3.98	6.36	.935	7.58	.142	-.037			
108	165	273	1988.1	1981.7	3.52	5.64-9.88	-2.72	6.12	.935	7.21	.137	-.035			5/2+
108	166	274	1994.6	1988.1	3.70	6.47-9.76	-3.38	5.64	.935	7.21	.135	-.035			
108	167	275	1999.9	1994.3	3.89	5.30-9.75	-2.04	5.28	.935	6.35	.126	-.040			3/2+
108	168	276	2006.1	2000.4	4.00	6.26-9.61	-3.02	4.81	.936	6.24	.103	-.033			
108	169	277	2011.5	2006.5	4.30	5.33-9.17	-1.69	4.65	.936	5.41	.095	-.025			3/2+
108	170	278	2017.7	2012.4	4.56	6.29-8.86	-2.41	4.47	.936	5.56	.076	-.020			
108	171	279	2022.7	2018.2	4.66	5.00-8.68	-1.05	4.22	.937	5.07	.103	-.033			5/2+
108	172	280	2028.9	2023.9	4.98	6.15-8.42	-1.80	4.07	.937	5.17	.078	-.021			
108	173	281	2034.0	2029.6	5.40	5.12-8.13	-.65	4.15	.936	4.73	.051	-.025			1/2+
108	174	282	2039.7	2035.1	5.56	5.68-8.10	-1.15	3.74	.936	4.52	.058	-.026			
108	175	283	2044.3	2040.5	5.76	4.63-8.07	.20	3.54	.939	4.16	.056	-.027			1/2+
108	176	284	2049.7	2045.8	6.41	5.41-8.00	-.42	3.06	.939	4.24	.058	-.026			
108	177	285	2053.7	2051.0	6.31	3.95-8.32	1.21	2.38	.940	2.80	.036	-.016			7/2+
108	178	286	2059.0	2056.1	6.42	5.34-7.68	-.24	2.03	.940	2.92	0				
108	179	287	2062.9	2061.1	6.57	3.82-7.64	1.56	1.42	.941	1.73	0				S 1/2
108	180	288	2068.1	2066.0	6.76	5.24-7.53	.31	1.17	.942	2.06	0				
108	181	289	2071.6	2070.9	6.92	3.53-7.51	2.18	.45	.942	.78	0				D 3/2
108	182	290	2076.7	2075.6	3.17	5.10-7.29	.78	.26	.943	1.20	.027	-.010			
108	183	291	2080.0	2080.2	7.25	3.31-7.18	2.69	-.49	.944	-.16	0				D 3/2
108	184	292	2089.3	2084.7	7.04	9.30-6.81	-2.08	3.70	.945	3.77	.262	.023			
108	185	293	2095.2	2089.2	3.16	-.17-5.81	2.18	-.34	.945	0.00	UNSTABLE				H11/2
108	186	294	2093.5	2093.5	2.77	4.35-11.03	2.43	-.91	.946	0.00	UNSTABLE				H11/2
108	187	295	2097.8	2097.8	6.72	4.26-10.29	2.69	-.35	.947	0.00	UNSTABLE				H11/2
108	188	296	2101.9	2101.9	2.86	4.17-10.70	2.94	-.92	.947	0.00	UNSTABLE				H11/2
108	189	297	2106.0	2106.0	7.04	4.08-6.22	3.19	-.36	.948	0.00	UNSTABLE				H11/2
108	190	298	2110.0	2110.0	2.90	3.99-10.41	3.44	-.93	.949	0.00	UNSTABLE				H11/2
108	191	299	2113.9	2113.9	3.42	3.90-5.94	3.65	-.37	.950	0.00	UNSTABLE				H11/2
108	192	300	2122.8	2117.7	8.13	8.91-5.33	-1.17	4.16	.951	4.62	.244	-.010			
108	193	301	2126.1	2121.4	8.28	3.31-5.21	3.93	4.30	.952	4.26	.236	-.011			1/2-
108	194	302	2130.4	2125.1	8.37	4.22-5.12	3.15	4.32	.953	4.90	.233	-.014			
108	195	303	2133.5	2128.6	8.56	3.14-4.84	4.49	4.47	.954	4.51	.230	-.015			1/2+

Z	N	A	B.E.	BO	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N		
108	196	304	2137.6	2132.1	8.67	4.08	-4.71	3.71	4.52	.555	5.20	.223	-.C18				
108	197	305	2140.6	2135.5	8.82	2.99	-4.49	5.01	4.68	.556	4.80	.219	-.C18		11/2+		
108	198	306	2144.5	2138.8	8.98	3.96	-4.34	4.20	4.78	.556	5.46	.214	-.C18				
108	199	307	2147.4	2142.0	9.13	2.84	-4.17	5.50	4.95	.557	5.08	.210	-.C18		11/2+		
108	200	308	2151.2	2145.1	9.28	3.80	-4.02	4.72	5.05	.558	5.76	.207	-.C19				
109	136	245	1745.3	1742.7	-3.32	10.94-13.30-12.67			3.41	.553	4.23	.086	.C34	13/2+			
109	137	246	1754.8	1752.8	-2.06	9.52-13.14-11.17			3.30	.552	3.64	.099	.C41	13/2+	3/2+		
109	138	247	1764.5	1762.8	-.76	9.68-12.77-11.09			2.24	.551	3.07	.105	.C37	13/2+			
109	139	248	1773.4	1772.6	-2.71	8.89-12.67-10.18			1.79	.550	2.46	.136	.C56	1/2-	3/2+		
109	140	249	1784.3	1782.3	-2.82	10.93-13.64-12.05			2.28	.549	3.18	.106	.C40	11/2+			
109	141	250	1793.7	1791.8	-2.56	9.40-12.02-10.25			2.61	.549	2.74	.129	.C37	1/2-	5/2+		
109	142	251	1803.9	1801.1	-2.32	10.20-12.20-10.98			2.66	.548	3.15	.135	.C27	11/2+			
109	143	252	1812.9	1810.4	-2.13	9.02-11.91			-9.67	2.89	.547	2.74	.138	.C26	11/2+	7/2-	
109	144	253	1823.0	1819.5	-1.91	10.09-12.20-10.57			3.11	.547	3.45	.144	.C16	11/2+			
109	145	254	1831.7	1828.6	-1.71	8.76-12.07			-9.09	3.37	.546	3.06	.146	.C14	11/2+	5/2+	
109	146	255	1841.6	1837.6	-1.49	9.86-11.92-10.02			3.63	.545	3.91	.151	.C08	11/2+			
109	147	256	1850.1	1846.4	-1.29	8.51-11.78			-8.52	3.91	.545	3.57	.152	.C07	11/2+	7/2+	
109	148	257	1859.7	1855.2	-1.06	9.58-11.67			-9.39	4.15	.544	4.43	.155	.C02	11/2+		
109	149	258	1868.0	1863.8	-.87	8.27-11.53			-7.93	4.45	.544	4.12	.157	.C01	11/2+	9/2-	
109	150	259	1877.3	1872.2	-.61	9.31-11.38			-8.80	4.70	.544	4.99	.158	-.C02	11/2+		
109	151	260	1885.3	1880.6	-.38	8.06-11.20			-7.42	5.04	.543	4.74	.158	-.C03	11/2+	1/2+	
109	152	261	1894.3	1888.8	-.17	9.00-11.07			-8.21	5.24	.543	5.58	.158	-.C07	11/2+		
109	153	262	1902.1	1896.8	.03	7.77-10.93			-6.81	5.54	.542	5.31	.157	-.C09	11/2+	11/2-	
109	154	263	1910.8	1904.8	.25	8.67-10.89			-7.52	5.66	.542	6.08	.156	-.C12	11/2+		
109	155	264	1918.3	1912.6	.45	7.50-10.78			-6.17	5.93	.542	5.79	.155	-.C14	11/2+	7/2+	
109	156	265	1926.7	1920.3	.65	8.39-10.66			-6.88	6.02	.542	6.53	.155	-.C17	11/2+		
109	157	266	1933.9	1927.9	.84	7.25-10.53			-5.56	6.28	.541	6.24	.154	-.C19	11/2+	9/2+	
109	158	267	1942.0	1935.4	1.19	8.12-10.40			-6.43	6.35	.541	6.96	.155	-.C21	11/2+		
109	159	268	1948.9	1942.7	1.21	6.88-10.39			-4.97	6.46	.541	6.61	.154	-.C26	1/2-	1/2+	
109	160	269	1956.8	1949.9	1.40	7.86-10.13			-5.59	6.53	.541	7.33	.153	-.C29	1/2-		
109	161	270	1963.6	1957.0	1.60	6.85			-9.99	-4.39	6.86	.541	7.17	.152	-.C32	1/2-	3/2+
109	162	271	1971.1	1964.0	1.79	7.52			-9.93	-4.88	6.80	.541	7.75	.154	-.C34	1/2-	
109	163	272	1977.7	1970.9	1.97	6.54			-9.85	-3.73	7.06	.541	7.53	.149	-.C37	1/2-	13/2-
109	164	273	1984.6	1977.7	2.14	6.90-10.10			-3.91	6.61	.541	7.68	.145	-.C36	1/2-		
109	165	274	1990.4	1984.3	2.31	5.82-10.46			-2.81	6.36	.541	6.89	.136	-.C40	1/2-	9/2+	
109	166	275	1997.0	1990.8	2.48	6.64-10.37			-3.37	5.88	.541	6.99	.136	-.C39	1/2-		
109	167	276	2002.3	1997.3	2.45	5.27-10.55			-1.69	5.31	.542	5.60	.103	-.C33	5/2-	11/2+	
109	168	277	2009.0	2003.6	2.87	6.67-10.17			-2.52	5.08	.542	5.95	.103	-.C33	5/2-		
109	169	278	2014.6	2009.8	3.10	5.57			-9.71	-1.23	5.02	.542	4.97	.073	-.C20	5/2-	3/2+
109	170	279	2020.9	2015.9	3.16	6.35			-9.51	-1.93	4.69	.542	5.55	.103	-.C33	5/2-	
109	171	280	2026.3	2021.9	3.57	5.40			-9.14	-.72	4.67	.543	4.65	.076	-.C21	5/2-	15/2-
109	172	281	2032.6	2027.8	3.69	6.27			-8.90	-1.45	4.47	.543	5.08	.057	-.C24	5/2-	
109	173	282	2037.8	2033.6	3.75	5.16			-8.62	-.00	4.44	.543	4.50	.058	-.C26	5/2-	1/2+
109	174	283	2043.7	2039.2	4.04	5.98			-8.48	-.60	4.15	.544	4.82	.061	-.C27	5/2-	
109	175	284	2048.5	2044.8	4.21	4.80			-8.38	.59	3.95	.544	4.05	.055	-.C28	5/2-	1/2+
109	176	285	2054.1	2050.3	4.38	5.58			-8.31	.04	3.47	.544	4.15	.061	-.C27	5/2-	

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
109	177	286	2058.0	2055.7	4.32	3.89	-8.64	1.63	2.56	.945	2.33	C		F 7/2	G 7/2
109	178	287	2063.6	2061.0	4.60	5.62	-7.99	.91	2.33	.945	2.67	C		F 7/2	
109	179	288	2067.6	2066.1	4.77	3.95	-8.05	2.47	1.71	.946	1.45	C		F 7/2	S 1/2
109	180	289	2073.0	2071.2	4.94	5.41	-7.87	1.22	1.47	.946	1.82	C		F 7/2	
109	181	290	2076.7	2076.2	5.10	3.70	-7.85	3.10	.76	.947	.54	C		F 7/2	U 7/2
109	182	291	2082.0	2081.1	5.22	5.22	-7.68	1.74	.52	.947	.87	C		F 7/2	
109	183	292	2085.5	2085.9	5.43	3.52	-7.52	3.60	-.18	.948	-.40	C		F 7/2	D 7/2
109	184	293	2090.6	2090.6	1.23	5.09	-11.29	2.20	-.36	.949	0.00	UNSTABLE		F 7/2	
109	185	294	2095.2	2095.2	6.00	4.60	-5.92	2.83	.20	.949	0.00	UNSTABLE		F 7/2	M 1/2
109	186	295	2099.7	2099.7	6.16	4.51	-10.92	1.88	-.37	.950	0.00	UNSTABLE		F 7/2	
109	187	296	2104.1	2104.1	6.32	4.42	-10.20	2.14	.19	.951	0.00	UNSTABLE		F 7/2	M 1/2
109	188	297	2108.4	2108.4	6.48	4.33	-10.62	2.39	-.36	.951	0.00	UNSTABLE		F 7/2	
109	189	298	2112.7	2112.7	6.65	4.24	-6.69	2.64	.18	.952	0.00	UNSTABLE		F 7/2	M 1/2
109	190	299	2116.8	2116.8	6.80	4.15	-10.57	2.89	-.39	.953	0.00	UNSTABLE		F 7/2	
109	191	300	2120.9	2120.9	6.96	4.06	-6.41	3.14	.17	.954	0.00	UNSTABLE		F 7/2	M 1/2
109	192	301	2125.3	2124.8	6.45	8.40	-6.13	-1.05	4.04	.955	3.90	.240	-.011	11/2+	
109	193	302	2132.7	2128.7	6.59	3.44	-6.07	-.36	4.16	.955	3.51	.237	-.013	11/2+	1/2-
109	194	303	2137.2	2132.5	6.84	4.47	-5.79	3.74	4.27	.956	4.28	.227	-.015	11/2+	
109	195	304	2140.5	2136.2	7.02	3.31	-5.64	4.97	4.43	.957	3.90	.224	-.016	11/2+	1/2+
109	196	305	2144.8	2139.9	7.22	4.29	-5.48	4.09	4.53	.958	4.61	.219	-.016	11/2+	
109	197	306	2147.9	2143.4	7.38	3.15	-5.28	5.28	4.70	.959	4.27	.214	-.019	11/2+	11/2+
109	198	307	2152.1	2146.9	7.56	4.14	-5.12	4.42	4.82	.959	4.97	.209	-.020	11/2+	
109	199	308	2155.1	2150.2	7.73	3.01	-4.94	5.65	5.01	.960	4.63	.205	-.020	11/2+	11/2+
109	200	309	2159.1	2153.5	7.91	3.97	-4.78	4.82	5.13	.961	5.34	.202	-.022	11/2+	
110	138	248	1762.4	1760.0	-2.07	9.81	-14.48	-12.92	2.34	.957	3.85	.100	.035		
110	139	249	1771.4	1770.0	-1.90	9.06	-13.69	-11.00	1.85	.957	3.12	.136	.056		7/2+
110	140	250	1782.6	1779.8	-1.63	11.20	-10.88	-13.34	2.41	.956	3.94	.112	.041		
110	141	251	1792.1	1789.5	-1.56	9.47	-12.24	-11.92	2.62	.955	3.46	.125	.041		5/2+
110	142	252	1802.4	1799.1	-1.44	10.33	-12.96	-12.72	2.60	.954	3.81	.130	.031		
110	143	253	1811.6	1808.5	-1.26	9.19	-12.90	-11.46	2.82	.954	3.34	.135	.029		7/2-
110	144	254	1821.9	1817.8	-1.11	10.24	-12.62	-12.34	3.00	.953	3.99	.140	.021		
110	145	255	1830.8	1827.1	-.94	8.93	-12.51	-10.84	3.23	.952	3.57	.142	.016		5/2+
110	146	256	1840.8	1836.3	-.78	10.01	-12.36	-11.73	3.46	.951	4.35	.146	.011		
110	147	257	1849.5	1845.4	-.60	8.70	-12.23	-10.23	3.73	.951	3.99	.149	.010		7/2+
110	148	258	1859.3	1854.3	-.44	9.73	-12.14	-11.08	3.94	.950	4.81	.152	.005		
110	149	259	1867.7	1863.1	-.27	8.45	-12.00	-9.61	4.23	.950	4.48	.154	.004		9/2-
110	150	260	1877.1	1871.7	-.14	9.44	-11.91	-10.43	4.42	.949	5.25	.156	-.001		
110	151	261	1885.4	1880.2	.01	8.21	-11.77	-9.01	4.72	.949	5.00	.157	-.002		1/2+
110	152	262	1894.5	1888.6	.18	9.17	-11.66	-9.79	4.91	.948	5.81	.156	-.005		
110	153	263	1902.5	1896.9	.36	7.95	-11.54	-8.49	5.21	.948	5.54	.155	-.007		11/2-
110	154	264	1911.3	1905.0	.54	8.85	-11.49	-9.22	5.32	.948	6.31	.154	-.011		
110	155	265	1919.0	1913.0	.72	7.68	-11.37	-7.85	5.59	.948	6.03	.153	-.014		7/2+
110	156	266	1927.6	1920.9	.90	8.57	-11.26	-8.55	5.68	.947	6.77	.153	-.017		
110	157	267	1934.8	1928.7	.91	7.25	-11.30	-7.03	5.77	.947	6.37	.152	-.022		1/2+
110	158	268	1943.2	1936.3	1.13	8.34	-11.14	-7.75	5.88	.947	7.18	.152	-.026		
110	159	269	1950.4	1943.8	1.49	7.24	-10.96	-6.45	6.16	.947	6.93	.150	-.027		1/2+

L	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
11C	160	270	1958.4	1951.3	1.67	8.04-10.70	-7.07	6.23	.547	7.64	.151	-.030			
11C	161	271	1965.5	1958.5	1.85	7.03-10.53	-5.87	6.57	.547	7.48	.151	-.033			3/2+
11C	162	272	1973.2	1965.7	2.03	7.70-10.50	-6.36	6.51	.547	8.06	.153	-.035			
11C	163	273	1979.9	1972.8	2.21	6.73-10.42	-5.22	6.77	.547	7.83	.149	-.036			13/2-
11C	164	274	1980.6	1979.7	2.22	6.91-10.84	-5.20	6.16	.547	7.11	C				
11C	165	275	1992.9	1986.5	2.49	6.09-11.11	-3.81	6.01	.547	6.37	C				0 5/2
11C	166	276	1999.8	1993.2	2.80	6.94-10.90	-4.49	5.65	.547	6.61	C				
11C	167	277	2005.7	1999.8	3.37	5.65-10.70	-3.21	5.49	.547	5.85	C				0 5/2
11C	168	278	2012.5	2006.3	3.55	6.85-10.32	-3.96	5.26	.547	6.30	.001	.015			
11C	169	279	2018.2	2012.7	3.64	5.66 -9.96	-2.68	5.12	.547	5.49	.033	-.003			1/2+
11C	170	280	2024.8	2019.0	3.90	6.61 -9.61	-3.40	4.87	.547	5.86	.036	-.010			
11C	171	281	2030.3	2025.2	4.03	5.53 -9.41	-2.15	4.82	.548	5.30	.041	-.017			3/2+
11C	172	282	2037.0	2031.2	4.39	6.63 -9.07	-3.07	4.80	.548	5.94	.036	-.021			
11C	173	283	2042.3	2037.2	4.59	5.38 -8.69	-1.61	4.81	.548	5.43	.036	-.025			1/2+
11C	174	284	2048.3	2043.0	4.61	5.99 -8.85	-2.05	4.37	.548	5.55	.036	-.023			
11C	175	285	2053.4	2048.8	4.84	5.04 -8.93	-.93	4.23	.549	4.83	.046	-.023			1/2+
11C	176	286	2058.9	2054.4	4.74	5.46 -9.13	-1.38	3.49	.549	4.44	C				
11C	177	287	2063.8	2060.0	5.75	4.90 -8.86	-.54	3.42	.549	4.55	-.100	.043			11/2-
11C	178	288	2069.3	2065.4	5.68	5.55 -8.71	-1.21	2.95	.550	3.90	C				
11C	179	289	2073.5	2070.8	5.85	4.16 -8.51	.53	2.34	.550	2.72	C				S 1/2
11C	180	290	2079.0	2076.0	6.02	5.57 -8.28	-.71	2.09	.551	3.04	C				
11C	181	291	2082.9	2081.2	6.18	3.87 -8.23	1.16	1.38	.551	1.76	C				0 3/2
11C	182	292	2088.3	2086.2	6.34	5.39 -8.09	-.19	1.14	.552	2.10	C				
11C	183	293	2092.0	2091.2	6.51	3.69 -7.94	1.67	.44	.552	.83	C				0 3/2
11C	184	294	2097.2	2096.0	6.65	5.23 -7.81	.29	.24	.553	1.21	.021	.002			
11C	185	295	2100.8	2100.8	5.61	3.56 -7.56	2.19	-.35	.554	C.00	UNSTABLE				H11/2
11C	186	296	2105.5	2105.5	5.77	4.67-12.18	1.33	-.96	.554	C.00	UNSTABLE				
11C	187	297	2110.0	2110.0	5.93	4.58 -7.43	1.59	-.40	.555	C.00	UNSTABLE				H11/2
11C	188	298	2114.5	2114.5	6.09	4.49 -7.29	1.84	-.96	.556	C.00	UNSTABLE				
11C	189	299	2118.9	2118.9	6.25	4.40 -7.15	2.09	-.40	.556	C.00	UNSTABLE				H11/2
11C	190	300	2123.2	2123.2	6.41	4.31 -7.01	2.34	-.97	.557	C.00	UNSTABLE				
11C	191	301	2127.4	2127.4	6.57	4.22 -6.87	2.59	-.41	.557	C.00	UNSTABLE				H11/2
11C	192	302	2131.6	2131.6	2.30	4.13 -6.73	2.84	-.97	.558	C.00	UNSTABLE				
11C	193	303	2140.2	2135.6	7.43	8.58 -2.05	-1.45	4.13	.559	3.74	.250	-.005			1/2-
11C	194	304	2144.7	2139.6	7.50	4.54 -6.43	-1.79	4.15	.559	4.42	.243	-.011			
11C	195	305	2148.1	2143.4	7.59	3.41 -6.33	3.30	4.25	.560	4.03	.237	-.013			11/2+
11C	196	306	2152.4	2147.2	7.65	4.34 -6.21	2.49	4.25	.561	4.70	.230	-.016			
11C	197	307	2155.7	2150.9	7.77	3.28 -6.07	3.71	4.39	.561	4.33	.224	-.017			11/2+
11C	198	308	2160.0	2154.5	7.88	4.25 -5.91	2.78	4.47	.562	5.03	.217	-.019			
11C	199	309	2163.1	2158.0	8.01	3.14 -5.75	4.01	4.64	.563	4.68	.211	-.019			11/2+
11C	200	310	2167.2	2161.5	8.15	4.11 -5.61	3.19	4.74	.563	5.40	.206	-.021			
111	140	291	1779.4	1777.0	-3.24	10.88-13.35-11.86		2.57	.561	3.34	.107	.035			11/2+
111	141	292	1788.9	1786.9	-3.18	9.52-12.71-11.19		2.64	.560	2.81	.111	.037			5/2+
111	142	293	1799.4	1796.7	-3.05	10.46-13.18-11.92		2.56	.560	3.16	.119	.030			5/2-
111	143	294	1808.8	1806.3	-2.88	9.36-13.22-10.70		2.75	.559	2.64	.129	.026			5/2- 7/2-
111	144	295	1819.2	1815.8	-2.69	10.44-12.98-11.62		2.93	.559	3.29	.134	.020			5/2-

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
111	145	256	1828.3	1825.3	-2.50	9.12-12.87-10.17			3.15	.958	2.87	.136	.C17	5/2-	5/2+
111	146	257	1838.5	1834.7	-2.31	10.20-12.77-11.08			3.37	.957	3.64	.142	.C11	5/2-	
111	147	258	1847.4	1843.9	-2.13	8.88-12.65 -9.61			3.63	.957	3.28	.144	.C1C	5/2-	7/2+
111	148	259	1857.3	1853.0	-1.95	9.92-12.60-10.47			3.84	.956	4.09	.146	.CC4	5/2-	
111	149	260	1865.9	1862.0	-1.77	8.63-12.48 -5.03			4.11	.956	3.75	.148	.C03	5/2-	9/2-
111	150	261	1875.6	1870.8	-1.58	9.63-12.43 -9.85			4.30	.955	4.57	.148	-.C01	5/2-	
111	151	262	1884.0	1879.5	-1.40	8.39-12.30 -8.46			4.59	.955	4.27	.149	-.C03	5/2-	1/2+
111	152	263	1893.2	1888.1	-1.32	9.25-12.37 -9.14			4.67	.954	5.01	.148	-.C0E	5/2-	
111	153	264	1901.3	1896.6	-1.15	8.12-12.31 -7.80			4.94	.954	4.73	.146	-.C1C	5/2-	11/2-
111	154	265	1910.4	1904.9	-.95	9.05-12.26 -8.55			5.08	.954	5.51	.146	-.C14	5/2-	
111	155	266	1918.2	1913.1	-.76	7.87-12.17 -7.30			5.35	.953	5.24	.144	-.C16	5/2-	5/2+
111	156	267	1927.0	1921.1	-.56	8.77-12.07 -8.04			5.46	.953	6.03	.141	-.C21	5/2-	
111	157	268	1934.6	1929.1	-.18	7.63-11.93 -6.73			5.74	.953	5.78	.141	-.C24	5/2-	1/2+
111	158	269	1943.2	1936.9	-.00	8.53-11.79 -7.46			5.85	.953	6.57	.143	-.C27	5/2-	
111	159	270	1950.6	1944.6	.19	7.43-11.61 -6.19			6.17	.952	6.36	.143	-.C25	5/2-	1/2+
111	160	271	1958.8	1952.2	.37	8.22-11.51 -6.80			6.21	.952	7.07	.145	-.C32	5/2-	
111	161	272	1966.0	1959.7	.56	7.21-11.18 -5.63			6.55	.952	6.91	.146	-.C35	5/2-	3/2+
111	162	273	1973.9	1967.0	.73	7.87-11.17 -6.11			6.48	.952	7.47	.149	-.C36	5/2-	
111	163	274	1980.8	1974.2	.93	6.93-11.09 -5.00			6.77	.952	7.25	.146	-.C3E	5/2-	13/2-
111	164	275	1988.3	1981.4	1.50	7.48-11.12 -5.43			6.55	.952	6.95	C		F 7/2	
111	165	276	1994.6	1988.4	1.68	6.26-11.41 -2.92			6.40	.952	6.21	C		F 7/2 D	5/2
111	166	277	2001.7	1995.3	1.85	7.12-11.19 -3.60			6.04	.952	6.44	C		F 7/2	
111	167	278	2007.8	2002.0	2.11	6.10-10.90 -2.41			5.95	.952	5.78	.C17	.C03	13/2+	3/2+
111	168	279	2014.7	2008.7	2.19	6.94-10.61 -3.15			5.64	.952	6.04	.C2C	.C01	13/2+	
111	169	280	2020.6	2015.3	2.42	5.89 -9.99 -1.94			5.55	.952	5.38	.C35	-.C05	13/2+	1/2+
111	170	281	2027.4	2021.7	2.60	6.78 -9.88 -2.67			5.31	.952	5.75	.C33	-.C11	13/2+	
111	171	282	2033.1	2028.0	2.77	5.71 -9.74 -1.47			5.25	.952	5.22	.C33	-.C15	13/2+	3/2+
111	172	283	2040.0	2034.3	2.99	6.84 -9.25 -2.52			5.28	.953	5.86	.C32	-.C2C	7/2-	
111	173	284	2045.5	2040.4	3.16	5.55 -9.10 -1.32			5.28	.953	5.35	.C33	-.C24	7/2-	1/2+
111	174	285	2051.7	2046.4	3.32	6.16 -9.21 -1.57			4.84	.953	5.45	.C34	-.C22	7/2-	
111	175	286	2056.7	2052.3	3.32	5.03 -9.35 -.52			4.53	.953	4.54	.C35	-.C21	7/2-	5/2+
111	176	287	2062.4	2058.2	3.58	5.74 -9.60 -.95			3.88	.954	4.28	C		F 7/2	
111	177	288	2067.3	2063.9	3.56	4.89 -9.50 .51			3.63	.954	4.10	-.C95	.C4C	1/2+ 11/2-	
111	178	289	2073.2	2069.5	3.91	5.90 -9.18 -.39			3.34	.955	3.74	C		F 7/2	
111	179	290	2077.6	2075.0	4.08	4.33 -8.75 1.40			2.73	.955	2.56	C		F 7/2 S	1/2
111	180	291	2083.3	2080.4	4.25	5.74 -8.63 1.01			2.48	.955	2.89	C		F 7/2	
111	181	292	2087.3	2085.7	4.41	4.03 -8.59 2.03			1.77	.956	1.61	C		F 7/2 D	3/2
111	182	293	2092.9	2090.9	4.58	5.55 -8.45 .67			1.54	.956	1.94	C		F 7/2	
111	183	294	2096.7	2096.1	4.74	3.85 -8.30 2.54			.84	.957	.68	C		F 7/2 D	3/2
111	184	295	2102.2	2101.1	4.97	5.46 -8.06 1.09			.70	.957	1.15	.C47	-.C14	13/2+	
111	185	296	2106.0	2106.0	5.22	3.81 -7.77 2.80			.16	.958	C.CC	UNSTABLE		F 7/2 H11/2	
111	186	297	2110.8	2110.8	5.38	4.83 -8.03 1.68			-.41	.958	C.CC	UNSTABLE		F 7/2	
111	187	298	2115.6	2115.6	5.54	4.74 -7.89 2.47			.15	.959	C.CC	UNSTABLE		F 7/2 H11/2	
111	188	299	2120.2	2120.2	5.71	4.65 -7.75 1.48			-.42	.959	C.CC	UNSTABLE		F 7/2	
111	189	300	2124.8	2124.8	5.87	4.56 -7.61 1.55			.15	.960	C.CC	UNSTABLE		F 7/2 H11/2	
111	190	301	2129.3	2129.3	6.03	4.47 -7.47 1.80			-.42	.960	C.CC	UNSTABLE		F 7/2	
111	191	302	2133.6	2133.6	6.18	4.38 -7.33 2.05			.14	.961	C.CC	UNSTABLE		F 7/2 H11/2	

Z	N	A	B.E.	B0	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
111	192	303	2137.9	2137.9	6.34	4.29	-7.20	2.29	-4.2	.961	C.CC	UNSTABLE	F 7/2		
111	193	304	2142.1	2142.1	1.96	4.20	-7.06	2.54	.13	.962	C.CC	UNSTABLE	F 7/2	H11/2	
111	194	305	2150.6	2146.2	5.92	8.50	-6.96	-1.60	3.96	.962	3.44	.249	-.006	3/2+	
111	195	306	2154.1	2150.2	6.05	3.53	-6.87	-.87	4.03	.963	3.06	.242	-.011	3/2+	11/2+
111	196	307	2158.6	2154.2	6.20	4.50	-6.85	3.30	4.03	.963	3.69	.236	-.012	3/2+	
111	197	308	2162.0	2158.0	6.24	3.32	-6.84	4.61	4.05	.964	3.30	.233	-.016	3/2-	11/2+
111	198	309	2166.3	2161.8	6.37	4.37	-6.76	3.73	4.10	.964	4.00	.224	-.019	3/2-	
111	199	310	2169.6	2165.5	6.51	3.28	-6.62	4.93	4.26	.965	3.64	.219	-.019	3/2-	11/2+
111	200	311	2173.9	2169.1	6.66	4.25	-6.51	4.09	4.36	.965	4.41	.206	-.021	3/2-	
112	142	254	1797.3	1793.9	-2.12	10.58	-13.67	-13.16	2.59	.964	3.96	.111	.036		
112	143	255	1806.8	1803.7	-1.97	9.51	-13.63	-12.27	2.74	.964	3.32	.126	.032		7/2-
112	144	256	1817.4	1813.4	-1.83	10.57	-13.38	-13.41	2.86	.963	3.88	.131	.024		
112	145	257	1826.7	1823.1	-1.66	9.29	-13.28	-11.97	3.07	.963	3.41	.136	.021		5/2+
112	146	258	1837.0	1832.7	-1.52	10.34	-13.18	-12.87	3.25	.962	4.12	.139	.015		
112	147	259	1846.1	1842.1	-1.34	9.06	-13.05	-11.41	3.49	.962	3.73	.143	.013		7/2+
112	148	260	1856.1	1851.4	-1.18	10.07	-13.00	-12.25	3.67	.961	4.48	.146	.006		
112	149	261	1864.9	1860.5	-1.01	8.81	-12.89	-10.82	3.93	.961	4.12	.148	.006		9/2-
112	150	262	1874.7	1869.6	-.85	9.79	-12.83	-11.63	4.09	.960	4.90	.149	.002		
112	151	263	1883.3	1878.5	-.67	8.57	-12.71	-10.23	4.38	.960	4.59	.151	-.000		1/2+
112	152	264	1892.7	1887.2	-.46	9.46	-12.69	-10.94	4.47	.960	5.32	.150	-.004		
112	153	265	1901.0	1895.8	-.28	8.30	-12.60	-9.61	4.75	.959	5.01	.151	-.006		11/2-
112	154	266	1910.2	1904.4	-.22	9.11	-12.66	-10.33	4.76	.959	5.71	.148	-.011		
112	155	267	1918.2	1912.7	-.05	8.03	-12.58	-8.97	5.02	.959	5.42	.146	-.014		9/2+
112	156	268	1927.1	1921.0	.11	8.94	-12.49	-9.68	5.11	.958	6.21	.141	-.019		
112	157	269	1934.9	1929.1	.28	7.80	-12.37	-8.34	5.37	.958	5.96	.141	-.022		1/2+
112	158	270	1943.6	1937.1	.45	8.70	-12.24	-9.05	5.48	.958	6.74	.142	-.026		
112	159	271	1951.2	1945.0	.64	7.62	-11.88	-7.79	5.80	.958	6.55	.147	-.030		1/2+
112	160	272	1959.6	1952.8	.80	8.36	-11.85	-8.39	5.83	.957	7.23	.145	-.031		
112	161	273	1967.0	1960.4	.97	7.38	-11.70	-7.17	6.16	.957	7.06	.146	-.034		3/2+
112	162	274	1975.0	1967.9	1.15	8.04	-11.70	-7.69	6.09	.957	7.62	.148	-.035		
112	163	275	1982.1	1975.3	1.27	7.05	-11.68	-5.97	6.32	.957	6.75	C			J15/2
112	164	276	1990.9	1982.6	2.56	8.78	-10.60	-7.13	7.21	.957	6.23	C			
112	165	277	1997.3	1989.8	2.74	6.44	-10.88	-4.83	7.06	.957	7.49	C			D 5/2
112	166	278	2004.6	1996.9	2.91	7.29	-10.50	-5.51	6.71	.957	7.72	C			
112	167	279	2010.8	2003.8	3.00	6.20	-10.39	-4.24	6.54	.957	6.97	C			D 5/2
112	168	280	2017.9	2010.7	3.16	7.09	-10.24	-4.95	6.21	.957	7.22	C			
112	169	281	2024.0	2017.4	3.33	6.05	-10.04	-3.59	6.12	.957	6.55	.016	.003		1/2+
112	170	282	2030.9	2024.0	3.46	6.91	-9.97	-4.30	5.83	.957	6.82	.017	.001		
112	171	283	2036.7	2030.5	3.54	5.80	-9.84	-3.02	5.69	.957	6.14	.031	-.006		3/2+
112	172	284	2043.4	2036.9	3.45	6.75	-9.70	-3.79	5.46	.957	6.49	.027	-.009		
112	173	285	2049.3	2043.2	3.81	5.91	-9.33	-2.79	5.65	.958	6.21	.024	-.016		1/2+
112	174	286	2055.4	2049.4	3.73	6.08	-9.87	-3.22	4.96	.958	5.96	C			
112	175	287	2060.7	2055.5	4.00	5.30	-9.95	-1.78	4.75	.958	5.17	C			G 7/2
112	176	288	2067.0	2061.5	4.62	6.35	-9.59	-2.64	4.55	.958	5.54	C			
112	177	289	2072.1	2067.4	4.73	5.01	-9.62	-1.33	4.25	.958	4.67	C			G 7/2
112	178	290	2078.2	2073.2	4.95	6.12	-8.98	-2.27	4.01	.959	5.01	C			

Z	N	A	H.E.	BC	SP	SN	SA	CE	PAR	X	S	A2	A4	P	N
112	179	291	2083.5	2078.8	5.97	5.35	-8.53	-1.33	4.26	.959	5.43	-.124	.044		15/2+
112	180	292	2088.6	2084.4	5.28	5.05	-9.04	-1.11	3.16	.959	4.15	C			
112	181	293	2092.8	2089.5	5.44	4.20	-9.00	.15	2.45	.960	2.87	C			D 3/2
112	182	294	2098.5	2095.3	5.61	5.71	-8.86	-1.20	2.21	.960	3.20	C			
112	183	295	2102.5	2100.6	5.77	4.02	-8.71	.66	1.51	.960	1.54	C			D 3/2
112	184	296	2108.0	2105.8	5.83	5.53	-8.57	-.68	1.28	.961	2.27	C			
112	185	297	2111.7	2110.8	5.74	3.72	-8.54	1.42	.47	.961	.91	.025	-.005		1/2-
112	186	298	2117.3	2115.8	6.43	5.53	-8.25	-.22	.44	.961	1.43	C			
112	187	299	2120.9	2120.7	5.35	3.66	-8.15	1.82	-.24	.962	.18	.034	.001		3/2-
112	188	300	2125.6	2125.6	5.32	4.62	-8.20	1.01	-.99	.962	C.00	UNSTABLE			
112	189	301	2130.3	2130.3	5.48	4.72	-8.07	1.83	-.43	.962	C.00	UNSTABLE			H11/2
112	190	302	2134.9	2134.9	5.64	4.62	-7.93	1.25	-.99	.963	C.00	UNSTABLE			
112	191	303	2139.4	2139.4	5.80	4.53	-7.79	1.50	-.43	.963	C.00	UNSTABLE			H11/2
112	192	304	2143.9	2143.9	5.96	4.44	-7.65	1.75	-.99	.964	C.00	UNSTABLE			
112	193	305	2148.2	2148.2	6.11	4.35	-7.52	2.00	-.44	.964	C.00	UNSTABLE			H11/2
112	194	306	2152.5	2152.5	1.88	4.27	-7.38	2.25	-.99	.965	C.00	UNSTABLE			
112	195	307	2161.2	2156.7	7.02	8.67	-7.29	-2.00	4.05	.965	3.40	.251	-.005		11/2+
112	196	308	2165.8	2160.8	7.14	4.62	-7.20	1.50	4.03	.965	4.01	.246	-.011		
112	197	309	2169.3	2164.8	7.33	3.50	-7.11	2.76	4.08	.966	3.62	.238	-.013		1/2+
112	198	310	2173.8	2168.7	7.44	4.48	-6.97	1.89	4.08	.966	4.32	.231	-.016		
112	199	311	2177.2	2172.5	7.55	3.40	-6.84	3.10	4.20	.967	3.99	.221	-.017		11/2+
112	200	312	2181.5	2176.3	7.68	4.38	-6.71	2.20	4.28	.967	4.70	.215	-.019		
113	144	257	1813.9	1810.6	-3.46	10.73	-13.79	-12.50	2.78	.967	3.24	.118	.025	7/2-	
113	145	258	1823.3	1820.5	-3.30	9.45	-13.70	-11.19	2.94	.966	2.69	.128	.022	7/2-	5/2+
113	146	259	1833.9	1830.3	-3.14	10.51	-13.63	-12.10	3.10	.966	3.38	.131	.016	7/2-	
113	147	260	1843.1	1839.9	-2.97	9.23	-13.52	-10.66	3.32	.965	2.95	.136	.014	7/2-	7/2+
113	148	261	1853.3	1849.4	-2.80	10.24	-13.48	-11.49	3.47	.965	3.68	.139	.009	7/2-	
113	149	262	1862.3	1858.7	-2.62	8.98	-13.38	-10.08	3.72	.965	3.30	.143	.007	7/2-	5/2-
113	150	263	1872.3	1867.9	-2.45	9.96	-13.33	-10.89	3.87	.964	4.07	.143	.002	7/2-	
113	151	264	1881.0	1877.0	-2.27	8.74	-13.21	-9.51	4.14	.964	3.74	.145	-.000	7/2-	1/2+
113	152	265	1890.7	1885.9	-2.08	9.64	-13.20	-10.23	4.24	.964	4.49	.142	-.004	7/2-	
113	153	266	1899.0	1894.8	-2.01	8.38	-13.21	-8.81	4.41	.963	4.10	.142	-.007	3/2-	11/2-
113	154	267	1908.4	1903.5	-1.72	9.39	-13.07	-9.56	4.51	.963	4.89	.137	-.012	3/2-	
113	155	268	1916.7	1912.0	-1.52	8.23	-12.95	-8.35	4.78	.963	4.62	.133	-.016	3/2-	5/2+
113	156	269	1925.8	1920.4	-1.32	9.14	-12.86	-9.09	4.89	.962	5.42	.132	-.020	3/2-	
113	157	270	1933.8	1928.8	-1.14	7.99	-12.74	-7.77	5.16	.962	5.16	.132	-.023	3/2-	1/2+
113	158	271	1942.7	1936.9	-.96	8.87	-12.65	-8.46	5.26	.962	5.92	.136	-.026	3/2-	
113	159	272	1950.4	1945.0	-.79	7.78	-12.49	-7.23	5.57	.962	5.75	.142	-.031	3/2-	1/2+
113	160	273	1959.0	1953.0	-.57	8.60	-12.42	-7.88	5.64	.962	6.54	.150	-.035	3/2-	
113	161	274	1966.6	1960.8	-.43	7.53	-12.31	-6.07	5.93	.962	6.27	.142	-.035	3/2-	3/2+
113	162	275	1975.3	1968.5	.29	8.76	-11.77	-7.06	6.40	.961	6.86	C		F 7/2	
113	163	276	1983.0	1976.1	.86	7.62	-11.37	-5.35	7.02	.961	6.89	.017	.002	7/2-	15/2-
113	164	277	1991.7	1983.5	.83	8.74	-10.50	-6.51	7.71	.961	6.16	C		F 7/2	
113	165	278	1998.3	1990.9	1.00	6.62	-10.81	-4.00	7.55	.961	7.42	C		F 7/2 D 5/2	
113	166	279	2005.8	1998.1	1.18	7.47	-10.82	-4.68	7.20	.961	7.65	C		F 7/2	
113	167	280	2012.2	2005.3	1.35	6.37	-10.71	-3.41	7.03	.961	6.89	C		F 7/2 D 5/2	

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
113	168	281	2019.6	2012.3	1.68	7.42-10.41	-4.28	6.85	.961	7.31	.C16	.CC5	7/2-		
113	169	282	2025.8	2019.2	1.83	6.20-10.32	-3.04	6.73	.961	6.60	.C2C	.CC4	7/2-	1/2+	
113	170	283	2032.9	2026.0	2.00	7.08-10.17	-3.81	6.44	.961	6.88	.C21	.CC2	7/2-		
113	171	284	2038.8	2032.7	2.17	5.97-10.09	-2.52	6.31	.961	6.18	.C3C	-.CC5	7/2-	3/2+	
113	172	285	2045.7	2039.2	2.34	6.91 -9.96	-3.35	6.07	.961	6.52	.C2E	-.CC7	7/2-		
113	173	286	2051.4	2045.7	2.08	5.65-10.02	-1.87	5.82	.961	5.68	.C34	.CC1	7/2-	5/2+	
113	174	287	2058.1	2052.1	2.74	6.74-10.12	-2.76	5.63	.961	6.10	.C27	-.CC6	7/2-		
113	175	288	2063.6	2058.3	2.93	5.49-10.18	-1.34	5.44	.962	5.30	.C2C	-.CC1	7/2-	5/2+	
113	176	289	2069.9	2064.5	2.90	6.32-10.01	-2.02	5.03	.962	5.47	C		F 7/2		
113	177	290	2075.1	2070.5	3.07	5.18 -9.87	-.51	4.73	.962	4.60	C		F 7/2	G 7/2	
113	178	291	2081.4	2076.5	3.23	6.28 -9.32	-1.46	4.50	.962	4.54	C		F 7/2		
113	179	292	2086.7	2082.3	3.15	5.27 -8.94	-.27	4.49	.962	5.05	-.125	.CC4	1/2+	15/2+	
113	180	293	2092.1	2088.1	3.57	5.46 -9.38	-.60	3.64	.963	4.08	C		F 7/2		
113	181	294	2096.5	2093.7	3.73	4.37 -9.34	1.09	2.93	.963	2.80	C		F 7/2	D 7/2	
113	182	295	2102.4	2099.2	3.90	5.68 -9.21	-.39	2.70	.963	2.14	C		F 7/2		
113	183	296	2106.6	2104.7	4.06	4.18 -9.06	1.47	2.00	.963	1.87	C		F 7/2	D 7/2	
113	184	297	2112.4	2110.0	4.35	5.82 -8.80	-.00	1.90	.964	2.35	.C16	-.CC6	7/2-		
113	185	298	2116.3	2115.3	4.52	3.88 -8.76	1.97	1.09	.964	.97	.C2E	-.CC4	7/2-	1/2-	
113	186	299	2122.0	2120.5	4.70	5.71 -8.52	.13	1.08	.964	1.52	.C22	-.CC4	7/2-		
113	187	300	2125.8	2125.5	4.85	3.81 -8.52	2.34	.38	.964	.28	.C42	.CC5	7/2-	7/2-	
113	188	301	2131.3	2130.5	5.77	5.54 -7.82	.68	.35	.965	.83	.C37	.CC4	7/2-		
113	189	302	2135.4	2135.4	5.10	4.05 -8.51	2.36	.12	.965	C.CC	UNSTABLE	F 7/2	H11/2		
113	190	303	2140.1	2140.1	5.26	4.78 -8.38	1.35	-.44	.965	C.CC	UNSTABLE	F 7/2			
113	191	304	2144.8	2144.8	5.41	4.69 -8.24	2.22	.11	.966	C.CC	UNSTABLE	F 7/2	H11/2		
113	192	305	2149.4	2149.4	5.57	4.60 -8.11	1.25	-.45	.966	C.CC	UNSTABLE	F 7/2			
113	193	306	2154.0	2154.0	5.73	4.51 -7.97	2.22	.11	.966	C.CC	UNSTABLE	F 7/2	H11/2		
113	194	307	2158.4	2158.4	5.89	4.42 -7.83	1.71	-.45	.967	C.CC	UNSTABLE	F 7/2			
113	195	308	2166.5	2162.7	5.35	8.13 -3.90	-1.84	3.90	.967	2.42	.257	-.CC5	1/2+	11/2+	
113	196	309	2171.3	2167.0	5.48	4.76 -7.64	-2.11	3.86	.967	2.98	.254	-.CC7	1/2+		
113	197	310	2174.9	2171.1	5.59	3.62 -7.56	-1.32	3.86	.968	2.57	.248	-.C10	1/2+	1/2+	
113	198	311	2179.5	2175.2	5.72	4.61 -7.45	2.82	3.85	.968	3.21	.242	-.C12	1/2+		
113	199	312	2183.0	2179.2	5.80	3.48 -7.29	4.09	3.89	.969	2.89	.231	-.C16	3/2+	11/2+	
113	200	313	2187.5	2183.1	5.92	4.50 -7.16	3.18	3.93	.969	3.61	.224	-.C18	3/2+		
114	146	260	1831.6	1827.5	-2.21	10.66-14.01-13.88		3.03	.969	3.91	.131	.C2C			
114	147	261	1841.0	1837.3	-2.04	9.40-13.90-12.48		3.24	.969	3.45	.137	.C17		7/2+	
114	148	262	1851.4	1847.0	-1.88	10.39-13.85-13.34		3.36	.968	4.13	.140	.C12			
114	149	263	1860.6	1856.5	-1.70	9.16-13.74-11.94		3.60	.968	3.72	.144	.C10		5/2-	
114	150	264	1870.7	1865.9	-1.54	10.12-13.69-12.75		3.73	.968	4.45	.145	.CC5			
114	151	265	1879.6	1875.2	-1.37	8.92-13.58-11.37		3.98	.967	4.10	.148	.CC3		1/2+	
114	152	266	1889.5	1884.3	-1.21	9.80-13.56-12.09		4.06	.967	4.82	.145	-.CC1			
114	153	267	1898.1	1893.3	-.95	8.64-13.49-10.77		4.30	.967	4.50	.143	-.CC5		7/2+	
114	154	268	1907.5	1902.2	-.90	9.44-13.50-11.34		4.27	.966	5.17	.138	-.C10			
114	155	269	1915.9	1910.9	-.73	8.40-13.41-10.10		4.53	.966	4.90	.135	-.C14		5/2+	
114	156	270	1925.2	1919.5	-.56	9.31-13.21-10.81		4.63	.966	5.69	.130	-.C18			
114	157	271	1933.4	1928.0	-.39	8.16-13.09 -9.45		4.85	.966	5.42	.131	-.C21		1/2+	
114	158	272	1942.4	1936.4	-.22	9.04-12.98-10.17		4.97	.966	6.16	.134	-.C25			

Z	N	A	B.F.	BO	SP	SN	SA	CB	EAR	X	S	A2	A4	P	N
114	159	273	1950.4	1944.6	-0.06	7.95-12.83	-8.94	5.27	.965	5.97	.141	-.C3C			1/2+
114	160	274	1959.7	1952.8	.68	9.33-12.20-10.10		5.85	.965	6.95	C				
114	161	275	1967.5	1960.8	.92	7.78-12.04	-8.35	6.26	.965	6.73	C				J1 ⁵ /2
114	162	276	1976.8	1968.7	1.48	9.32-11.09	-9.64	7.11	.965	6.17	C				
114	163	277	1984.4	1976.4	1.45	7.58-10.90	-7.88	7.52	.965	7.96	C				J1 ⁵ /2
114	164	278	1993.5	1984.1	1.83	9.12	-9.81	-9.25	8.41	.965	6.46	C			
114	165	279	2000.3	1991.6	2.01	6.75-10.07	-6.74	8.26	.965	6.72	C				D ⁵ /2
114	166	280	2008.0	1999.0	2.18	7.64-11.20	-7.41	7.90	.964	6.95	C				
114	167	281	2014.5	2006.3	2.35	6.55-11.09	-6.14	7.74	.964	6.20	C				D ⁵ /2
114	168	282	2021.9	2013.5	2.37	7.44-10.95	-6.85	7.40	.964	6.45	C				
114	169	283	2028.3	2020.6	2.49	6.32-10.83	-5.56	7.23	.964	7.65	C				D ⁵ /2
114	170	284	2035.5	2027.5	2.67	7.26-10.66	-6.14	6.95	.964	7.98	C				
114	171	285	2041.6	2034.4	2.78	6.08-10.64	-4.80	6.75	.964	7.21	C				G ⁷ /2
114	172	286	2048.7	2041.1	3.00	7.14-10.42	-5.64	6.56	.964	7.55	C				
114	173	287	2054.6	2047.6	3.20	5.86-10.36	-4.24	6.36	.965	6.81	C				G ⁷ /2
114	174	288	2061.5	2054.3	3.36	6.90-10.20	-5.09	6.15	.965	7.18	C				
114	175	289	2067.1	2060.7	3.52	5.64-10.47	-3.71	5.94	.965	6.40	C				G ⁷ /2
114	176	290	2073.8	2067.1	3.88	6.69	-9.86	-4.72	5.74	.965	6.76	C			
114	177	291	2079.2	2073.3	4.05	5.34	-9.82	-3.21	5.44	.965	5.85	C			G ⁷ /2
114	178	292	2085.6	2079.4	4.21	6.45	-9.73	-4.15	5.20	.965	6.23	C			
114	179	293	2090.8	2085.4	4.08	5.14	-9.59	-2.56	4.90	.965	6.05	-.123	.C45		1 ⁵ /2+
114	180	294	2096.8	2091.3	4.67	6.05	-9.66	-2.78	4.46	.965	6.17	-.125	.C44		
114	181	295	2101.2	2097.1	4.71	4.40-10.61	-.96	3.64	.966	4.05	C				D ⁷ /2
114	182	296	2107.3	2102.8	4.87	6.04	-9.62	-1.81	3.40	.966	4.42	C			
114	183	297	2111.6	2108.4	5.03	4.34	-9.47	-1.21	2.70	.966	3.16	C			D ⁷ /2
114	184	298	2117.4	2114.0	5.07	5.65	-9.34	-2.55	2.46	.966	3.45	C			
114	185	299	2121.3	2119.4	5.06	3.88	-9.47	-.41	1.50	.966	1.95	C			H1 ¹ /2
114	186	300	2127.3	2124.7	5.16	6.01	-8.99	-2.15	1.63	.967	2.65	C			
114	187	301	2131.2	2129.5	5.43	3.87	-8.83	.02	.84	.967	1.31	.C13	-.C06		3/2-
114	188	302	2136.9	2135.0	5.62	5.73	-8.63	-1.55	.88	.967	1.90	C			
114	189	303	2140.7	2140.1	5.35	3.78	-8.51	.54	.18	.967	.76	.C01	-.C17		3/2+
114	190	304	2146.3	2145.0	6.13	5.56	-7.57	-1.20	.24	.966	1.31	.C41	.C13		
114	191	305	2149.9	2149.5	5.07	3.64	-8.65	1.62	-.41	.966	.14	.C02	-.C16		3/2-
114	192	306	2155.4	2154.6	5.95	5.47	-7.60	-.08	-.26	.966	.75	C			
114	193	307	2159.3	2159.3	5.35	3.91	-8.42	.92	-.46	.966	C.00	UNSTABLE			H1 ¹ /2
114	194	308	2163.9	2163.9	5.50	4.58	-8.29	1.17	-1.01	.969	C.00	UNSTABLE			
114	195	309	2168.4	2168.4	1.86	4.49	-8.15	1.42	-.46	.969	C.00	UNSTABLE			H1 ¹ /2
114	196	310	2172.8	2172.8	1.51	4.40	-8.01	1.66	-1.01	.969	C.00	UNSTABLE			
114	197	311	2181.5	2177.1	6.65	8.75	-7.93	-2.53	3.98	.970	2.97	.257	-.C05		1/2+
114	198	312	2186.3	2181.3	6.78	4.75	-7.81	1.00	3.95	.970	3.53	.255	-.C10		
114	199	313	2189.9	2185.5	6.90	3.59	-7.72	2.30	3.94	.970	3.11	.250	-.C13		7/2-
114	200	314	2194.5	2189.5	7.00	4.61	-7.59	1.42	3.94	.971	3.82	.241	-.C16		
115	148	263	1847.9	1844.2	-3.56	10.56-14.27-12.50		3.14	.972	3.28	.125	.C13	13/2+		
115	149	264	1857.2	1853.9	-3.41	9.31-14.18-11.10		3.34	.971	2.85	.136	.C11	13/2+		5/2-
115	150	265	1867.5	1863.5	-3.23	10.30-14.12-11.89		3.46	.971	3.64	.132	.C05	13/2+		
115	151	266	1876.6	1873.0	-3.06	9.08-14.02-10.52		3.65	.970	3.24	.138	.C03	13/2+		1/2+

Z	N	A	B.E.	RC	SP	SN	SA	CE	BAR	X	S	A2	A4	P	N
115	152	267	1886.5	1882.3	-2.91	9.96-14.02	-11.21	3.75	.970	3.93	.134	-.CC1	13/2+		
115	153	268	1895.4	1891.5	-2.68	8.87-13.90	-9.94	4.03	.969	3.70	.127	-.CC6	13/2+	7/2+	
115	154	269	1905.1	1900.5	-2.48	9.64-13.90	-10.59	4.02	.969	4.34	.122	-.C10	13/2+		
115	155	270	1913.6	1909.5	-2.29	8.55-13.69	-9.38	4.28	.969	4.10	.118	-.C14	1/2-	9/2+	
115	156	271	1923.2	1918.3	-2.07	9.52-13.56	-10.17	4.41	.969	4.91	.112	-.C18	1/2-		
115	157	272	1931.5	1926.9	-1.91	8.32-13.48	-8.75	4.65	.969	4.60	.117	-.C21	1/2-	1/2+	
115	158	273	1940.7	1935.5	-1.77	9.18-13.43	-9.48	4.69	.968	5.17	.C41	-.CC3	1/2-		
115	159	274	1948.8	1943.9	-1.55	8.17-13.25	-8.28	5.03	.968	4.92	.C36	-.CC3	1/2-	11/2+	
115	160	275	1958.4	1952.2	-1.36	9.52-12.59	-9.54	5.67	.968	6.16	.C17	.CC1	1/2-		
115	161	276	1966.4	1960.4	-1.10	8.03-12.35	-8.22	6.11	.968	6.00	.C20	.CC1	1/2-	13/2-	
115	162	277	1975.7	1968.5	-1.08	9.34-11.60	-9.33	6.80	.968	7.29	C		F 5/2		
115	163	278	1983.5	1976.4	-.90	7.76-11.37	-7.51	7.21	.968	7.11	C		F 5/2	J15/2	
115	164	279	1992.8	1984.2	-.73	9.30-10.84	-8.87	8.10	.968	6.58	C		F 5/2		
115	165	280	1999.8	1991.9	-.55	6.97-11.48	-6.37	7.95	.967	7.85	C		F 5/2	D 9/2	
115	166	281	2007.6	1999.5	-.38	7.82-12.40	-7.04	7.60	.967	8.08	C		F 5/2		
115	167	282	2014.3	2007.0	-.20	6.72-12.30	-5.77	7.43	.967	7.32	C		F 5/2	D 9/2	
115	168	293	2021.9	2014.4	-.03	7.61-12.16	-6.49	7.10	.967	7.57	C		F 5/2		
115	169	284	2028.6	2021.6	.34	6.68-11.85	-5.38	7.11	.967	7.04	.C17	.CC6	1/2-	1/2+	
115	170	285	2036.0	2028.7	.49	7.42-11.85	-6.02	6.81	.967	7.21	.C16	.CC1	1/2-		
115	171	286	2042.3	2035.8	.71	6.25-11.76	-4.72	6.66	.967	6.57	.C15	.CC6	1/2-	3/2+	
115	172	287	2049.6	2042.7	.63	7.25-11.58	-5.51	6.42	.967	6.50	.C16	.CC5	1/2-		
115	173	288	2055.6	2049.5	1.03	6.05-11.50	-4.13	6.24	.967	6.15	.C28	-.CC6	1/2-	9/2+	
115	174	289	2062.6	2056.2	1.15	7.02-11.39	-4.53	5.95	.967	6.48	.C12	.CC1	1/2-		
115	175	290	2068.3	2062.8	1.18	5.67-11.37	-3.45	5.64	.967	5.53	C		F 5/2	G 7/2	
115	176	291	2075.2	2069.3	1.35	6.85-11.26	-4.36	5.43	.967	5.90	C		F 5/2		
115	177	292	2080.7	2075.7	1.52	5.51-11.23	-2.72	5.13	.967	5.03	C		F 5/2	G 7/2	
115	178	293	2087.4	2081.9	1.80	6.73-10.83	-2.27	5.01	.968	6.41	-.111	.C51	15/2-		
115	179	294	2093.3	2088.1	2.50	5.24-10.16	-2.04	5.25	.968	5.87	-.120	.C46	15/2-	15/2+	
115	180	295	2099.5	2094.2	2.66	6.21-10.23	-2.24	4.82	.968	5.95	-.120	.C44	15/2-		
115	181	296	2104.7	2100.2	3.45	5.19-10.31	-1.04	4.60	.968	5.22	-.111	.C46	15/2-	15/2+	
115	182	297	2109.6	2106.0	2.35	4.94-10.83	-.63	3.10	.968	3.57	C		F 5/2		
115	183	298	2114.1	2111.8	2.52	4.51-10.69	-.85	2.40	.968	2.20	C		F 5/2	D 3/2	
115	184	299	2120.1	2117.5	2.68	6.01-10.55	-2.19	2.18	.968	2.64	C		F 5/2		
115	185	300	2124.4	2123.1	3.08	4.28-10.45	-.30	1.44	.969	1.25	.C31	.CC6	1/2-	1/2-	
115	186	301	2130.4	2128.5	3.11	6.04-10.23	-1.96	1.44	.969	1.90	.C17	-.CC3	1/2-		
115	187	302	2134.6	2133.9	3.40	4.16-9.95	.09	.78	.969	.75	.C42	.C15	1/2-	3/2-	
115	188	303	2140.5	2139.2	3.53	5.87-9.80	-1.34	.75	.969	1.43	.C45	.C24	1/2-		
115	189	304	2144.3	2144.4	3.58	3.82-9.78	.65	-.02	.969	.08	.C08	-.C23	1/2-	3/2+	
115	190	305	2150.8	2149.5	4.49	6.47-8.85	-1.61	.78	.970	1.45	.C66	.C30	1/2-		
115	191	306	2154.5	2154.3	4.61	3.76-9.13	-.11	.09	.970	C.CC	UNSTABLE	F 5/2	H11/2		
115	192	307	2159.4	2159.4	4.05	4.92-9.00	.14	-.46	.970	C.CC	UNSTABLE	F 5/2			
115	193	308	2164.3	2164.3	4.97	4.83-8.87	.39	.08	.970	C.CC	UNSTABLE	F 5/2	H11/2		
115	194	309	2169.0	2169.0	5.12	4.74-8.73	.64	-.47	.971	C.CC	UNSTABLE	F 5/2			
115	195	310	2173.7	2173.7	5.28	4.65-8.60	.88	.08	.971	C.CC	UNSTABLE	F 5/2	H11/2		
115	196	311	2178.2	2178.2	5.44	4.56-8.46	1.13	-.48	.972	C.CC	UNSTABLE	F 5/2			
115	197	312	2186.5	2182.7	4.97	8.29-8.31	-2.44	3.89	.972	1.95	.265	-.CC5	3/2-	1/2+	
115	198	313	2191.4	2187.1	5.11	4.89-8.17	-2.71	3.85	.973	2.50	.266	-.CC7	3/2-		

Z	N	A	B.E.	BC	SP	SN	SA	CB	BAR	X	S	A2	A4	P	A
115	199	314	2195.1	2191.4	5.24	3.72	-8.07	-1.90	3.82	.973	1.99	.265	-.010	3/2-	7/2-
115	200	315	2199.8	2155.6	5.35	4.72	-7.96	2.13	3.76	.974	2.66	.259	-.012	3/2-	
116	150	266	1865.3	1860.6	-2.22	10.46	-14.46	-13.79	3.39	.975	4.00	.147	.010		
116	151	267	1874.6	1870.4	-2.03	9.27	-14.34	-12.45	3.62	.975	3.58	.153	.006		1/2+
116	152	268	1884.7	1879.9	-1.85	10.14	-14.33	-13.05	3.66	.974	4.31	.145	.002		
116	153	269	1893.7	1869.3	-1.73	8.94	-14.26	-11.76	3.66	.974	3.99	.141	-.002		7/2+
116	154	270	1903.5	1858.5	-1.57	9.80	-14.26	-12.45	3.85	.973	4.70	.125	-.007		
116	155	271	1912.2	1907.6	-1.43	8.73	-14.17	-11.15	4.07	.973	4.42	.123	-.012		9/2+
116	156	272	1921.9	1916.6	-1.26	9.69	-13.92	-11.83	4.19	.973	5.25	.110	-.017		
116	157	273	1930.4	1925.5	-1.08	8.49	-13.83	-10.45	4.42	.972	4.93	.116	-.020		1/2+
116	158	274	1939.8	1934.2	-.89	9.37	-13.76	-11.17	4.48	.972	5.60	.120	-.022		
116	159	275	1948.0	1942.6	-.80	8.26	-13.66	-10.06	4.73	.971	5.33	.132	-.027		1/2+
116	160	276	1957.4	1951.3	-.47	9.36	-13.34	-10.88	5.02	.971	6.12	C			
116	161	277	1965.6	1959.6	-.77	8.23	-13.06	-9.57	5.46	.971	5.99	.019	-.001		13/2-
116	162	278	1975.2	1967.9	-.53	9.58	-12.81	-10.76	6.24	.971	7.33	C			
116	163	279	1983.1	1976.0	-.36	7.94	-12.65	-9.02	6.64	.970	7.15	C			11 1/2
116	164	280	1992.6	1984.0	-.18	9.47	-12.50	-10.22	7.54	.970	8.62	C			
116	165	281	1995.8	1991.9	-.01	7.15	-12.54	-7.87	7.40	.970	7.85	C			D 5/2
116	166	282	2007.8	1999.6	.17	7.99	-14.07	-8.54	7.05	.970	6.12	C			
116	167	283	2014.7	2007.3	.34	6.90	-13.96	-7.27	6.88	.970	7.36	C			D 5/2
116	168	284	2022.4	2014.8	.52	7.78	-13.82	-7.98	6.55	.970	7.61	C			
116	169	285	2024.2	2022.2	.62	6.78	-13.59	-6.70	6.49	.970	7.00	.016	.007		1/2+
116	170	286	2036.8	2029.6	.79	7.59	-13.43	-7.41	6.20	.970	7.27	.015	.006		
116	171	287	2043.3	2036.6	.96	6.47	-13.28	-6.10	6.04	.970	6.53	.020	.003		3/2+
116	172	288	2050.7	2043.8	1.14	7.43	-13.11	-6.94	5.81	.970	6.87	.016	.003		
116	173	289	2057.3	2050.8	1.71	6.63	-12.56	-5.51	6.03	.970	6.65	.021	-.016		1/2+
116	174	290	2064.0	2057.7	1.40	6.71	-12.99	-5.67	5.31	.970	6.36	C			
116	175	291	2070.0	2064.5	1.71	5.98	-12.86	-4.46	5.10	.970	5.56	C			G 7/2
116	176	292	2077.2	2071.1	2.01	7.15	-12.61	-5.50	5.02	.970	6.69	-.115	.043		
116	177	293	2083.4	2077.7	2.67	6.18	-12.07	-4.13	5.22	.970	6.46	-.116	.046		3/2+
116	178	294	2090.4	2084.1	3.01	7.07	-11.69	-4.81	5.28	.970	7.05	-.125	.047		
116	179	295	2096.4	2090.4	3.19	6.02	-11.02	-3.57	5.52	.970	6.71	-.129	.047		1 1/2+
116	180	296	2102.8	2096.7	3.37	6.39	-11.08	-3.76	5.10	.970	6.81	-.133	.046		
116	181	297	2108.2	2102.8	3.53	5.36	-10.68	-2.55	4.88	.970	5.99	-.135	.045		1/2+
116	182	298	2112.5	2108.9	2.87	4.28	-12.63	-1.31	2.56	.970	3.61	C			
116	183	299	2117.2	2114.8	3.04	4.67	-12.35	.39	1.87	.971	2.35	C			D 3/2
116	184	300	2123.3	2120.0	3.20	6.16	-12.22	-3.66	1.64	.971	2.69	C			
116	185	301	2127.7	2126.4	3.29	4.37	-12.19	-1.59	.84	.971	1.31	.034	.001		1/2-
116	186	302	2133.9	2132.0	3.47	6.21	-11.83	-3.28	.85	.971	1.91	C			
116	187	303	2138.4	2137.6	3.74	4.44	-11.27	-1.38	.30	.972	.91	.027	.019		3/2+
116	188	304	2144.2	2143.0	3.69	5.82	-11.46	-2.41	.11	.972	1.20	.007	-.012		
116	189	305	2148.4	2148.4	4.08	4.21	-11.13	-.15	-.48	.972	C.CC	UNSTABLE			H11/2
116	190	306	2153.6	2153.6	2.87	5.26	-11.60	-.52	-1.04	.973	C.CC	UNSTABLE			
116	191	307	2158.8	2158.8	4.28	5.17	-10.21	-.64	-.48	.973	C.CC	UNSTABLE			H11/2
116	192	308	2163.9	2163.9	4.43	5.07	-10.70	-.39	-1.04	.973	C.CC	UNSTABLE			
116	193	309	2168.9	2168.9	4.59	4.98	-9.35	-.14	-.48	.974	C.CC	UNSTABLE			H11/2

Z	N	A	B.E.	BO	SP	SN	SA	CB	BAR	X	S	A2	A4	P	N
116	194	310	2173.8	2173.8	4.75	4.89	-9.93	.11	-1.04	.974	C.CC	UNSTABLE			
116	195	311	2178.6	2178.6	4.90	4.80	-9.04	.35	-.48	.974	C.CC	UNSTABLE			H11/2
116	196	312	2183.3	2183.3	5.06	4.71	-8.91	.60	-1.03	.975	C.CC	UNSTABLE			
116	197	313	2187.9	2187.9	1.40	4.62	-8.78	.84	-.48	.975	C.CC	UNSTABLE			J12/2
116	198	314	2192.4	2192.4	1.04	4.54	-8.64	1.08	-1.03	.975	C.CC	UNSTABLE			
116	199	315	2201.2	2196.9	6.07	8.74	-8.65	-2.97	3.81	.976	3.05	.246	-.C22		7/2-
116	200	316	2206.1	2201.2	6.28	4.93	-8.46	-3.30	3.84	.976	3.60	.246	-.C22		
117	152	269	1881.1	1877.2	-3.55	10.28	-14.65	-12.02	3.45	.978	3.35	.154	.CC9	3/2-	
117	153	270	1890.3	1886.7	-3.43	9.12	-14.62	-10.81	3.61	.977	3.05	.141	-.CCC	1/2-	7/2+
117	154	271	1900.3	1896.1	-3.20	10.03	-14.55	-11.58	3.62	.977	3.93	.112	-.CCE	3/2-	
117	155	272	1909.3	1905.4	-2.92	9.01	-14.41	-10.45	3.94	.977	3.71	.114	-.C13	12/2+	9/2+
117	156	273	1919.2	1914.6	-2.74	9.87	-14.18	-11.20	4.06	.976	4.56	.C9E	-.C17	12/2+	
117	157	274	1927.8	1923.6	-2.58	8.65	-14.12	-9.83	4.26	.976	4.23	.C95	-.C20	12/2+	12/2-
117	158	275	1937.2	1932.5	-2.58	9.37	-14.27	-10.40	4.14	.976	4.95	.103	-.C32	12/2+	
117	159	276	1945.7	1941.3	-2.31	8.54	-14.05	-9.25	4.48	.975	4.46	.117	-.C24	7/2-	1/2+
117	160	277	1955.3	1950.0	-2.12	9.54	-13.69	-10.22	4.77	.975	5.21	.C26	-.C07	3/2-	
117	161	278	1963.7	1958.5	-1.97	8.35	-13.48	-9.20	5.21	.975	5.15	.C3C	-.C07	3/2-	12/2-
117	162	279	1973.3	1966.5	-1.86	9.68	-13.32	-10.31	5.90	.975	6.41	C		F 5/2	
117	163	280	1981.6	1975.2	-1.53	8.27	-13.08	-8.74	6.46	.974	6.35	.C17	.C01	3/2-	15/2-
117	164	281	1991.1	1983.4	-1.51	9.49	-12.93	-9.78	7.19	.974	7.70	C		F 5/2	
117	165	282	1998.4	1991.5	-1.33	7.32	-13.37	-7.44	7.04	.974	6.57	C		F 5/2	D 5/2
117	166	283	2006.6	1999.4	-1.16	8.17	-14.50	-8.11	6.69	.974	7.20	C		F 5/2	
117	167	284	2013.7	2007.2	-.98	7.07	-14.39	-6.84	6.52	.974	6.45	C		F 5/2	D 5/2
117	168	285	2021.7	2014.5	-.71	8.06	-14.15	-7.65	6.30	.974	6.82	.C15	.CC6	3/2-	
117	169	286	2028.6	2022.5	-.60	6.89	-13.98	-6.32	6.17	.974	6.11	.C20	.CC5	3/2-	1/2+
117	170	287	2036.4	2030.0	-.42	7.77	-13.82	-7.02	5.89	.973	6.38	.C25	-.C01	3/2-	
117	171	288	2043.0	2037.4	-.29	6.59	-13.91	-5.67	5.68	.973	5.95	-.C04	.C28	3/2-	3/2+
117	172	289	2051.0	2044.6	.34	8.06	-13.27	-6.90	5.91	.973	6.56	.C22	-.C15	1/2-	
117	173	290	2057.6	2051.8	.26	6.55	-13.01	-5.34	5.89	.973	6.02	.C23	-.C22	1/2-	1/2+
117	174	291	2064.8	2058.8	.74	7.19	-13.08	-5.80	5.47	.973	6.13	.C22	-.C20	1/2-	
117	175	292	2070.9	2065.8	.87	6.12	-13.02	-4.54	5.22	.973	5.96	-.124	.C50	11/2+	1/2+
117	176	293	2078.4	2072.6	1.26	7.54	-12.50	-5.31	5.37	.973	6.64	-.127	.C45	11/2+	
117	177	294	2084.8	2079.3	1.47	6.35	-11.78	-3.98	5.62	.973	6.32	-.126	.C45	11/2+	3/2+
117	178	295	2092.1	2085.5	1.67	7.26	-11.37	-4.69	5.70	.973	6.92	-.125	.C48	11/2+	
117	179	296	2098.3	2092.4	1.85	6.20	-10.69	-3.45	5.95	.974	6.59	-.132	.C48	11/2+	15/2+
117	180	297	2104.9	2098.8	2.02	6.56	-10.85	-3.64	5.55	.974	6.71	-.136	.C47	11/2+	
117	181	298	2110.4	2105.1	2.19	5.52	-11.17	-2.41	5.33	.974	5.85	-.138	.C47	11/2+	1/2+
117	182	299	2116.8	2111.3	4.28	6.37	-11.01	-3.08	4.94	.974	6.02	-.135	.C46	11/2+	
117	183	300	2118.9	2117.4	1.73	2.12	-14.08	-1.90	1.53	.974	1.46	C		F 5/2	D 3/2
117	184	301	2125.3	2123.4	2.00	6.45	-12.57	-3.35	1.41	.974	2.01	.C07	-.C17	3/2-	
117	185	302	2129.8	2129.3	2.15	4.52	-12.56	-1.27	.60	.974	.52	.C31	-.C04	3/2-	1/2-
117	186	303	2136.7	2135.1	2.27	6.33	-12.24	-2.85	.57	.975	1.04	.C34	.C01	3/2-	
117	187	304	2141.0	2140.8	2.62	4.79	-11.73	-1.21	.21	.975	.78	.C67	.C45	1/2+	5/2+
117	188	305	2147.4	2146.4	3.28	6.47	-11.30	-2.56	.51	.975	1.51	.102	.C47	1/2+	
117	189	306	2152.3	2152.0	3.96	4.89	-10.57	-2.05	.44	.975	.93	.108	.C50	1/2+	3/2-
117	190	307	2157.4	2157.4	3.74	5.05	-11.39	-1.42	-.49	.975	C.CC	UNSTABLE		F 5/2	

Z	N	A	B.E.	BC	SP	SN	SA	CP	BAR	X	S	A2	A4	P	N
117	191	308	2162.7	2162.7	3.90	5.33	-9.89	-1.17	.07	.976	C.00	UNSTABLE	F 5/2	H11/2	
117	192	309	2167.9	2167.9	4.06	5.23	-11.12	-.92	-.49	.976	C.00	UNSTABLE	F 5/2		
117	193	310	2173.1	2173.1	4.22	5.14	-9.75	-.67	.07	.976	C.00	UNSTABLE	F 5/2	H11/2	
117	194	311	2178.1	2178.1	4.37	5.05	-9.61	-.42	-.49	.976	C.00	UNSTABLE	F 5/2		
117	195	312	2183.1	2183.1	4.53	4.96	-9.48	-.18	.07	.977	C.00	UNSTABLE	F 5/2	H11/2	
117	196	313	2187.9	2187.9	4.68	4.87	-9.35	.07	-.49	.977	C.00	UNSTABLE	F 5/2		
117	197	314	2192.7	2192.7	4.84	4.78	-9.22	.31	.06	.977	C.00	UNSTABLE	F 5/2	J12/2	
117	198	315	2197.4	2197.4	4.99	4.69	-9.09	.56	-.49	.977	C.00	UNSTABLE	F 5/2		
117	199	316	2202.0	2202.0	.85	4.60	-12.77	.80	.06	.978	C.00	UNSTABLE	F 5/2	J12/2	
117	200	317	2206.5	2206.5	.43	4.51	-13.15	1.04	-.49	.978	C.00	UNSTABLE	F 5/2		
118	154	272	1898.1	1893.4	-2.22	10.14	-14.92	-13.43	3.55	.980	4.28	.127	-.005		
118	155	273	1907.2	1902.9	-2.11	9.12	-14.79	-12.29	3.79	.979	4.06	.119	-.011	9/2+	
118	156	274	1917.2	1912.2	-1.96	10.02	-14.57	-12.96	3.88	.979	4.85	.112	-.016		
118	157	275	1926.0	1921.4	-1.81	8.80	-14.50	-11.55	4.06	.979	4.54	.106	-.020	13/2-	
118	158	276	1935.7	1930.5	-1.50	9.68	-14.51	-12.23	4.07	.979	5.16	.104	-.020		
118	159	277	1944.3	1939.5	-1.46	8.57	-14.43	-10.89	4.27	.978	4.78	.120	-.024	1/2+	
118	160	278	1953.7	1948.3	-1.59	9.41	-14.39	-11.74	4.25	.978	5.40	.131	-.026		
118	161	279	1962.2	1957.0	-1.41	8.57	-14.09	-10.82	4.69	.978	5.23	.025	-.006	13/2-	
118	162	280	1972.1	1965.6	-1.25	9.85	-13.59	-11.86	5.37	.978	6.48	C			
118	163	281	1980.5	1974.1	-1.08	8.44	-13.38	-10.31	5.93	.978	6.45	.017	.001	15/2-	
118	164	282	1990.2	1982.4	-.90	9.67	-13.29	-11.36	6.67	.977	7.77	C			
118	165	283	1997.7	1990.7	-.72	7.50	-13.73	-9.01	6.52	.977	7.03	C		D 5/2	
118	166	284	2006.1	1998.8	-.55	8.34	-14.86	-9.68	6.17	.977	7.26	C			
118	167	285	2013.3	2006.8	-.37	7.25	-14.76	-8.41	6.00	.977	6.52	C		D 5/2	
118	168	286	2021.5	2014.7	-.21	8.22	-14.53	-9.11	5.77	.977	6.87	.016	.005		
118	169	287	2028.6	2022.4	-.03	7.07	-14.36	-7.88	5.65	.977	6.16	.022	.002	1/2+	
118	170	288	2036.5	2030.1	.14	7.95	-14.20	-8.59	5.37	.977	6.45	.025	-.004		
118	171	289	2043.4	2037.6	.38	6.83	-14.15	-7.24	5.23	.977	5.72	.034	.001	3/2+	
118	172	290	2051.5	2045.1	.43	8.11	-13.63	-6.49	5.34	.977	6.57	.023	-.015		
118	173	291	2058.2	2052.4	.61	6.73	-13.37	-7.10	5.33	.976	6.04	.025	-.023	1/2+	
118	174	292	2065.6	2059.6	.79	7.37	-13.43	-7.32	4.92	.976	6.70	-.125	.048		
118	175	293	2072.4	2066.7	1.45	6.78	-13.28	-5.99	5.17	.976	6.36	-.135	.045	1/2+	
118	176	294	2080.1	2073.7	1.63	7.72	-12.27	-6.76	5.33	.976	7.06	-.136	.048		
118	177	295	2086.6	2080.6	1.79	6.56	-11.70	-5.43	5.57	.976	6.72	-.136	.048	3/2+	
118	178	296	2094.1	2087.3	1.96	7.43	-11.42	-6.14	5.66	.976	7.41	-.134	.045		
118	179	297	2100.4	2094.0	2.14	6.37	-11.22	-4.89	5.93	.976	7.09	-.136	.048	15/2+	
118	180	298	2107.2	2100.6	2.33	6.75	-11.54	-5.13	5.55	.977	7.23	-.142	.048		
118	181	299	2112.9	2107.0	2.51	5.70	-11.85	-3.92	5.35	.977	6.42	-.146	.047	1/2+	
118	182	300	2116.2	2113.4	-.56	3.30	-14.94	-1.35	1.73	.977	2.79	C			
118	183	301	2121.2	2119.7	2.32	5.00	-15.29	-3.45	1.03	.977	1.53	C		D 3/2	
118	184	302	2127.8	2125.8	2.47	6.60	-12.97	-4.88	.91	.977	2.08	.006	-.017		
118	185	303	2132.5	2131.9	2.66	4.71	-12.94	-2.90	.11	.977	.63	.047	.013	1/2-	
118	186	304	2139.0	2137.9	2.80	6.48	-12.63	-4.43	.07	.977	1.12	.046	.010		
118	187	305	2144.1	2143.7	3.13	5.11	-11.89	-2.89	-.12	.977	1.00	.067	.045	5/2+	
118	188	306	2149.5	2149.5	2.05	5.35	-12.71	-2.96	-1.05	.977	C.00	UNSTABLE			
118	189	307	2155.2	2155.2	2.84	5.67	-11.48	-2.21	-.49	.978	C.00	UNSTABLE		H11/2	

Z	N	A	B.E.	BO	SP	SN	SA	CB	PAR	X	C	A2	A4	P	N
118	190	308	2160.7	2160.7	3.37	5.58-11.71	-1.95	-1.05	.978	C.CC	UNSTABLE				
118	191	309	2166.2	2166.2	3.53	5.48-10.44	-1.70	-.49	.978	C.CC	UNSTABLE				H11/2
118	192	310	2171.6	2171.6	3.69	5.35-10.31	-1.45	-1.05	.978	C.CC	UNSTABLE				
118	193	311	2176.9	2176.9	3.84	5.30-10.18	-1.20	-.49	.978	C.CC	UNSTABLE				H11/2
118	194	312	2182.1	2182.1	4.00	5.20-10.05	-.95	-1.04	.978	C.CC	UNSTABLE				
118	195	313	2187.2	2187.2	4.16	5.11 -9.92	-.70	-.49	.979	C.CC	UNSTABLE				H11/2
118	196	314	2192.3	2192.3	4.31	5.02 -9.79	-.46	-1.04	.979	C.CC	UNSTABLE				
118	197	315	2197.2	2197.2	4.46	4.93 -9.66	-.21	-.49	.979	C.CC	UNSTABLE				J13/2
118	198	316	2202.0	2202.0	4.62	4.84 -9.53	.03	-1.04	.979	C.CO	UNSTABLE				
118	199	317	2206.8	2206.8	4.77	4.75 -9.40	.27	-.49	.979	C.CC	UNSTABLE				J13/2
118	200	318	2211.5	2211.5	4.92	4.67 -9.26	.52	-1.04	.980	C.CC	UNSTABLE				
119	156	275	1913.7	1909.5	-3.53	10.22-14.90-12.26	3.68	.981	4.07	.108	-.C17	1/2-			
119	157	276	1922.7	1918.9	-3.33	9.00-14.91-11.06	3.88	.981	3.82	.098	-.C21	1/2- 13/2-			
119	158	277	1932.6	1928.1	-3.10	9.91-14.88-11.95	3.93	.981	4.52	.088	-.C22	1/2-			
119	159	278	1941.2	1937.3	-3.11	8.56-14.96-10.19	3.94	.981	4.16	.103	-.C33	1/2- 1/2+			
119	160	279	1950.6	1946.3	-3.03	9.49-14.84-10.80	3.83	.981	4.34	.034	.CC1	1/2-			
119	161	280	1959.5	1955.2	-2.60	8.80-14.58-10.26	4.33	.980	4.30	.038	-.C12	1/2- 13/2-			
119	162	281	1969.5	1963.9	-2.65	10.00-14.12-11.27	4.98	.980	5.50	0		F 5/2			
119	163	282	1978.1	1972.6	-2.47	8.62-13.89 -9.75	5.53	.980	5.47	.01F	.CCC	1/2- 15/2-			
119	164	283	1987.9	1981.1	-2.29	9.65-13.72-10.79	6.27	.980	6.80	0		F 5/2			
119	165	284	1995.6	1989.5	-2.12	7.68-14.32 -8.45	6.12	.980	6.07	0		F 5/2 D 3/2			
119	166	285	2004.1	1997.8	-1.94	8.52-15.29 -9.12	5.77	.980	6.30	0		F 5/2			
119	167	286	2011.6	2006.0	-1.67	7.52-15.09 -7.95	5.71	.979	5.68	-.010	.CC9	1/2- 7/2+			
119	168	287	2019.9	2014.0	-1.60	8.29-14.97 -6.56	5.37	.979	5.89	.016	.CC4	1/2-			
119	169	288	2027.2	2022.0	-1.42	7.25-14.80 -7.32	5.25	.979	5.18	.025	.CC0	1/2- 1/2+			
119	170	289	2035.3	2029.8	-1.19	8.18-14.68 -8.07	5.03	.979	5.93	.068	-.C32	1/2-			
119	171	290	2042.2	2037.5	-1.16	6.86-14.71 -6.59	4.76	.979	4.88	.000	.C21	1/2- 3/2+			
119	172	291	2050.3	2045.1	-1.15	8.12-14.37 -7.70	4.70	.979	5.97	-.127	.C51	5/2-			
119	173	292	2057.5	2052.6	-.74	7.14-13.81 -6.31	4.93	.979	5.65	-.130	.C52	5/2- 11/2-			
119	174	293	2065.6	2060.0	.01	8.11-13.76 -7.34	5.10	.979	6.36	-.131	.C51	5/2-			
119	175	294	2072.5	2067.2	.18	6.95-13.36 -5.69	5.35	.979	6.00	-.132	.C50	5/2- 1/2+			
119	176	295	2080.4	2074.4	.34	7.88-12.67 -6.45	5.51	.979	6.68	-.135	.C45	5/2-			
119	177	296	2087.1	2081.4	.51	6.72-12.06 -5.12	5.75	.979	6.34	-.135	.C45	5/2- 3/2+			
119	178	297	2094.8	2088.4	.70	7.63-11.98 -5.86	5.87	.979	6.90	-.142	.C46	5/2-			
119	179	298	2101.3	2095.2	.84	6.51-11.86 -4.62	6.10	.979	6.65	-.136	.C45	5/2- 15/2+			
119	180	299	2108.2	2102.0	1.00	6.92-12.20 -4.83	5.72	.979	6.82	-.142	.C48	5/2-			
119	181	300	2114.1	2108.6	1.17	5.87-12.53 -3.59	5.52	.979	5.95	-.146	.C47	5/2- 1/2+			
119	182	301	2117.0	2111.1	.77	2.91-16.19 -4.76	1.34	.979	1.84	0		F 5/2			
119	183	302	2122.1	2121.5	.94	5.17-16.54 -2.91	.64	.979	.59	0		F 5/2 D 3/2			
119	184	303	2128.8	2127.9	1.02	6.65-16.23 -4.26	.45	.979	.93	.034	.CC1	1/2-			
119	185	304	2133.8	2134.1	1.26	4.95-13.40 -2.24	-.27	.979	-.35	.034	.CC1	1/2- 1/2-			
119	186	305	2140.4	2140.2	1.44	6.66-13.19 -3.89	-.26	.979	.18	.037	-.CC2	1/2-			
119	187	306	2145.8	2146.3	1.65	5.32-12.39 -2.75	-.44	.979	.12	.067	.C45	1/2- 5/2+			
119	188	307	2152.2	2152.2	2.68	6.42-12.30 -2.99	-.50	.979	C.CC	UNSTABLE	F 5/2				
119	189	308	2158.0	2158.0	2.84	5.83-11.26 -2.73	.06	.980	C.CC	UNSTABLE	F 5/2 H11/2				
119	190	309	2163.7	2163.7	3.00	5.74-11.99 -2.48	-.50	.980	C.CC	UNSTABLE	F 5/2				

Z	N	A	R.E.	BC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
119	191	310	2169.4	2169.4	3.16	5.64-11.24	-2.23	.06	.580	C.CC	UNSTABLE	F 5/2	H11/2		
119	192	311	2174.9	2174.9	3.32	5.55-10.73	-1.97	-.50	.580	C.CC	UNSTABLE	F 5/2			
119	193	312	2180.4	2180.4	3.47	5.45-10.61	-1.72	.06	.580	C.CC	UNSTABLE	F 5/2	H11/2		
119	194	313	2185.8	2185.8	3.63	5.36-10.48	-1.47	-.49	.580	C.CC	UNSTABLE	F 5/2			
119	195	314	2191.0	2191.0	3.78	5.27-10.35	-1.23	.06	.580	C.CC	UNSTABLE	F 5/2	H11/2		
119	196	315	2196.2	2196.2	3.94	5.18-10.22	-.98	-.49	.580	C.CC	UNSTABLE	F 5/2			
119	197	316	2201.3	2201.3	4.09	5.09-10.09	-.73	.06	.581	C.CC	UNSTABLE	F 5/2	J17/2		
119	198	317	2206.3	2206.3	4.25	5.00-9.96	-.49	-.49	.581	C.CC	UNSTABLE	F 5/2			
119	199	318	2211.2	2211.2	4.40	4.91-9.83	-.25	.05	.581	C.CC	UNSTABLE	F 5/2	J17/2		
119	200	319	2216.0	2216.0	4.55	4.82-9.70	-.01	-.49	.581	C.CC	UNSTABLE	F 5/2			
120	158	278	1930.2	1925.4	-2.41	10.32-15.33-13.59	3.68	.583	4.66	.111	-.C20				
120	159	279	1939.1	1934.7	-2.08	8.89-15.24-17.18	3.83	.583	4.75	.093	-.C23			5/2+	
120	160	280	1948.4	1943.9	-2.24	9.34-15.58-12.44	3.40	.582	4.45	.034	.C01				
120	161	281	1957.4	1953.0	-2.06	8.98-15.17-11.96	3.90	.582	4.45	.043	-.C12			13/2-	
120	162	282	1967.5	1961.5	-1.91	10.15-14.43-12.96	4.52	.582	5.63	C					
120	163	283	1976.3	1970.7	-1.72	8.81-14.20-11.46	5.08	.582	5.61	.C18	.C00			15/2-	
120	164	284	1986.4	1979.4	-1.56	10.01-14.04-12.44	5.81	.582	6.52	C					
120	165	285	1994.2	1988.0	-1.39	7.85-14.63-10.16	5.66	.582	6.15	C				D 5/2	
120	166	286	2002.9	1996.5	-1.21	8.65-15.61-10.82	5.32	.582	6.42	C					
120	167	287	2010.6	2004.8	-1.05	7.69-15.42-9.65	5.25	.582	5.75	-.C15	.C08			7/2+	
120	168	288	2019.1	2013.0	-.86	8.48-15.28-10.25	4.93	.581	6.03	.C18	.C04				
120	169	289	2026.5	2021.2	-.68	7.43-15.10-9.01	4.82	.581	5.32	.028	-.C00			1/2+	
120	170	290	2034.8	2029.1	-.51	8.35-14.98-9.74	4.60	.581	5.90	.C61	-.C26				
120	171	291	2041.8	2037.0	-.37	7.00-15.04-8.26	4.30	.581	5.10	-.C05	.C26			3/2+	
120	172	292	2050.4	2044.8	.06	8.54-14.45-9.47	4.50	.581	5.74	.C25	-.C20				
120	173	293	2057.5	2052.5	-.01	7.08-14.20-8.30	4.49	.581	5.23	.C27	-.C23			1/2+	
120	174	294	2066.1	2060.0	.47	8.60-13.72-9.37	4.97	.581	6.61	-.140	.C48				
120	175	295	2073.2	2067.4	.65	7.12-13.32-8.14	5.23	.581	6.23	-.144	.C47			1/2+	
120	176	296	2081.2	2074.8	.82	8.05-12.64-7.89	5.39	.581	6.55	-.143	.C46				
120	177	297	2088.1	2082.0	.98	6.89-12.53-6.57	5.63	.581	6.61	-.143	.C46			3/2+	
120	178	298	2095.9	2089.1	1.10	7.75-12.50-7.26	5.71	.581	7.37	-.136	.C45				
120	179	299	2102.6	2096.1	1.31	6.71-12.34-6.08	5.98	.581	7.05	-.135	.C46			15/2+	
120	180	300	2109.7	2103.0	1.49	7.10-12.67-6.31	5.63	.581	7.18	-.146	.C47				
120	181	301	2111.4	2109.8	-2.64	1.74-17.31-7.76	1.13	.581	1.64	C				D 7/2	
120	182	302	2118.4	2116.5	1.48	7.02-17.04-6.44	.90	.581	1.97	C					
120	183	303	2123.8	2123.1	1.64	5.33-17.41-4.58	.21	.581	.71	C				D 7/2	
120	184	304	2130.7	2129.5	1.92	6.97-13.74-6.05	.13	.581	1.46	-.C05	-.C25				
120	185	305	2135.8	2135.9	1.99	5.01-13.74-3.92	-.68	.581	-.12	.C27	-.C13			1/2-	
120	186	306	2142.2	2142.2	1.79	6.46-13.88-5.15	-1.06	.581	C.CC	UNSTABLE					
120	187	307	2148.4	2148.4	2.65	6.19-12.39-4.39	-.50	.581	C.CC	UNSTABLE				H11/2	
120	188	308	2154.5	2154.5	2.32	6.09-12.79-3.51	-1.06	.581	C.CC	UNSTABLE					
120	189	309	2160.5	2160.5	2.48	5.99-11.91-3.26	-.50	.581	C.CC	UNSTABLE				H11/2	
120	190	310	2166.4	2166.4	2.63	5.89-11.41-3.00	-1.05	.581	C.CC	UNSTABLE					
120	191	311	2172.2	2172.2	2.79	5.80-11.28-2.75	-.50	.581	C.CC	UNSTABLE				H11/2	
120	192	312	2177.9	2177.9	2.95	5.70-11.16-2.50	-1.05	.581	C.CC	UNSTABLE					
120	193	313	2183.5	2183.5	3.10	5.61-11.03-2.25	-.50	.582	C.CC	UNSTABLE				H11/2	

Z	N	A	R.E.	RC	SP	SN	SA	CB	PAR	X	S	A2	A4	P	N
120	194	314	2189.0	2189.C	3.26	5.52-10.90	-2.00	-1.05	.982	C.CC	UNSTABLE				
120	195	315	2194.4	2194.4	3.42	5.42-10.78	-1.75	-.50	.982	C.CC	UNSTABLE				H11/2
120	196	316	2199.8	2199.8	3.57	5.33-10.65	-1.50	-1.05	.982	C.CC	UNSTABLE				
120	197	317	2205.0	2205.C	3.72	5.24-10.52	-1.25	-.50	.982	C.CC	UNSTABLE				J11/2
120	198	318	2210.2	2210.2	3.88	5.15-10.39	-1.01	-1.04	.982	C.CC	UNSTABLE				
120	199	319	2215.2	2215.2	4.03	5.06-10.26	-.77	-.49	.982	C.CC	UNSTABLE				J11/2
120	200	320	2220.2	2220.2	4.18	4.97-10.14	-.52	-1.04	.982	C.CC	UNSTABLE				