UCRL 15847 P.O. 7469905
VOL 3

N/A

UCRL--15847-Vol.3

DE87 002501

CALCULATED FISSION PROPERTIES
OF THE HEAVIES ELEMENTS
VOL 3
CALCULATED SINGLE-PROTON LEVELS
FOR NUCLEI WITH N EQUAL TO
152, 154, 156, 158, 160, and 162

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September 1986

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93

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Calculated Single-Proton Levels for Nuclei with N equal to 152,154,156,158,160 and 162.

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May 15, 1986

The decay properties of nuclei in many cases depend strongly on the quantum numbers of the single-particle levels in the vicinity of the Fermi surface. A striking illustration is the prolonged fission half-lives of odd nuclei relative to their even neighbours. The hindrance factor depends on the spin of unpaired odd particle and increases with increasing spin of the odd particle. The effect has been studied theoretically by ref.[1] and others. For ^{257}Fm the hindrance factor is almost ten orders of magnitude.

The computer code for calculating nuclear masses calculates single-particle levels at the deformations considered as one step in the calculations. We have run this code at the ground state deformation of all nuclei considered in the 1981 mass study[2,3] and stored the calculated single-particle levels on permanent mass storage. A computer code has been constructed for extracting levels of nuclei that are specified to the program and plotting them. In this report we consider single-proton levels for even- N nuclei in the range $152 \leq N \leq 162$. Six such plots are included in this report as figs. 1-6. The levels are plotted relative to the Fermi surface of each nucleus. We also include tables of the plotted single-particle levels since it is not always possible to determine the spin from an inspection of the plots, when levels are overlapping.

References

- [1] J. Randrup, C. F. Tsang, P. Möller, S. G. Nilsson and S. E. Larsson, Nucl. Phys. **A217** (1973) 221.
- [2] P. Möller and J. R. Nix, Nucl. Phys. **A361** (1981) 117.
- [3] P. Möller and J. R. Nix, At. Data Nucl. Data Tables **26** (1981) 165.

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Relative Single-Proton Energy (MeV)

Z = 93 N = 152 A = 245 Relative Single-Proton Energies

E (MeV)	Omega
-2.830	9/2-
-2.425	5/2+
-1.720	3/2-
-1.641	11/2-
-1.325	1/2+
-0.893	1/2-
-0.863	3/2+
-0.637	3/2+
-0.253	1/2+
0.000	5/2+
0.095	5/2-
1.001	3/2-
1.120	7/2+
2.019	7/2-
2.490	1/2-
2.519	9/2+
2.896	5/2-

Z = 95 N = 152 A = 247 Relative Single-Proton Energies

E (MeV)	Omega
-2.904	9/2-
-2.467	5/2+
-1.805	3/2-
-1.721	11/2-
-1.418	1/2+
-0.959	1/2-
-0.956	3/2+
-0.692	3/2+
-0.300	1/2+
-0.101	5/2+
0.000	5/2-
0.928	3/2-
1.015	7/2+
1.914	7/2-
2.406	9/2+
2.407	1/2-
2.818	5/2-

Z = 97 N = 152 A = 249 Relative Single-Proton Energies

E (MeV)	Omega
-2.683	3/2-
-2.527	11/2-
-2.183	1/2+
-1.773	1/2-
-1.767	3/2+
-1.493	3/2+
-1.092	1/2+
-0.987	5/2+
-0.985	5/2-
0.000	3/2-
0.059	7/2+
0.916	7/2-
1.398	9/2+
1.476	1/2-
1.867	5/2-
2.763	11/2+
2.802	1/2+
2.877	9/2-

Z = 99 N = 152 A = 251 Relative Single-Proton Energies

E (MeV)	Omega
-2.707	3/2-
-2.326	11/2-
-2.156	1/2+
-1.750	3/2+
-1.746	1/2-
-1.288	3/2+
-1.056	5/2-
-1.015	5/2+
-0.888	1/2+
-0.029	3/2-
0.000	7/2+
0.897	7/2-
1.331	9/2+
1.430	1/2-
1.874	5/2-
2.768	11/2+
2.841	1/2+

Z = 101 N = 152 A = 253 Relative Single-Proton Energies

E (MeV)	Omega
-2.821	1/2+
-2.475	1/2-
-2.471	3/2+
-1.997	3/2+
-1.950	5/2-
-1.811	5/2+
-1.593	1/2+
-0.880	3/2-
-0.869	7/2+
0.000	7/2-
0.415	9/2+
0.575	1/2-
1.011	5/2-
1.883	11/2+
2.220	1/2+
2.364	9/2-
2.980	1/2-

Z = 103 N = 152 A = 255 Relative Single-Proton Energies

E (MeV)	Omega
-2.993	1/2+
-2.707	1/2-
-2.696	3/2+
-2.344	5/2-
-2.206	3/2+
-2.109	5/2+
-1.801	1/2+
-1.240	7/2+
-1.238	3/2-
-0.396	7/2-
0.000	9/2+
0.218	1/2-
0.643	5/2-
1.498	11/2+
2.089	1/2+
2.129	9/2-
2.762	3/2+
2.782	1/2-
2.874	3/2-
2.965	7/2-

Z = 105 N = 152 A = 257 Relative Single-Proton Energies

E (MeV)	Omega
-2.928	1/2+
-2.745	1/2-
-2.706	3/2+
-2.605	5/2-
-2.219	5/2+
-2.210	3/2+
-1.808	1/2+
-1.465	3/2-
-1.460	7/2+
-0.651	7/2-
-0.282	9/2+
0.000	1/2-
0.411	5/2-
1.263	11/2+
2.115	9/2-
2.215	1/2+
2.608	3/2-
2.702	3/2+
2.732	1/2-
2.941	7/2-
2.967	1/2-

Z = 107 N = 152 A = 259 Relative Single-Proton Energies

E (MeV)	Omega
-2.598	5/2+
-2.526	3/2+
-2.122	1/2+
-1.880	7/2+
-1.868	3/2-
-1.085	7/2-
-0.729	9/2+
-0.404	1/2-
0.000	5/2-
0.825	11/2+
1.753	9/2-
1.895	1/2+
2.175	3/2-
2.320	3/2+
2.324	1/2-
2.592	7/2-
2.609	1/2-
2.706	3/2-
2.992	13/2+

Z = 93 N = 154 A = 247 Relative Single-Proton Energies

E (MeV)	Omega
-2.852	9/2-
-2.382	5/2+
-1.729	3/2-
-1.599	11/2-
-1.263	1/2+
-0.865	1/2-
-0.822	3/2+
-0.608	3/2+
-0.217	1/2+
0.000	5/2+
0.032	5/2-
0.974	3/2-
1.087	7/2+
1.947	7/2-
2.456	1/2-
2.459	9/2+
2.859	5/2-

Z = 95 N = 154 A = 249 Relative Single-Proton Energies

E (MeV)	Omega
-2.951	1/2-
-2.866	9/2-
-2.302	5/2+
-1.718	3/2-
-1.550	11/2-
-1.200	1/2+
-0.812	1/2-
-0.783	3/2+
-0.543	3/2+
-0.145	1/2+
-0.016	5/2-
0.000	5/2+
0.965	3/2-
1.049	7/2+
1.888	7/2-
2.392	9/2+
2.441	1/2-
2.836	5/2-

Z = 97 N = 154 A = 251 Relative Single-Proton Energies

E (MeV)	Omega
-2.660	3/2-
-2.456	11/2-
-2.092	1/2+
-1.714	1/2-
-1.698	3/2+
-1.432	3/2+
-1.029	1/2+
-1.017	5/2-
-0.955	5/2+
0.000	3/2-
0.056	7/2+
0.876	7/2-
1.369	9/2+
1.470	1/2-
1.856	5/2-
2.748	11/2+
2.900	1/2+
2.925	9/2-

Z = 99 N = 154 A = 253 Relative Single-Proton Energies

E (MeV)	Omega
-2.639	3/2-
-2.363	11/2-
-1.955	1/2+
-1.628	1/2-
-1.611	3/2+
-1.330	3/2+
-1.100	5/2-
-0.941	5/2+
-0.923	1/2+
-0.036	3/2-
0.000	7/2+
0.786	7/2-
1.265	9/2+
1.432	1/2-
1.802	5/2-
2.671	11/2+

Z = 101 N = 154 A = 255 Relative Single-Proton Energies

E (MeV)	Omega
-2.976	11/2-
-2.521	1/2+
-2.248	1/2-
-2.228	3/2+
-1.931	3/2+
-1.885	5/2-
-1.631	5/2+
-1.521	1/2+
-0.780	3/2-
-0.762	7/2+
0.000	7/2-
0.459	9/2+
0.687	1/2-
1.046	5/2-
1.897	11/2+
2.381	9/2-
2.561	1/2+

Z = 103 N = 154 A = 257 Relative Single-Proton Energies

E (MeV)	Omega
-2.642	1/2+
-2.458	1/2-
-2.422	3/2+
-2.322	5/2-
-2.107	3/2+
-1.921	5/2+
-1.703	1/2+
-1.181	3/2-
-1.159	7/2+
-0.433	7/2-
0.000	9/2+
0.296	1/2-
0.639	5/2-
1.485	11/2+
2.191	9/2-
2.511	1/2+
2.851	3/2-

Z = 105 N = 154 A = 259 Relative Single-Proton Energies

E (MeV)	Omega
-2.826	1/2+
-2.680	1/2-
-2.628	3/2+
-2.620	5/2-
-2.172	5/2+
-2.134	3/2+
-1.732	1/2+
-1.464	3/2-
-1.451	7/2+
-0.667	7/2-
-0.293	9/2+
0.000	1/2-
0.411	5/2-
1.266	11/2+
2.176	9/2-
2.318	1/2+
2.592	3/2-
2.748	3/2+
2.749	1/2-

Z = 107 N = 154 A = 261 Relative Single-Proton Energies

E (MeV)	Omega
-2.974	3/2+
-2.546	5/2+
-2.448	3/2+
-2.043	1/2+
-1.868	7/2+
-1.866	3/2-
-1.100	7/2-
-0.739	9/2+
-0.400	1/2-
0.000	5/2-
0.829	11/2+
1.818	9/2-
1.995	1/2+
2.157	3/2-
2.331	1/2-
2.372	3/2+
2.663	7/2-
2.695	1/2-
2.789	3/2-

Z = 93 N = 156 A = 249 Relative Single-Proton Energies

E (MeV)	Omega
-2.913	9/2-
-2.477	1/2-
-2.328	5/2+
-1.555	11/2-
-1.485	3/2-
-0.749	1/2+
-0.586	3/2+
-0.514	1/2-
-0.409	3/2+
-0.182	1/2+
0.000	5/2-
0.247	5/2+
1.022	3/2-
1.157	7/2+
1.781	7/2-
2.374	9/2+
2.535	1/2-
2.765	5/2-

Z = 95 N = 156 A = 251 Relative Single-Proton Energies

E (MeV)	Omega
-2.702	1/2-
-2.517	5/2+
-1.782	11/2-
-1.717	3/2-
-0.991	1/2+
-0.787	3/2+
-0.726	1/2-
-0.653	3/2+
-0.375	1/2+
-0.240	5/2-
0.000	5/2+
0.804	3/2-
0.905	7/2+
1.530	7/2-
2.116	9/2+
2.308	1/2-
2.539	5/2-

Z = 97 N = 156 A = 253Relative Single-Proton Energies

E (MeV)	Omega
-2.549	3/2-
-2.419	11/2-
-1.811	1/2+
-1.531	1/2-
-1.482	3/2+
-1.409	3/2+
-1.067	5/2-
-0.999	1/2+
-0.837	5/2+
0.000	3/2-
0.069	7/2+
0.759	7/2-
1.294	9/2+
1.484	1/2-
1.784	5/2-
2.660	11/2+
2.919	9/2-

Z = 99 N = 156 A = 255Relative Single-Proton Energies

E (MeV)	Omega
-2.540	3/2-
-2.339	11/2-
-1.689	1/2+
-1.457	1/2-
-1.415	3/2+
-1.310	3/2+
-1.159	5/2-
-0.905	1/2+
-0.836	5/2+
-0.052	3/2-
0.000	7/2+
0.667	7/2-
1.183	9/2+
1.433	1/2-
1.721	5/2-
2.577	11/2+
2.987	9/2-

Z = 101 N = 156 A = 257 Relative Single-Proton Energies

E (MeV)	Omega
-2.803	11/2-
-2.299	1/2+
-2.103	1/2-
-2.056	3/2+
-1.888	5/2-
-1.768	3/2+
-1.522	5/2+
-1.362	1/2+
-0.758	3/2-
-0.724	7/2+
0.000	7/2-
0.458	9/2+
0.712	1/2-
1.067	5/2-
1.929	11/2+
2.545	9/2-
2.819	1/2+

Z = 103 N = 156 A = 259 Relative Single-Proton Energies

E (MeV)	Omega
-2.420	1/2+
-2.300	5/2-
-2.274	1/2-
-2.253	3/2+
-2.066	3/2+
-1.788	5/2+
-1.677	1/2+
-1.129	3/2-
-1.096	7/2+
-0.475	7/2-
0.000	9/2+
0.368	1/2-
0.627	5/2-
1.455	11/2+
2.162	9/2-
2.785	1/2+
2.823	3/2-

Z = 105 N = 156 A = 261 Relative Single-Proton Energies

E (MeV)	Omega
-2.715	1/2+
-2.694	5/2-
-2.575	1/2-
-2.572	3/2+
-2.349	3/2+
-2.138	5/2+
-1.957	1/2+
-1.502	3/2-
-1.486	7/2+
-0.877	7/2-
-0.414	9/2+
0.000	1/2-
0.248	5/2-
1.050	11/2+
1.834	9/2-
2.423	3/2-
2.491	1/2+
2.632	1/2-
2.744	7/2-
2.855	3/2+

Z = 107 N = 156 A = 263 Relative Single-Proton Energies

E (MeV)	Omega
-2.999	5/2-
-2.808	1/2+
-2.745	1/2-
-2.709	3/2+
-2.338	5/2+
-2.318	3/2+
-1.928	1/2+
-1.800	3/2-
-1.766	7/2+
-1.125	7/2-
-0.721	9/2+
-0.294	1/2-
0.000	5/2-
0.826	11/2+
1.893	9/2-
2.140	3/2-
2.352	1/2-
2.409	1/2+
2.660	3/2+
2.753	7/2-

Z = 93 N = 158 A = 251 Relative Single-Proton Energies

E (MeV)	Omega
-2.856	9/2-
-2.242	1/2-
-2.158	5/2+
-1.386	3/2-
-1.375	11/2-
-0.523	1/2+
-0.426	3/2+
-0.358	1/2-
-0.225	3/2+
-0.019	1/2+
0.000	5/2-
0.358	5/2+
1.059	3/2-
1.201	7/2+
1.781	7/2-
2.377	9/2+
2.572	1/2-
2.792	5/2-

Z = 95 N = 158 A = 253 Relative Single-Proton Energies

E (MeV)	Omega
-2.578	1/2-
-2.457	5/2+
-1.728	3/2-
-1.711	11/2-
-0.874	1/2+
-0.737	3/2+
-0.678	1/2-
-0.579	3/2+
-0.351	5/2-
-0.321	1/2+
0.000	5/2+
0.731	3/2-
0.839	7/2+
1.422	7/2-
2.009	9/2+
2.237	1/2-
2.457	5/2-

Z = 97 N = 158 A = 255 Relative Single-Proton Energies

E (MeV)	Omega
-2.435	3/2-
-2.382	11/2-
-1.536	1/2+
-1.394	3/2+
-1.343	1/2-
-1.256	3/2+
-1.112	5/2-
-0.968	1/2+
-0.720	5/2+
0.000	3/2-
0.083	7/2+
0.653	7/2-
1.226	9/2+
1.502	1/2-
1.716	5/2-
2.578	11/2+
2.912	9/2-

Z = 99 N = 158 A = 257 Relative Single-Proton Energies

E (MeV)	Omega
-2.920	5/2+
-2.481	3/2-
-2.204	11/2-
-1.508	1/2+
-1.347	1/2-
-1.294	3/2+
-1.200	5/2-
-1.173	3/2+
-0.783	1/2+
-0.766	5/2+
-0.065	3/2-
0.000	7/2+
0.628	7/2-
1.145	9/2+
1.424	1/2-
1.703	5/2-
2.572	11/2+

Z = 101 N = 158 A = 259 Relative Single-Proton Energies

E (MeV)	Omega
-2.665	11/2-
-1.935	1/2+
-1.827	5/2-
-1.816	1/2-
-1.775	3/2+
-1.607	3/2+
-1.300	5/2+
-1.227	1/2+
-0.666	3/2-
-0.606	7/2+
0.000	7/2-
0.496	9/2+
0.831	1/2-
1.097	5/2-
1.952	11/2+
2.642	9/2-

Z = 103 N = 158 A = 261 Relative Single-Proton Energies

E (MeV)	Omega
-2.311	1/2+
-2.303	5/2-
-2.197	1/2-
-2.175	3/2+
-1.971	3/2+
-1.730	5/2+
-1.588	1/2+
-1.118	3/2-
-1.076	7/2+
-0.482	7/2-
0.000	9/2+
0.382	1/2-
0.638	5/2-
1.468	11/2+
2.235	9/2-
2.817	3/2-
2.894	1/2+

Z = 105 N = 158 A = 263 Relative Single-Proton Energies

E (MeV)

Omega

-2.722 5/2-
 -2.538 1/2+
 -2.461 1/2-
 -2.453 3/2+
 -2.197 3/2+
 -2.053 5/2+
 -1.826 1/2+
 -1.518 3/2-
 -1.473 7/2+
 -0.907 7/2-
 -0.444 9/2+
 0.000 1/2-
 0.229 5/2-
 1.050 11/2+
 1.966 9/2-
 2.382 3/2-
 2.602 1/2-
 2.698 1/2+
 2.868 7/2-
 2.969 3/2+

Z = 107 N = 158 A = 265 Relative Single-Proton Energies

E (MeV)

Omega

-2.956 5/2-
 -2.586 1/2+
 -2.552 3/2+
 -2.544 1/2-
 -2.241 3/2+
 -2.189 5/2+
 -1.879 1/2+
 -1.738 3/2-
 -1.687 7/2+
 -1.150 7/2-
 -0.704 9/2+
 -0.195 1/2-
 0.000 5/2-
 0.811 11/2+
 1.880 9/2-
 2.128 3/2-
 2.358 1/2-
 2.684 1/2+
 2.773 7/2-
 2.863 3/2+

Z = 95 N = 160 A = 255 Relative Single-Proton Energies

E (MeV)	Omega
-2.395	1/2-
-2.385	5/2+
-1.741	3/2-
-1.615	11/2-
-0.713	1/2+
-0.678	3/2+
-0.618	1/2-
-0.509	5/2-
-0.465	3/2+
-0.247	1/2+
0.000	5/2+
0.607	3/2-
0.738	7/2+
1.268	7/2-
1.849	9/2+
2.124	1/2-
2.327	5/2-

Z = 97 N = 160 A = 257 Relative Single-Proton Energies

E (MeV)	Omega
-2.905	1/2-
-2.902	5/2+
-2.318	3/2-
-2.160	11/2-
-1.248	1/2+
-1.211	3/2+
-1.154	1/2-
-1.141	5/2-
-1.009	3/2+
-0.765	1/2+
-0.590	5/2+
0.000	3/2-
0.110	7/2+
0.629	7/2-
1.198	9/2+
1.518	1/2-
1.712	5/2-
2.600	11/2+

Z = 99 N = 160 A = 259 Relative Single-Proton Energies

E (MeV)	Omega
-2.902	5/2+
-2.899	1/2-
-2.377	3/2-
-2.186	11/2-
-1.267	1/2+
-1.256	5/2-
-1.231	3/2+
-1.175	1/2-
-1.033	3/2+
-0.764	1/2+
-0.662	5/2+
-0.090	3/2-
0.000	7/2+
0.509	7/2-
1.063	9/2+
1.430	1/2-
1.615	5/2-
2.478	11/2+

Z = 101 N = 160 A = 261 Relative Single-Proton Energies

E (MeV)	Omega
-2.826	3/2-
-2.602	11/2-
-1.760	5/2-
-1.677	1/2+
-1.646	3/2+
-1.586	1/2-
-1.443	3/2+
-1.155	1/2+
-1.123	5/2+
-0.572	3/2-
-0.500	7/2+
0.000	7/2-
0.538	9/2+
0.952	1/2-
1.127	5/2-
1.963	11/2+
2.654	9/2-

Z = 103 N = 160 A = 263 Relative Single-Proton Energies

E (MeV)	Omega
-2.957	11/2-
-2.276	5/2-
-2.018	3/2+
-2.005	1/2+
-1.945	1/2-
-1.771	3/2+
-1.545	5/2+
-1.483	1/2+
-1.067	3/2-
-0.995	7/2+
-0.520	7/2-
0.000	9/2+
0.478	1/2-
0.625	5/2-
1.450	11/2+
2.291	9/2-
2.781	3/2-

Z = 105 N = 160 A = 265 Relative Single-Proton Energies

E (MeV)	Omega
-2.794	5/2-
-2.399	3/2+
-2.344	1/2+
-2.312	1/2-
-2.102	3/2+
-1.968	5/2+
-1.817	1/2+
-1.571	3/2-
-1.494	7/2+
-1.047	7/2-
-0.545	9/2+
0.000	1/2-
0.111	5/2-
0.929	11/2+
1.920	9/2-
2.243	3/2-
2.481	1/2-
2.838	7/2-
2.982	1/2+

Z = 107 N = 160 A = 267 Relative Single-Proton Energies

E (MeV)	Omega
-2.957	5/2-
-2.418	3/2+
-2.413	1/2-
-2.394	1/2+
-2.077	5/2+
-2.059	3/2+
-1.738	3/2-
-1.717	1/2+
-1.648	7/2+
-1.158	7/2-
-0.707	9/2+
-0.164	1/2-
0.000	5/2-
0.832	11/2+
2.032	9/2-
2.107	3/2-
2.345	1/2-
2.908	7/2-
2.912	1/2+

Z = 109 N = 160 A = 269 Relative Single-Proton Energies

E (MeV)	Omega
-2.993	1/2+
-2.984	1/2-
-2.734	5/2+
-2.719	3/2+
-2.457	3/2-
-2.422	1/2+
-2.378	7/2+
-1.976	7/2-
-1.500	9/2+
-0.825	1/2-
-0.783	5/2-
0.000	11/2+
1.215	9/2-
1.305	3/2-
1.547	1/2-
2.127	7/2-
2.375	1/2+
2.407	3/2+
2.527	13/2+
2.719	5/2+
2.911	3/2-
2.914	1/2-
2.985	5/2-

Z = 95 N = 162 A = 257Relative Single-Proton Energies

E (MeV)	Omega
-2.306	5/2+
-2.162	1/2-
-1.753	3/2-
-1.501	11/2-
-0.720	5/2-
-0.616	3/2+
-0.551	1/2-
-0.524	1/2+
-0.308	3/2+
-0.144	1/2+
0.000	5/2+
0.417	3/2-
0.600	7/2+
1.066	7/2-
1.637	9/2+
1.966	1/2-
2.139	5/2-

Z = 97 N = 162 A = 259Relative Single-Proton Energies

E (MeV)	Omega
-2.700	5/2+
-2.592	1/2-
-2.186	3/2-
-1.930	11/2-
-1.159	5/2-
-1.026	3/2+
-0.967	1/2+
-0.962	1/2-
-0.747	3/2+
-0.543	1/2+
-0.447	5/2+
0.000	3/2-
0.148	7/2+
0.617	7/2-
1.179	9/2+
1.542	1/2-
1.712	5/2-
2.630	11/2+

Z = 99 N = 162 A = 261 Relative Single-Proton Energies

E (MeV)	Ω
-2.743	5/2+
-2.628	1/2-
-2.281	3/2-
-1.995	11/2-
-1.312	5/2-
-1.089	3/2+
-1.027	1/2+
-1.021	1/2-
-0.807	3/2+
-0.580	1/2+
-0.556	5/2+
-0.132	3/2-
0.000	7/2+
0.458	7/2-
1.006	9/2+
1.417	1/2-
1.573	5/2-
2.466	11/2+

Z = 101 N = 162 A = 263 Relative Single-Proton Energies

E (MeV)	Ω
-2.962	1/2-
-2.674	3/2-
-2.361	11/2-
-1.761	5/2-
-1.454	3/2+
-1.387	1/2+
-1.381	1/2-
-1.163	3/2+
-0.963	5/2+
-0.915	1/2+
-0.564	3/2-
-0.444	7/2+
0.000	7/2-
0.534	9/2+
0.995	1/2-
1.134	5/2-
2.004	11/2+
2.899	9/2-

Z = 103 N = 162 A = 265 Relative Single-Proton Energies

E (MeV)	Omega
-2.715	11/2-
-2.269	5/2-
-1.824	3/2+
-1.741	1/2-
-1.720	1/2+
-1.484	3/2+
-1.377	5/2+
-1.235	1/2+
-1.061	3/2-
-0.933	7/2+
-0.517	7/2-
0.000	9/2+
0.531	1/2-
0.631	5/2-
1.492	11/2+
2.538	9/2-
2.762	3/2-

Z = 105 N = 162 A = 267 Relative Single-Proton Energies

E (MeV)	Omega
-2.992	11/2-
-2.799	5/2-
-2.201	1/2-
-2.199	3/2+
-2.135	1/2+
-1.849	5/2+
-1.819	3/2+
-1.593	3/2-
-1.500	1/2+
-1.455	7/2+
-0.993	7/2-
-0.528	9/2+
0.000	1/2-
0.159	5/2-
1.026	11/2+
2.262	3/2-
2.282	9/2-
2.488	1/2-

Z = 107 N = 162 A = 269 Relative Single-Proton Energies

E (MeV)	Omega
-2.959	5/2-
-2.290	3/2+
-2.281	1/2-
-2.209	1/2+
-1.963	5/2+
-1.877	3/2+
-1.743	3/2-
-1.611	7/2+
-1.552	1/2+
-1.166	7/2-
-0.711	9/2+
-0.129	1/2-
0.000	5/2-
0.849	11/2+
2.086	3/2-
2.179	9/2-
2.322	1/2-

Z = 109 N = 162 A = 271 Relative Single-Proton Energies

E (MeV)	Omega
-2.998	1/2-
-2.876	1/2+
-2.703	5/2+
-2.584	3/2-
-2.526	3/2+
-2.429	7/2+
-2.207	1/2+
-2.017	7/2-
-1.576	9/2+
-0.919	1/2-
-0.851	5/2-
0.000	11/2+
1.215	3/2-
1.472	1/2-
1.475	9/2-
2.306	7/2-
2.448	3/2+
2.513	1/2+
2.603	5/2+
2.796	13/2+