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**Bibliography of Electron Transfer
in Heavy Particle Collisions
1950-75**

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Bibliography of Electron Transfer in Heavy Particle Collisions

1950-75

**Controlled Fusion Atomic Data Center
Physics Division, Oak Ridge National Laboratory**

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Bibliography of Electron Transfer in Heavy Particle Collisions

1950-75

Abstract

This annotated bibliography lists published work on electron transfer in heavy particle collisions for the period 1950 to 1975. Sources include scientific journals, abstract compilations, conference proceedings, books, and reports. The bibliography is arranged alphabetically by author. Each entry indicates whether the work was experimental or theoretical, what energy range was covered, and what reactants were investigated. Following the bibliographical listing are indexes of reactants and authors.

Introduction

This bibliography is one of four indexed bibliographies on heavy particle collisions to be published by the Controlled Fusion Atomic Data Center. Other bibliographies in the series include *Bibliography of Molecular Dissociation in Heavy Particle Collisions, 1950-75*, *Bibliography of Atomic and Molecular Excitation in Heavy Particle Collisions, 1950-75*, and *Bibliography of Ionization and Stripping in Heavy Particle Collisions, 1950-75*. This bibliography consists of an annotated list of published works on electron transfer in heavy particles for the period 1950 to 1975. It is divided into two sections, 1950-70 publications and 1971-75 publications. These sections are arranged alphabetically by author and followed by indexes of reactants and authors. Each entry indicates whether the work was experimental (E) or theoretical (T), what energy range was covered, and what reactants were investigated.

The following remarks are offered to facilitate the use of the bibliography.

1. These bibliographies have been edited for obviously misplaced entries, which were deleted from their original categories and added to the end of the correct categories. This editing process accounts for missing entry numbers (due to deletions) and the lack of alphabetical arrangement for some final category entries (added after the bibliography was computer formatted).

2. The addition of a reactant to the subject index is indicated by an asterisk beside the entry's alphabetically correct position; the

reactant is given at the end of the appropriate column. The same method is used to add authors to the author index. When necessary, double or triple asterisks are used to show second or third additions to a column.

3. Since these bibliographies were computer generated using a program developed in 1961-63, the system of making capital or lowercase letters does not conform to conventional practice. All element symbols are set in caps both in the reactants column of the bibliographical listing and in the subject index. In the bibliographical entry itself, capitalization is entirely a function of spacing. Thus, there is no distinction between Co as a symbol of cobalt or of carbon monoxide, and the abbreviation for electron volt is consistently Ev. It is hoped that these idiosyncrasies will be understood in context.

4. Also due to computer manipulation, any differences in symbolic representation or formatting resulted in different entries in the index. For example, a superscript ++ is handled differently from a superscript 2+. The user should keep these differences in mind when performing searches.

5. Sequencing of reactants in the index follows the order

N* (excited state), N, N₂, N⁺, N⁻, N²⁺, NA (etc.), NE (etc.).

An asterisked symbol precedes the symbol alone, which is followed by subscripted symbols, etc. Occasionally, index sequencing is incorrect for various ions of the same element (e.g., I¹⁰⁺ may precede I²⁺). This occurs only for those elements having ions with charge states of

10+ or greater. Such incorrect sequencing is noted in the appropriate sections of the reactants index.

6. Several papers of interest do not refer to a particular collision or system. The reactants in these cases are listed as undefined, denoted as UNDEF. Review papers are labeled REVIEW rather than list all reactants discussed in the paper. Although every effort was made to locate complete publications, a few entries were indexed from the abstract alone; these are labeled, in both the entry and reactants index, as "Categorized by Abstract Only."

7. The collision energy range is denoted by the numbers 0, 1, 2, 3, 4, and 5, which refer, respectively, to thermal energy, $E < 10$ eV, $E < 100$ eV, $E < 1$ keV, $E < 10$ keV, and $E < 100$ keV.

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Section I

Bibliography of Electron Transfer in Heavy Particle Collisions

1950-70

HEAVY PARTICLE COLLISIONS

(Table 1)

ELECTRON TRANSFER (BETWEEN BOUND STATES)

REACTANTS	EXP OR THEORY	F RANGE	REFERENCE
1 $(Ar^+) + (Ar) \rightarrow (Ne^+) + (Ne) \quad (N_2^+) + (N_2) \rightarrow (N_2^+, N_2^+) + (N_2)$	E	3	Abbe, J. C., Adloff, J. P., Reactions Of Positive Ions With Argon, Nitrogen, And Hydrogen, BULL. SOC. CHIM. FRANCE REV. 80, 6 1212 (1964).
2 $(H^+) + (H^-) \rightarrow (HD^+, D_2^+) + (D, D^-)$	E	2	Aberth, U., Peterson, J. R., Lorents, B. C., Cook, C. J., Measurement Of Ion-Ion Neutralization Cross Sections Using The Superimposed Beam Technique, 5TH INT. CONF. ON COLLISIONS, P.162, Leningrad (1967).
3 $(Ar^+) + (Ar)$	T	4	Aberth, U., Lorents, D. C., Marchi, P. P., Smith, F. T., Effect Of Nuclear Symmetry In Ion-Atom Scattering, PHYS. REV. LETTERS 14 776 (1965).
4 $(H^+) + (O^-)$	E	2	Aberth, U., Peterson, J. R., Lorents, B. C., Cook, C. J., $H^+ + O^-$ Neutralization Cross-Section Measurements Using A Superimposed-Beam Technique, PHYS. REV. LETTERS 20 579 (1964).
5 $(H^+) + (O^-) \rightarrow (H_2^+, O_2^+) + (O, O^-)$	E	2	Aberth, William M., Peterson, James R., Ion-Ion Mutual Neutralization Cross Sections Measured By A Superimposed Beam Technique, PHYS. REV. A1 150 (1970).
6 $(H^+) + (H, H_2)$	T	6	Abrines, R., Percival, J. C., Valentini, A. A., Classical Theory Of Collisions Of Protons And Electrons With Hydrogen Atoms, 4TH INT. CONF. PHYS. ELECTRON. ATOMIC COLLISIONS, P.223, SCIENCE MONOGRAPHIES, NEW YORK (1965).
7 $(He^+) + (H)$	T	6	Abrines, R., Percival, I. C., Classical Theory Of Charge Transfer And Ionization Of Hydrogen Atoms By Protons, PRM., PHYS. SOC., LONDON 84 461 (1966).
8 $(H^+) + (H)$	T	5	Abrines, R., Percival, I. C., Classical Proton-Hydrogen Scattering Cross Sections, PHYS. LETTERS 13 216 (1964).
9 $(H^+) + (H)$	T	5	Abrines, R., Percival, I. C., A Generalized Correspondence Principle And Proton-Hydrogen Collisions, PACC. PHYS. SOC., LONDON 84 473 (1966).
10 Under	T	6	Abul-Had, A. Y., A Note On The Three-Body Treatment For Re-Arrangement Collisions, NUOVO CIMENTO 52E 124 (1967).
11 $(H^+) + (N_2, O_2, AR)$	E	5	Acerbi, E., Castiglioni, M., Butta, G., Resnati, F., Sacchi, C., Tagliaferri, G., Electron Capture By 33 And 34 Mev Protons In Gases, NUOVO CIMENTO 50B 176 (1967).
12 $(H^+) + (N_2, O_2, AR)$	E	5	Acerbi, E., Castiglioni, M., Butta, G., Resnati, F., Sacchi, G., Tagliaferri, G., Electron Capture By 33 And 34 Mev Protons In Gases, NUOVO CIMENTO 42B 176 (1967).
13 $(O^+) + (O_2)$	E	2	Adams, N. G., Bohan, B. R., Dunlin, D. B., Fabianfeld, F. C., Ferguson, E. E., Flowing Afterglow Studies Of Formation And Reactions Of Cluster Ions Of O_2^+ , O_3^+ , And C_2^+ , J. CHEM. PHYS. 52 3133 (1970).
14 $(He, He^+, HeH^+, HeH_2^+, HeF, HeF^+, HeF_2^+, HeN^+, HeN_2^+, He, He^+, Ar, Ar^+, ArH^+, ArH_2^+, Ar, Ar^+) + (N_2)$	E	2	Adams, N. G., Bohan, B. R., Ferguson, E. E., Reactions Of He, He^+, He, Ar, Ar^+ , And Rare-Gas Hydride Ions With Hydrogen At 200 Degrees K, J. CHEM. PHYS. 52 5101 (1970).
15 $(H^+) + (He, HeF, AR, AR, IF)$	F	4	Afrosimov, V. V., Ramanov, Yu. A., Panov, R. A., Fedorenko, N. V., Coincidence Method For Studying Charge - Exchange In Proton - Inert Gas Interactions, SOVIET PHYS.-TECH. PHYS. 14 107 (1969).
16 $(H^+) + (N_2, N_2)$	F	4	Afrosimov, V. V., Lelko, G. A., Ramanov, Yu. A., Panov, R. A., Fedorenko, N. V., Elementary Processes Of Charge State Change In The Interaction Of Protons With Hydrogen And Nitrogen Molecules, VI ICPEAC, P.114, IRL MIT PRESS, CAMBRIDGE, MASS. (1969).
17 $(H^+) + (N_2)$	F	4	Afrosimov, V. V., Lelko, G. A., Ramanov, Yu. A., Panov, R. A., Elementary Processes Of Charge Of Charge States In The Interaction Between Protons And Hydrogen Molecules, SOVIET PHYS.-JETP 29 448 (1969).
18 $(He, AR, HeF, ARF, HeF_2, ARF_2) + (AR)$	E	5	Afrosimov, V. V., Il'in, R. N., Agarin, V. A., Solov'ev, E. S., Fedorenko, N. V., Ionization Of Argon By Atoms, And Singly Or Doubly Charged Ions Of Neon And Argon, SOVIET PHYS.-JETP 14 747 (1962).
19 $(H^+) + (He, HeF, AR, IF)$	F	5	Afrosimov, V. V., Il'in, R. N., Solov'ev, E. S., Electron Capture By Protons In Inert Gases, SOVIET PHYS. - TECH. PHYS. 5 661 (1960).
20 Review	T	4	Afrosimov, V. V., Progress In The Investigation Of Atomic Particle Collisions, 6TH INT. CONF. PHENOMENA IN IONIZED GASES, VIENNA, 1967, P.91 (1968).
21 $(H^+) + (AR)$	E	4	Afrosimov, V. V., Ramanov, Yu. A., Panov, R. A., Uroshevich, V., Capture, Ionization, And Ionization Capture In Collisions Of Protons With Argon Atoms, SOVIET PHYS.-TECH. PHYS. 12 512 (1967).
22 $(H^+) + (AR)$	E	4	Afrosimov, V. V., Ramanov, Yu. A., Coincidence Method For The Direct Determination Of The Charge-Changing Collision Cross Sections, SOVIET PHYS.-TECH. PHYS. 12 190 (1967).

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REACTANTS	EXP ON THEOM.	E RANGE	REFERENCE
23 (H^+)(He, Ar)	E	4	Afrosimov, V. V., Romanov, Yu. A., Panov, R. N., Fedorenko, N. V., Coincidence Measurements Of The Cross Sections Of Elementary Processes In Collisions Of H^+ , H^0 , And H^- With The Atoms Of Noble Gases, 5TH INT. CONF. ON COLLISIONS, P.210, Leningrad (1967).
24 (H^0, H^+, H^-)(He)	E	4	Afrosimov, V. V., Romanov, Yu. A., Panov, R. N., Fedorenko, N. V., Investigation, By The Coincidence Method, Of Charge State Changes Occurring In The Interaction Between H^0 , H^+ And H^- And The Xenon Atom, SOVIET PHYS.-JETP 28 52 (1969).
25 ($H^0, H^+, H^-, H_2^+, H_2^0$)(Ar)	E	5	Afrosimov, V. V., II In, R. N., Fedorenko, N. V., The Ionization Of Argon By Hydrogen Ions, SOVIET PHYS. - TECH. PHYS. 3 2000 (1958).
26 (H^0)(H)	T	4	Agrest, R. N., Kuranov, Yu. V., Iobekhov, S. I., Rikhsingiz, M. R., Calculation Of Average Cross Sections For Ionization And Resonant Charge Transfer For The Electrons In An Accelerated Atomic Beam, SOVIET PHYS. - TECH. PHYS. 11 1627 (1967).
27 (Li^+)(Ne) (Ne^+)(Ar)	E	3	Alan, G. D., Bohm, D. R., Mastad, J. B., Ong, P. P., Charge Transfer Collisions Involving Curve-Crossing, 5TH INT. CONF. ON COLLISIONS, P.403, Leningrad (1967).
28 (He^+)(H_2)	E	2	Albritton, D. L., Schultzehoff, A. L., Ferguson, E. E., The Mechanism For The Reaction Of He^+ With H_2 , VI ICPEAC, P.331, THE MIT PRESS, CAMBRIDGE, MASS. (1969).
29 (He^{2+})(He)	T	1	Allison, D. C. S., Daigarno, A., Radiative Charge Transfer From He Atoms To He^+ Ions, PHOC. PHYS. SOC., LONDON 85 845 (1965).
30 (H^+)(Ne) (Ne^+ , Ne^{2+})(H)	T	5	Allison, Samuel R., Experimental Results On Charge-Changing Collisions Of Hydrogen And Helium Atoms And Ions At Kinetic Energies About 0.2 eV, REV. MOD. PHYS. 30 1137 (1958).
31 (He^+, He^{2+})(H_2, He, H_2)	E	5	Allison, S. R., Cuevas, J., Murphy, P. G., Experimental Cross Sections For Charge-Changing Collisions Of He^+ And He^{2+} Ions Traversing Gases, PHYS. REV. 102 1041 (1956).
32 (He^{2+})(He, H_2, N_2)	E	5	Allison, Samuel R., Double Electron Capture And Loss By Helium Ions Traversing Gases, PHYS. REV. 109 76 (1958).
33 (Li^+, Li^{2+})(He, H_2, N_2)	E	5	Allison, S. R., Cuevas, J., Garcia-Nunez, R., Experiments On Charge-Changing Collisions Of Lithium And Atomic Beams, PHYS. REV. 120 1266 (1950).
34 (H^+)(H) (Cal. by Abstract Only)	T	3	Alzafan, F. E., Ullrich, F. C., Variational Approach To The Calculation Of Charge Exchange Cross Sections For Adiabatic Collisions, 663-15391, NASA-TN-L-1654 (1962).
35 (Li^+, Li^{2+})(N_2)	E	3	Amer, R. C., Ullrich, F. C., Effects Of Ion Beam Excitation On Charge Transfer Cross-Section Measurements, ATOMIC COLLISION PROCESSES, P.447, NORTH-HOLLAND PUBL. CO., AMSTERDAM (1964).
36 (Ar^+)(H_2, Ar) (N_2^+)(Ar)	E	3	Amer, R. C., Hayden, H. C., Ion-Beam Excitation Effects On The Single Charge Transfer Between Argon And Nitrogen, J. CHEM. PHYS. 42 2011 (1965).
37 (Ar^+)(H_2, O_2)	E	3	Amer, Robert C., Mc Linn, John F., Charge-Exchange Cross Sections For Argon Ions In H_2 And O_2 Below 1 eV, J. CHEM. PHYS. 45 122 (1966).
38 (He^+)(He, O_2)	E	3	Amer, Robert C., Naugle, Paul G., Relative Charge-Transfer Efficiencies Of P Sub $3/2$ And P Sub $1/2$ Xenon Ions In He And In O_2 , PHYS. REV. 165 63 (1968).
39 (N_2^+)(Ar)	E	9	Amer, Robert C., Hayden, Howard C., Studies Of The N_2-N_2 , N_2-Ar , And $Ar-N_2$ Ionization Cross Sections Utilizing Asymmetric Charge Transfer, 4TH INT. CONF. PHYS. ELECTRON. ATOMIC COLLISIONS, P.42 (1965).
40 (H^+)(He, Ne, Ar, Kr, Xe)	E	6	Andreev, F. P., Anhudinov, V. A., Babashev, S. V., Dubel Shil, V. R., Matveev, V. P., Lyman Beta Radiation Produced By Proton - Inert Gas Collisions Influence Of Electric Field On Its Intensity, 5TH INT. CONF. ON COLLISIONS, P.302, Leningrad (1967).
41 (He^+, He^{2+})(H_2)	E	4	Andreev, F. P., Anhudinov, V. A., Babashev, S. V., Effective Cross Sections For The Excitation Of Balmer Series Hydrogen Lines In Collisions Of Singly Charged Helium And Neon Ions With Hydrogen Molecules, UPT. SPECTRUMS. 16 103 (1964).
42 (H^+)(He, Ne, Ar, Kr, Xe)	E	4	Andreev, F. P., Anhudinov, V. A., Babashev, S. V., Charge Exchange Of Protons In Inert Gases Involving The Formation Of Fast Hydrogen Atoms In The $2s$ And $1p$ States, SOVIET PHYS. - JETP 23 375 (1966).
43 (H^+)(Ne, He, Ar, Kr, Xe)	E	4	Andreev, F. P., Anhudinov, V. A., Babashev, S. V., Matveev, V. P., Effect Of Electric Fields On Intensity Of Hydrogen L Beta Line Excited In Proton Charge Exchange With Inert Gases, SOVIET PHYS.-JETP 25 232 (1967).
44 (H^+)(He, Ne, Ar)	E	4	Andreev, F. P., Anhudinov, V. A., Babashev, S. V., Cross Sections For Electron Capture By Protons To $3s$ -, $3p$ -, $3d$ -States Of The Hydrogen Atom, 5TH INT. CONF. ON COLLISIONS, P.307, Leningrad (1967).
45 (H^+)(H_2)	E	4	Andreev, F. P., Anhudinov, V. A., Babashev, S. V., Excitation Of Hydrogen Lyman Alpha And Beta Lines By H^+ , H_2^+ , And He^+ Ions Passing Through Hydrogen, 5TH INT. CONF. ON COLLISIONS, P.309, Leningrad (1967).
46 ($Ar^+, CO_2^+, NH_3^+, O_2^+$)(CH_4, C_2H_2, C_2H_4) (Cal. by Abstract Only)	E	3	Aperina, F. V., Morzin, R. I., Tol Jozz, V. L., Fridlyandskii, G. V., Transfer Of Kinetic Energy Into Excitation Energy During Charge Exchange Between Ions And Molecules, KHIM. VYS. ENERG. 3 291 (1969).

REACTANTS	EXP OR THEOR.	E RANGE	REFERENCE
67 (H_2^+, H^+, H_2^+)(H_2)	E	1	Aquilanti, V., Velpi, J. C., Some Ionic Processes of Interest in The Upper Atmosphere, NUCLEAR SCI. 36 259 (1964).
68 (He^+, He^{2+})(Al, Ni, Ag, Au, C)	E	5	Armstrong, J. C., Hollander, J. V., Harris, B. W., Rarison, G. P., Equilibrium Charge-State Fractions of 0.2 to 6.2 Rev Helium Ions in Carbon, PRCC. PHYS. SOC., LONDON 46 1243 (1965).
69 (He^{2+})(H)	T	1	Arthurs, A. R., Nystrop, J., Radiative Charge Transfer from H Atoms To He^{2+} Ions, PRCC. PHYS. SOC., LONDON 70 144 (1957).
50 (He^+)(He) (He^+)(He)	E	4	Baderau, E., Clobotaru, D., The Determination Of The Charge-Exchange Cross-Section In He And He Atom Interchange, REV. PHYS., ACAD. REPUB. POP. ROM. 5 157 (1967).
51 (H^+)(H) (He^+)(He) (He^+)(He) (Ar^+)(Ar) (Ar^+)(Ar) (He^+)(He) (He^+)(He)	E	5	Baderau, E., Clobotaru, D., On The Resonant Transfer Of Electric Charge In Monatomic Gases, 6TH INT. CONF. ON PHENOMENA GASES, 1 97, SERPA, PARIS (1963).
52 Undefined (Cat. by Abstract Only)	E	0	Barde, A. P. M., Nautinho, A. P. C., Le Velas, A. L., Ros, J., Total Charge Transfer Cross Sections Of Alkali Atoms On Halogen Molecules, ENTROPY 16 165 (1965).
53 (R, Na, Li)(Br_2)	E	2	Barde, A. P. M., Nautinho, A. P. C., Le Velas, A. L., Ros, J., Total Cross Sections For Charge Transfer Between Alkali Atoms And Halogen Molecules, CHEM. PHYS. LETTERS 3 530 (1969).
54 (O_2^-, O_2^-, OH^-, H^+)(O_2)	E	3	Bellay, T. L., Mahadevan, L., Electron Transfer And Detachment In Collisions Of Low-Energy Negative Ions With O_2 , J. CHEM. PHYS. 52 179 (1970).
55 (O_2^+, H^+)(O_2, H) (He^+)(He)	T	3	Banks, Peter N., Ion Temperature in The Upper Atmosphere, J. GEOPHYS. RES. 72 3165 (1967).
56 (H^+)(H) (O_2^+)(O_2) (He^+)(He) (O_2^+)(O_2) (H_2^+)(H_2)	T	1	Banks, P. N., Collision Frequencies And Energy Transfer-Ions, 166-24514 (1966).
57 (He^+)(He) (Ar^+)(Ar) (KR^+)(KR)	E	3	Barat, R., Bauman, J., Abignelli, R., Hoover, J. C., Differential Measurements Of Ion-Atom Collisions In The Energy Range 500 To 3000 eV. III. He^+ On He, Ar On Ar And Kr On Kr Collisions, J. PHYS. 1 3 230 (1970).
58 (H^+)(H)	T	3	Bardsley, J. N., Electron Detachment And Charge Transfer In $H-H^+$ Collisions, PRCC. PHYS. SOC., LONDON 91 300 (1967).
59 ($Ar^{2+}, Ar^{3+}, Ar^{4+}$)(Ar)	E	4	Barnett, C. F., Harte, W. E., Krauss, R. G., Langley, S. A., Nabel, P. Y., Ray, J. A., Ruscch, A., Tschury, L. H., Measurements Of Multiple Charge Transfer Of Multiple Charged Argon Ions, THERMONUCLEAR DIVISION SEMI-ANNUAL PROGRESS REPORT FOR PERIOD ENDING OCTOBER 31, 1966, GRC-4062 36 (1967).
60 Review	E	0	Barnett, C. F., Gilbody, H. S., Measurements Of Atomic Cross Sections In Static Gases, METHODS OF EXPERIMENTAL PHYSICS, VOL. 7A, P. 340, ACADEMIC PRESS, New York (1968).
61 (H^+, HD^+, H_2^+)(H_2)	E	5	Barnett, C. F., Ray, J. A., Langley, S. A., Ruscch, A., Rutherford, P. L., LETHBRIDGE (1967).
62 (H_2^+, H_2^+)(H_2, H_2O)	T	5	Barnett, C. F., Ruscch, A., Ray, J. A., Formation Of Neutral Atomic Hydrogen Beams, 6TH INT. CONF. ON PHENOMENA GASES, 1 161, SERPA, PARIS (1963).
63 (H^+)(H_2, H_2, Ar) (H_2^+)(Ar)	T	5	Barnett, C. F., Griffin, D. A., Krauss, R. G., Ray, J. A., Atomic And Molecular Cross Sections, GRC-150 100 (1967).
64 (H^+)(H_2, Ar, H_2, He)	E	5	Barnett, C. F., Reynolds, H. A., Charge Exchange Cross Sections Of Hydrogen Particles In Gases At High Energies, PHYS. REV. 109 350 (1958).
65 (He^+)(H_2, He, H_2, He)	E	5	Barnett, C. F., Siler, P. M., Charge Exchange Cross Sections For Helium Ions In Gases, PHYS. REV. 109 345 (1958).
66 (H^+, H)($H_2, O_2, CO, CO_2, H_2O, CH_4, C_2H_6$)	E	5	Barnett, C. F., Harte, W. E., Krauss, R. G., Langley, S. A., Nabel, P. Y., Ray, J. A., Ruscch, A., Tschury, L. H., High-Energy Charge Exchange Of H^+ And H_2^+ In Condensable Gases, THERMONUCLEAR DIVISION SEMI-ANNUAL PROGRESS REPORT FOR PERIOD ENDING OCTOBER 31, 1966, GRC-4062 37 (1967).
67 ($H_2^+, HD^+, D^+, H^+, H_2^+, D_2^+$)(H_2) ($He^{2+}, He^{3+}, He^{4+}$)(He, Ar, Kr, Xe) (H^+, H, H_2^+, H_2^+)(CS, HC)	E	5	Barnett, C. F., Harte, W. E., Krauss, R. G., Langley, S. A., Ray, J. A., Ruscch, A., Atomic And Molecular Cross Sections, GRC-4150, P. 103 (1967).
68 (H^+)(H)	T	5	Russell, R. M., Gerjuoy, E., Distorted wave Method For Electron Capture From Atomic Hydrogen, PHYS. REV. 117 740 (1960).
69 (H^+)(H)	T	0	Bate, D., Gil, B. C., Photoionization, 2. Resonance In Electron Capture By Proton From Hydrogen Atoms, 6TH INT. CONF. PHYS. SOCIETY, ATOMIC COLLISIONS, P. 214, SCIENCE PUBLICATIONS, New York (1965).
70 (H^+)(H)	T	3	Bate, D., Gil, B. C., Photoionization, 2. Resonance In Electron Capture By A Proton From A Hydrogen Atom, PHYS. REV. 140 104 (1966).
71 (He^{2+})(He)	T	4	Bate, D., Nethercote, J. C., Gil, B. C., Resonant Electron Capture Of Alpha Particles Passing Through Helium, ATOMIC COLLISIONS, P. 769, NORTH-HOLLAND PUBL. CO., AMSTERDAM (1964).
72 (He^{2+})(H)	T	4	Bate, D., Photoionization, 2. Resonance In Electron Capture By Alpha-Particle Incident On Hydrogen Atom, 6TH INT. CONF. ON COLLISIONS, P. 44, LETHBRIDGE (1967).
73 (He^{2+})(H)	T	5	Bate, D., Photoionization, 2. Resonance In Electron Capture By Alpha-Particle Incident On Atomic Hydrogen, PHYS. REV. 143 104 (1967).
74 Undefined (Cat. by Abstract Only)	T	0	Bate, D., Wasey, H. G., Low Inelastic Collisions Between Atomic Systems, PHYS. REV. 111 (1958).

REACTANTS	EXP OR THEOR.	E RANGE	REFERENCE
75 (Be ²⁺)(He) (Al ²⁺ , Si ²⁺ , B ²⁺)(H); (Li ⁺ , Na ⁺ , K ⁺)(H ⁻)	T	0	Bates, D. R., Collisions Involving The Crossing Of Potential Energy Curves, PROC. ROY. SOC., LONDON 257A 22 (1960).
76 Underf	T	0	Bates, D. R., Mc Carroll, R. R., Electron Capture In Slow Collisions, PROC. ROY. SOC., LONDON A245 (1958).
77 (H ⁺)(H) (CS ⁺)(CS)	T	0	Bates, D. R., Rapieton, R. A., Classical Calculations On Electron Capture, PROC. PHYS. SOC., LONDON 87 667 (1966).
78 (H ⁺)(H)	T	0	Bates, D. R., Malik, A. R., Impact Parameter And Semi-Classical Treatments Of Atomic Collisions, PROC. ROY. SOC., LONDON 292 168 (1966).
79 (H ⁺)(H, D, O ⁺) (O ⁺)(H ₂)	T	2	Bates, D. R., Lynn, M., Electron Capture Of The Accidental Resonance Type, PROC. ROY. SOC., LONDON 253A 141 (1960).
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81 (H ⁺)(H ₂ ⁺)	T	2	Bates, D. R., Reid, R. H. G., Resonance Charge Transfer Between Protons And Excited Hydrogen Atoms. II. Classical Approximations, J. PHYS. B 2 657 (1969).
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1066 $(D^+, He^+) + (D_2, H_2)$	E	0	Sayer, J., Smith, D., Ion And Charge Exchange Reactions Involving Atmospheric Gases, <i>DISC. FARMAT SOC.</i> 37 107 (1964).
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1001	(H ⁺)(N ₂ , NE, N ₂ O ₂ , NE, AR, KR)	E	5	Schryber, Urs, Elektroneneinfang Schneller Protonen in Gasen, HELV. PHYS. ACTA 40 1023 (1967).
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1003	(H ₂ ⁺)(N ₂)	E	5	Schulzke, Fred, Ionisierung- Joladequerschnitte Von Wasserstoff-Atomen Ionen Von 9 Bis 60 KeV in Wasserstoff, Z. PHYS. 157 510 (1960).
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1007	(AD ⁺)(AR)	E	1	Shahin, M. W., Lipshy, S. M., Energy Transfer Between Molecules And Electronically Excited Atoms. II, J. PHYS. CHEM. 69 4406 (1965).
1008	(AR ⁺ , N ₂ ⁺)(N ₂) (N ₂ ⁺)(O ₂)	E	3	Shahin, M. W., Mass Spectrometric Studies Of Ion-Molecule Reactions In Gas Discharges, ION-MOLECULE REACTIONS IN THE GAS PHASE, P.315, A SYMPOSIUM, AMERICAN CHEMICAL SOC., WASHINGTON (1966).
1009	(H ⁺)(H)	T	5	Shenoy, C. S., Kumar, L., Callaway, J., Coulomb I Matrix And Electron Capture By Protons Passing Through Hydrogen, PHYS. REV. A1 1137 (1970).
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1093	(H ⁺ , D ⁺ , HE ⁺ , NE ⁺ , N ₂ ⁺)(N ₂)	E	4	Sheridan, J. R., Rotation And Vibration In H ₂ ⁺ First Negative Bands Excited By Ion Impact, UNIVERSITY OF WASHINGTON, 1964. (DISSERTATION)
1094	(AR ⁺ , C ₂ H ₄ ⁺ , C ₂ H ₆ ⁺ , C ₂ H ₂ ⁺ , C ₂ H ₃ ⁺ , C ₂ H ₅ ⁺ , N ₂ ⁺ , H ₂ ⁺ , NO ₂ ⁺ , ND ₂ ⁺)(AR) (Cat. by Abstract Only)	E	3	Shirai, Tsuneo, Rudo, Yoshiaki, Warabi-aka, Terumori, Yanagisawa, Saburo, Perpendicular-Type Two-Stage Mass Spectrometer For Study Of Ion-Molecule Reactions, HIPPON BAKARI ZASSHI 90 646 (1969).
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1096	(CH ₄ ⁺ , NH ₃ ⁺ , C ₂ H ₂ ⁺ , C ₂ H ₃ ⁺ , C ₂ H ₅ ⁺ , N ₂ S ⁺)(ND)	E	2	Slech, L. Wayne, Fulrell, J. M., Rate Constants For Charge Exchange Involving Guanothionyl Ions And Nitric Oxide, J. CHEM. PHYS. 40 1409 (1960).
1097	Underf	E	5	Slegert, G., Gunther, M., Koenig, L., Elektroneneinfangquerschnitte Fur Ungeladene Spaltproduktionen, Z. NATURFORSCH. 22A 975 (1967).
1098	Underf	T	0	Sil, M. C., Electron Capture By Ions Passing Through Gases, INDIAN J. PHYS. 28 232 (1954).
1099	(NE ⁺)(NE)	T	3	Sil, M. C., Surai, D. P., Menherjee, S. C., Charge Transfer In He ⁺ - He Collisions, 5TH INT. CONF. ON COLLISIONS, P.86, Leningrad (1967).
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1104	(AR ⁺ , KR ⁺)(ND)	E	3	Sjogren, M., Szabo, I., On The First Excited State Of Ne ⁺ , ARK. FYS. 37 551 (1960).
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1112	Unref	T	2	Solovov, B. M., Influence Of Elastic Scattering On Resonance Charge Transfer In A Slow Collision, SOVIET PHYS. - DOKL. 9 570 (1965).
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1117	Unref	T	5	Solovov, B. M., Inelastic Collisions Of Slow Atoms, OPT. SPEKTROS. 17 273 (1964).
1118	$(He^+)(He) (H^+)(He) (Ar^+)(Ar) (Rb^+)(Rb) (At^+)(At)$	T	5	Solovov, B. M., Chibrikov, N. I., Resonance Charge Exchange In Inert Gases, SOVIET PHYS. TECH. PHYS. 10 78 (1965).
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1123	Unref (Cot. by Abstract Only)	E	0	Smith, David Lee, A Mass Spectroscopic Study Of Charge-Transfer Reactions, THESIS, UNIV. OF KANSAS (1965).
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1126	$(He^+)(Ar)$	E	3	Smith, Felix T., Fieschmann, Hans N., Young, Robin A., Collision Spectroscopy. III. Scattering In Low-Energy Charge-Transfer Collisions Of He^+ And Ar , PHYS. REV. A 2 379 (1970).
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1130	$(H^+)(H)$	T	3	Smith, F. J., The Probability Of Electron Capture At Fixed Scattering Angles In $H^+ - H$ Collisions, PROC. PHYS. SOC., LONDON 94 889 (1966).
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1136	$(He^+)(O_2, N_2)$	E	0	Smith, D., Copney, R. J., Fouracre, R. A., Reactions Of O^+ Ions In Helium - Oxygen And Helium - Oxygen - Nitrogen Mixtures, AD-647706, AFRL-67-0092 (1966).
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1145 Underf	T	0	Stechle, P., Boltzmann Collision Integrals For Charge Exchange, INT-1-19, GCMF-660449-4 (1966).
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1157 $(\text{O}^+) \text{p}(\text{H})$	E	3	Stebbing, N. F., Rutherford, J. A., Low-Energy Collisions Between O^+ (sup 4 S) And H (1s), J. GEOPHYS. RES. 73 1035 (1968).
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1162 $(\text{H}^+, \text{H}_2^+, \text{O}^+) \text{p}(\text{O}_2)$ (O^+, He^+) $\text{p}(\text{H}_2)$ ($\text{H}^+, \text{O}^+, \text{H}_2^+, \text{D}_2^+$) $\text{p}(\text{HD})$ (He^+) $\text{p}(\text{O}_2)$	E	0	Stebbing, N. F., Fineman, M. A., McCowan, J. W., Turner, B. N., Electronic And Ionic Reactions In Atmospheric Gases, N64-18550, NASA-1700 (1965).
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1166 $(\text{H}_2^+, \text{H}^+) \text{p}(\text{H}_2)$ (Cat. by Abstract Only)	E	4	Stephert, J., Bouchet, J., Delfosse, J. R., Method Of Measuring Charge Exchange Cross-Sections, ANN. SOC. SCI. BRUX., SER. I 75 188 (1961).
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1171 $(\text{SF}_6^-) \text{p}(\text{SF}_6, \text{TEF}_6, \text{UF}_6)$	E	2	Stockdale, J. A. D., Coople, S. B., Schulzinger, R. C., Negative Ion Formation In Selected Hexafluoride Molecules, J. CHEM. PHYS. 53 1502 (1970).
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1175 (H ₂ ⁺)(NO)	E	1	Stuhl, F., Nibl, H., Formation Of Metastable N ₂ (A ² Sigma Sub U ⁺) In The Charge Transfer Reaction Of H ₂ ⁺ with NO, CHEM. PHYS. LETTERS 4 417 (1969).
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1179 (H ⁺)(H ₂)	T	4	Sural, D. P., Sili, N. C., Electron Capture By Protons Passing Through Molecular Hydrogen, J. CHEM. PHYS. 42 725 (1965).
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1214	$(CO, H_2) + (H_2, CO, AR, O_2, CH_4, C_2H_2, C_2H_4)$	E	3	Utterback, N. G., Total Cross Sections For Production Of Negative Charge In Ionizing Collisions Between Molecules, 5TH INT. CONF. ON COLLISIONS, P. 216, LENINGRAD (1967).
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1234 $(HE^+, C^+, N^+, F^+, NE^+, CL^+, AL^+, KR^+, IE^+, NC^+, IE^+, H_2^+, CO^+, CHD^+, N_2O^+, CH_3^+, O^+) \rightarrow (CH_3) (H^+, HE^+, C^+, N^+, F^+, NE^+, CL^+, AL^+, KR^+, IE^+, NC^+, CH_3^+, CH_3^+, N_2^+, CO^+, CHD^+, N_2O^+, CO^+) \rightarrow (CO_2)$	E	2	Von Koch, H., Dissociation Of Methane Molecule Ions Formed In Charge Exchange Collisions With Positive Ions. Ion-Molecule Reactions Of Methane, ADL. FYS. 20 525 (1965).
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1237 $(C^+, O^+, O_2^+) \rightarrow (RR) (O_2) \rightarrow (N_2)$	E	4	Vujovic, P., Ristic, M., Cobic, B., The Formation Of C^+ , O^+ , And N_2^+ In Two-Electron Capture Processes, VI ICPAC, P.1020, THE MIT PRESS, CAMBRIDGE, MASS. (1969).
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1246 $(H_2^+) \rightarrow (H_2, H_2O) (AR^+) \rightarrow (AR)$	E	3	Weiner, E. R., Hertel, G. R., Koshi, V. L., Cross Sections For Some Gas-Phase Single-Charge Transfer Reactions Of H_2^+ And Ar^+ , J. CHEM. PHYS. 39 3530 (1963).
1247 $(H^+) \rightarrow (H_2, HE, N_2, AR)$	E	5	Welsh, Leland Merrill, Cross Sections For Electron Capture By Fast Protons In H_2 , He, N_2 , Ar, UCRL-16765, THESIS, UNIV. OF CALIF., BERKELEY (1964).
1248 $(H^+) \rightarrow (H_2, HE, N_2, AR)$	E	5	Welsh, Leland M., Barbner, Klaus M., Kaplan, Selig M., Pyle, Robert V., Cross Sections For Electron Capture By Fast Protons In H_2 , He, N_2 , And Ar, PHYS. REV. 186 66 (1967).
1249 $(Li^+) \rightarrow (H_2, AIR)$	E	5	Wendt, H., Hartung, J., Ladungszustände von Lithiumionen in Gasen, Z. NATURFORSCH. 23A 247 (1968).
1250 $(Li^+, Li^+, Li^+) \rightarrow (AIR, AR)$	E	5	Wendt, H., Hartung, J., Ladungszustände von Lithiumionen nach dem Durchdringen von Materie, Z. NATURFORSCH. 23A 2019 (1968).
1251 $(H^+) \rightarrow (H)$	T	4	Vilets, L., Collier, D. F., Coupled-Channel Calculations For H^+ -H Scattering, 4TH INT. CONF. PHYS. ELECTRON. ATOMIC COLLISIONS, P.340, SCIENCE CONFERENCE, NEW YORK (1965).
1252 $(H^+) \rightarrow (H)$	T	4	Vilets, L., Collier, D. F., Coupled-State Calculations Of H^+ -H Scattering, PHYS. REV. 147 13 (1965).
1253 Underf	T	2	Vilhele, H. E., Recombination In Columns, J. CHEM. PHYS. 47 4386 (1967).

REACTANTS	EXP OR THEOR.	E RANGE	REFERENCE
1254 Under	T	5	Willet, R. A., Ekinow, S. G., Exact Numerical Solution For Asymmetric Charge Transfer, PHYS. LETTERS 10 204 (1964).
1255 $(\text{Ar}^+, \text{Ar}^{2+}) + (\text{Ar})$ $(\text{Kr}^+, \text{Kr}^{2+}) + (\text{Kr})$	E	3	Williams, J. F., Single Electron Capture Cross Sections Of The P Sub $3/2$ And P Sub $1/2$ States Argon And Krypton Ions, CAN. J. PHYS. 46 2339 (1968).
1256 $(\text{H}^+) + (\text{H}_2, \text{He}, \text{Ne}, \text{Ar}, \text{Kr}, \text{Xe})$ $(\text{H}_2^+, \text{He}^+) + (\text{H}_2)$	E	4	Williams, J. F., Ekinow, S. G., Charge Exchange And Dissociation Cross Sections For H^+ , H_2^+ , And H_3^+ Ions Of 2- To 50-Kev Energy Incident Upon Hydrogen And The Inert Gases, PHYS. REV. 199 62 (1965).
1257 $(\text{H}^+) + (\text{H}_2, \text{He}, \text{Ne}, \text{Ar}, \text{Kr}, \text{Xe})$	E	4	Williams, J. F., Cross Sections For Double Electron Capture By 2-50-Kev Protons Incident Upon Hydrogen And The Inert Gases, PHYS. REV. 150 7 (1966).
1258 $(\text{H}^+, \text{H}) + (\text{H}_2, \text{He})$	E	5	Williams, J. F., Erratum Measurement Of Charge-Transfer Cross Sections For 0.25- To 2.5-Kev Protons And Hydrogen Atoms Incident Upon Hydrogen And Helium Gases, PHYS. REV. 175 240 (1969).
1259 $(\text{He}^+, \text{Ar}^+, \text{Kr}^+) + (\text{H}_2, \text{He}, \text{Ne}, \text{Ar}, \text{Kr})$	T	5	Williams, J. F., The Adiabatic Hypothesis Applied To High-Energy Charge-Transfer Collisions Involving Rare Gases, PRDC. PHYS. SOC., LONDON 1 132 (1966).
1260 $(\text{H}) + (\text{H}_2, \text{He}, \text{Ne}, \text{Ar}, \text{Kr}, \text{Xe})$	E	4	Williams, J. F., Single-Electron Capture And Loss Cross Sections For 2-50-Kev Hydrogen Atoms Incident Upon Hydrogen And The Inert Gases, PHYS. REV. 153 196 (1967).
1261 $(\text{H}^+) + (\text{H}_2, \text{He})$	E	5	Williams, J. F., Measurement Of Charge-Transfer Cross Sections For 0.25- To 2.5-Kev Protons And Hydrogen Atoms Incident Upon Hydrogen And Helium Gases, PHYS. REV. 157 97 (1967).
1262 $(\text{H}^+) + (\text{H}_2, \text{He})$	T	5	Williams, J. F., The Measurement Of Charge Transfer Cross Sections For High Energy (Approximately 1 Kev) Protons And Hydrogen Atoms Incident Upon Hydrogen And Helium Gases, AEC/E-159 (1967).
1263 $(\text{H}_2^+) + (\text{O}_2, \text{NO})$ $(\text{O}_2^+, \text{NO})$	E	3	Wills, C., Boyd, A. V., Young, R. J., Radiolysis Of Air And Nitrogen-Oxygen Mixtures With Intense Electron Pulses Determination Of A Mechanism By Comparison Of Measured And Calculated Yields, CAN. J. CHEM. 48 1515 (1970).
1264 $(\text{O}_2^+) + (\text{O}_2)$ $(\text{O}^+) + (\text{O}_2)$	E	3	Wills, C., Boyd, A. V., Young, R. J., Armstrong, D. A., Radiation Chemistry Of Gaseous Oxygen Experimental And Calculated Yields, CAN. J. CHEM. 48 1505 (1970).
1265 Under (Cat. by Abstract Only)	E	0	Wilmanns, P., Lindholm, E., Dissociation Of Methanol Molecule Ions Formed In Charge Exchange Collisions With Positive Ions, AER. FVS. 21 97 (1962).
1266 $(\text{HD}_2^+) + (\text{C}_2\text{H}_2)$ $(\text{C}_2\text{H}_2^+) + (\text{HD}_2)$ (Cat. by Abstract Only)	E	2	Wlozel, Norbert, Michalske, Krystyna, Mass Spectrometric Studies Of Ion-Molecule Reactions In Binary Systems. III. Reactions In Ethin-H ₂ Systems, NUKLEONIKA 14 342 (1969).
1267 $(\text{He}, \text{He}^+, \text{He}^{2+}, \text{He}^{3+}, \text{He}^{4+}) + (\text{Ar})$	E	4	Wolfe, G. J. R., Blomman, D. J., Van De Wap, V. F., Electron Capture By Multiply Charged Ions, PHYS. LETTERS 21A 170 (1970).
1268 $(\text{H}_2^+, \text{H}^+) + (\text{He})$	E	4	Witherow, A. D., Rose, P. M., Replide, R. P., Brooks, R. D., Use Of Molecular Beams For Neutral Beam Injectors, REV. SCI. INSTR. 36 240 (1963).
1269 $(\text{H}^+, \text{D}^+, \text{He}^+, \text{H}^+) + (\text{H}_2, \text{He}, \text{H}_2, \text{D}_2, \text{He}, \text{Ar})$	E	4	Witherow, A. D., Rose, P. M., Replide, R. P., Brooks, R. D., Small-Angle Scattering Observed In The Formation Of Neutral Atoms From 10- To 55-Kev Positive Ion Beams, PHYS. REV. 134 A1254 (1964).
1270 $(\text{H}^+) + (\text{H})$	E	5	Witherow, A. D., Rydine, G., Glibody, R. D., An Experimental Study Of Charge Transfer In Proton-Atomic-Hydrogen Collisions Using A Farnox Target Method, PRDC. PHYS. SOC., LONDON 99 341 (1966).
1271 $(\text{H}^+, \text{He}^+, \text{He}^{2+}, \text{Ar}^+, \text{Kr}^+) + (\text{H}_2, \text{He}, \text{He}, \text{Ar}, \text{Kr})$	E	5	Witherow, A. D., Glibody, R. D., An Experimental Study Of Small-Angle Scattering In Charge-Transfer Collisions, PRDC. PHYS. SOC., LONDON 90 343 (1967).
1272 $(\text{He}^+, \text{Ar}^+, \text{Kr}^+) + (\text{H}_2, \text{He}, \text{He}, \text{Ar}, \text{Kr})$	E	5	Witherow, A. D., Glibody, R. D., A Study Of The Charge Neutralization Of Fast He^+ , Ar^+ And Kr^+ Ions During Passage Through Gaseous Targets, PRDC. PHYS. SOC., LONDON 50 353 (1967).
1273 $(\text{He}^+) + (\text{H}_2, \text{He})$	E	5	Witherow, A. D., Levy, G., Glibody, R. D., Charge-Changing Collisions Involving Fast Helium Beams-The Effect Of A Metastable Atom Component, PRDC. PHYS. SOC., LONDON 91 862 (1967).
1274 $(\text{He}^+) + (\text{H}_2, \text{He})$	E	5	Witherow, A. D., Levy, G., Glibody, R. D., Capture And Loss Involving Fast Helium Beams - The Effect Of A Metastable Atom Component, SYN INT. CONF. ON COLLISIONS, P.262, Leningrad (1967).
1275 $(\text{H}^+, \text{H}) + (\text{H}_2)$	E	4	Witherow, A. D., Rose, P. M., Replide, R. P., Brooks, R. D., Injection Of Intense Neutral Beams Into A Tandem Accelerator, REV. SCI. INSTR. 35 1 (1964).
1276 $(\text{H}_2^+) + (\text{O}_2)$	E	2	Wolf, F. A., Turner, D. R., Energy Dependence Of The Charge-Transfer Reaction $\text{H}_2^+ + \text{O}_2$ Going To $\text{H}_2 + \text{O}_2^+$ In The Thermal And Low Electron Volt Region, J. CHEM. PHYS. 50 3645 (1969).
1277 $(\text{O}^+) + (\text{H}_2)$	T	2	Wolf, Fred A., Computer Experiments On Ion-Molecule Reactions, SYN INT. CONF. PHYS. ELECTRON. ATOMIC COLLISIONS, P.228, SCIENCE BRUNNEN, NEW YORK (1965).
1278 $(\text{H}^+) + (\text{O}_2)$ $(\text{O}^+) + (\text{H}_2)$ $(\text{He}^+) + (\text{H}_2)$	T	2	Wolf, Fred A., Computer Calculations Of Ion-Molecule Reactions, J. CHEM. PHYS. 44 1619 (1966).
1279 $(\text{O}_2^+) + (\text{H}_2)$	T	2	Wolf, F. A., Turner, D. R., The Effect Of Polarization On Charge Transfer Cross Sections In The Low E _v Region, SYN INT. CONF. ON COLLISIONS, P.191, Leningrad (1967).

	REACTANTS	EXP OR THEOR.	E RANGE	REFERENCE
1200	$(O^-, O_2^-, O_2^{2-}, OH^-) + (HD_2) (O^+, O_2^+, H^+, H_2^+) + (HO) (H^+) + (O_2)$	T	2	Welf, Fred A., Turner, B. R., Energy Dependence Of Charge-Transfer Reactions In The Thermal And Low-Electron-Volt Region, J. CHEM. PHYS. 48 4226 (1968).
1201	$(He^+) + (He, He, Ar, Kr, Xe)$	E	5	Walterbeek Miller, L., De Meer, F. J., Electron Capture Into Excited States By Helium Ions Incident On Noble Gases, PHYSICA 48 345 (1970).
1202	$(O, O^+) + (CS)$ (Cat. by Abstract Only)	E	3	Woodward, Benjamin Weston, III, Ionization Of Cesium Atoms In Collisions With Atomic Oxygen, THESIS, UNIV. OF COLORADO (1970).
1203	$(He^+) + (C)$ (Cat. by Abstract Only)	E	0	Yager, Robert Eugene, A Model For Deep-Well Excitation Of He^+ , THESIS, RICE UNIV. (1969).
1204	$(H^+) + (He, Ne) (Li^+, Na^+) + (Ar, Kr) (K^+) + (He) (Kr^+) + (Ar)$	T	3	Yakov, N. K., A Model Of Double Resonant Charge Exchange, SOVIET PHYS.-JETP 25 812 (1967).
1205	$(I^-) + (I_2)$	E	1	Young, T. M. Y., Charge Exchange In The Afterglow Of An Iodine Discharge, J. ELECTRON. CONTROL 5 312 (1958).
1206	$(H^+) + (H) (O^+) + (O)$	T	0	Yeo, Jerrald P., Mottier-London Interaction Potentials And Resonant Charge-Exchange Cross Sections For Atomic And Atomic Ions, 4TH. INT. CONF. PHYS. ELECTRON. ATOMIC COLLISIONS, P.345, SCIENCE BOOKCRAFTERS, NEW YORK (1965).
1207	$(HO) + (O_2)$	T	1	Zelberg, S. L., Wave Studies Of Oxygen-Electron Attachment And Initial Conditions, AB-664 857 (1965).
1208	$(He^+) + (He, H_2, Ne, Kr) (H^+) + (H_2, Ne, He, Ar, Kr, H_2, O_2) (H_2^+, H_2^+) + (He, H_2) (He^+, He^+) + (He, Ar) (Ar^+, H^+) + (Ar) (Kr^+) + (Kr) (H_2^+) + (H_2)$	E	5	Ziemba, F. P., Luchwood, G. M., Morgan, G. M., Everhart, E., Resonant Electron Capture And Stripping In Moderately Large-Angle Atomic Collisions, PHYS. REV. 110 1522 (1960).
1209	$(He^+) + (He)$	E	5	Ziemba, F. P., Everhart, E., Resonance Phenomena In Large-Angle Helium Ion-Helium Atom Collisions, PHYS. REV. LETTERS 2 295 (1959).
1210	$(He^+) + (He)$	T	5	Ziemba, F. P., Puzosh, A., Resonance Electron Exchange In Large-Angle Scattering Of He^+ On He At Low Energies, PHYS. REV. 115 922 (1959).
1211	$(C^{++}) + (He, Ne, Ar)$	E	4	Zuilly, M. J., Koopman, B. W., Single-Electron Capture By C^{++} In Helium, Neon And Argon, VI ICPEAC, F.1025, THE MIT PRESS, CAMBRIDGE, MASS. (1969).
1212	$(C^{++}, C^{2+}) + (He, Ne, Ar) (Kr^{2+}) + (He)$ (Cat. by Abstract Only)	E	4	Zuilly, M. Jay, Single Electron Capture By Multiply-Charged Carbon Ions At Energies Below 40 KeV, THESIS, UNIV. OF MARYLAND (1969).
1213	$(C^{++}) + (He, Ne, Ar)$	E	4	Zuilly, M. Jay, Koopman, David V., Single-Electron Capture By C^{++} In Helium, Neon, And Argon Below 40 KeV, PHYS. REV. A 2 1051 (1970).

KEYWORD INDEX

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(D ⁺) ₂ (HC)					
657					
(D ⁺) ₂ (HC)					
1222					
(D ⁺) ₂ (HC)					
1222					
(D ⁺) ₂ (H ₂)					
900					
(D ⁺) ₂ (HC)					
313					
(D ⁺) ₂ (H ₂)					
120	120	293	345	451	
531	1010	1020	1000	1260	
(D ⁺) ₂ (H ₂)					
370	1062				
(D ⁺) ₂ (H ₂)					
370	1062				
(D ⁺) ₂ (H ₂)					
457					
(D ⁺) ₂ (H ₂)					
370	1062				
(D ⁺) ₂ (H ₂)					
175	293	345	502		
(D ⁺) ₂ (H ₂)					
110	119	290	401	1131	
(D ⁺) ₂ (H ₂)	(Col. by Abstract Only)				
541					
(D ⁺) ₂ (H ₂)					
401	170	603	900	1061	
(D ⁺) ₂ (H ₂)					
293					
(D ⁺) ₂ (H ₂)					
67	341	570	657	1020	
1061	1200				
(D ⁺) ₂ (H ₂)	(Col. by Abstract Only)				
1060	1223				
(D ⁺) ₂ (H ₂)					
405	667				
(D ⁺) ₂ (HC)					
120	120	293	341	405	
651	1010	1020	1260		
(D ⁺) ₂ (HC)					
1100					
(D ⁺) ₂ (H ₂)					
502					
(D ⁺) ₂ (H ₂)					
531	1010	1020			
(D ⁺) ₂ (H ₂)					
445	502				
(D ⁺) ₂ (HC)					
657					
(D ⁺) ₂ (H ₂)					
120	120	1066	1093	1200	
(D ⁺) ₂ (H ₂)					
502					
(D ⁺) ₂ (HC)					
293	449	451	1010	1020	
1260					
(D ⁺) ₂ (H ₂)					
1066	1260				
(D ⁺) ₂ (H ₂)					
293	531	1010	1020		
(D ⁺) ₂ (H ₂)					
132					
(D ⁺) ₂ (H ₂)					
132					
(D ⁺) ₂ (HC)					
132					
(D ⁺) ₂ (H ₂)					
132					
(D ⁺) ₂ (H ₂)					
1222	1232				
(D ⁺) ₂ (H ₂)					
657					
(D ⁺) ₂ (H ₂)					
511	570	900			
(D ⁺) ₂ (H ₂)					
67	539	570	667	1070	
(D ⁺) ₂ (H ₂)					
657					
(D ⁺) ₂ (HC)					
1222					
(D ⁺) ₂ (H ₂)					
1222					
(D ⁺) ₂ (HC)					
657					
(D ⁺) ₂ (HC)					
1222					
(D ⁺) ₂ (HC)					
1222					
(D ⁺) ₂ (H ₂)					
900					
(D ⁺) ₂ (HC)					
313					
(D ⁺) ₂ (H ₂)					
120	120	293	345	451	
531	1010	1020	1000	1260	
(D ⁺) ₂ (H ₂)					
370	1062				
(D ⁺) ₂ (H ₂)					
370	1062				
(D ⁺) ₂ (H ₂)					
457					
(D ⁺) ₂ (H ₂)					
370	1062				
(D ⁺) ₂ (H ₂)					
175	293	345	502		
(D ⁺) ₂ (H ₂)					
110	119	290	401	1131	
(D ⁺) ₂ (H ₂)	(Col. by Abstract Only)				
541					
(D ⁺) ₂ (H ₂)					
401	170	603	900	1061	
(D ⁺) ₂ (H ₂)					

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(F ⁺) ₁ (B ₁)				
627				
(F ⁺) ₁ (B ₁)				
304	1200			
(F ⁺) ₁ (B ₁)				
275	700			
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
927				
(F ⁺) ₁ (B ₁)				
1050				
(F ⁺) ₁ (B ₁)				
235	807			
(F ⁺) ₁ (B ₁)				
270				
(F ⁺) ₁ (B ₁)				
235	700	807		
(F ⁺) ₁ (B ₁)				
235				
(F ⁺) ₁ (B ₁)				
270				
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
730				
(F ⁺) ₁ (B ₁)				
700				
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
927				
(F ⁺) ₁ (B ₁)				
1000				
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
927				
(F ⁺) ₁ (B ₁)				
1000				
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
927				
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
927				
(F ⁺) ₁ (B ₁)				
861				
(F ⁺) ₁ (B ₁)				
514				
(F ⁺) ₁ (B ₁)				
514				
(F ⁺) ₁ (B ₁)				
209	333	436	803	807
915	1012	1167	1200	1200
(F ⁺) ₁ (B ₁)				
514				
(F ⁺) ₁ (B ₁)				
514				
(F ⁺) ₁ (B ₁)				
1200				
(F ⁺) ₁ (B ₁)				
1200				
(F ⁺) ₁ (B ₁)				
66	1200			
(F ⁺) ₁ (B ₁)				
1200				
(F ⁺) ₁ (B ₁)				
943				
(F ⁺) ₁ (B ₁)				
66	806	1200		
(F ⁺) ₁ (B ₁)				
66	265	331	333	334
946	902	904		
(F ⁺) ₁ (B ₁)				
54	806	1200		
(F ⁺) ₁ (B ₁)				
1200				
(F ⁺) ₁ (B ₁)				
67	664	843	1071	
(F ⁺) ₁ (B ₁)				
63	205	328	646	722
723	706	774	779	829
1027	1113			
(F ⁺) ₁ (B ₁)				
263	333	436	646	847
902	1012	1063	1121	1167
1200	1221	1260	1280	1275
(F ⁺) ₁ (B ₁)				
66	1200			
(F ⁺) ₁ (B ₁)				
209	320	436	847	916
943	1012	1167	1200	1250
1200				
(F ⁺) ₁ (B ₁)				
436	847	1200	1250	
(F ⁺) ₁ (B ₁)				
700				

(F ⁺) ₁ (B ₁)				
67	125	943		
(F ⁺) ₁ (B ₁)				
66	436	916	902	904
1012	1167	1200		
(F ⁺) ₁ (B ₁)				
943				
(F ⁺) ₁ (B ₁)				
436	847	916	1167	1260
(F ⁺) ₁ (B ₁)				
806				
(F ⁺) ₁ (B ₁)				
903	904			
(F ⁺) ₁ (B ₁)				
66	436	847	902	904
1167	1200			
(F ⁺) ₁ (B ₁)				
24	436	847	1260	
(F ⁺) ₁ (B ₁)				
750				
(F ⁺) ₁ (B ₁)				
592				
(F ⁺) ₁ (B ₁)				
25	63	472	493	505
510	531	532	539	647
660	750	855	877	1164
1222	1232			
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
1223				
(F ⁺) ₁ (B ₁)				
754				
(F ⁺) ₁ (B ₁)				
1034				
(F ⁺) ₁ (B ₁)				
1034				
(F ⁺) ₁ (B ₁)				
657				
(F ⁺) ₁ (B ₁)				
573	670			
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
574				
(F ⁺) ₁ (B ₁)				
254	256	667	669	670
(F ⁺) ₁ (B ₁)				
67				
(F ⁺) ₁ (B ₁)				
535	570	1232		
(F ⁺) ₁ (B ₁)				
400	401			
(F ⁺) ₁ (B ₁)				
1	61	62	67	80
201	204	322	400	472
493	509	510	511	515
532	539	570	655	657
640	670	699	717	718
715	706	826	827	828
877	900	1063	1070	1141
1141	1164	1180	1224	1225
1221	1232	1236	1240	
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
507	508	1166		
(F ⁺) ₁ (B ₁)				
62	170	254	256	270
271	657	667	669	670
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
195	260			
(F ⁺) ₁ (B ₁)				
509	510	532	1164	1222
1232	1240	1200		
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
507	1223			
(F ⁺) ₁ (B ₁)				
170				
(F ⁺) ₁ (B ₁)				
632	640	1164	1222	1232
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
1223				
(F ⁺) ₁ (B ₁)				
260				
(F ⁺) ₁ (B ₁)				
67	260	657	1141	1142
(F ⁺) ₁ (B ₁)				
472	493	509	510	647
669	670	661		
(F ⁺) ₁ (B ₁)				
1141	1142			
(F ⁺) ₁ (B ₁)				
532	503	1141	1142	1164
1222	1232			
(F ⁺) ₁ (B ₁) (Cat. by Abstract Only)				
1223				

RETURNED TO SENDER

(H ₂ O) ⁺ [(H ₂ O) ₂]	256	255	470		
(H ₂ O) ⁺ [(H ₂ O) ₃]	667	665	670		
(H ₂ O) ⁺ [(H ₂ O) ₄]	532	448	1166	1222	1232
(H ₂ O) ⁺ [(H ₂ O) ₅]	1223	(Conf. by Abstract Only)			
(H ₂ O) ⁺ [(H ₂ O) ₆]	1269				
(H ₂ O) ⁺ [(H ₂ O) ₇]	1047	1204	1212		
(H ₂ O) ⁺ [(H ₂ O) ₈]	1204		1212		
(H ₂ O) ⁺ [(H ₂ O) ₉]	1204	1212			
(H ₂ O) ⁺ [(H ₂ O) ₁₀]	1185				
(H ₂ O) ⁺ [(H ₂ O) ₁₁]	256	279			
(H ₂ O) ⁺ [(H ₂ O) ₁₂]	1078				
(H ₂ O) ⁺ [(H ₂ O) ₁₃]	1078				
(H ₂ O) ⁺ [(H ₂ O) ₁₄]	25	691	561		
(H ₂ O) ⁺ [(H ₂ O) ₁₅]	182				
(H ₂ O) ⁺ [(H ₂ O) ₁₆]	182				
(H ₂ O) ⁺ [(H ₂ O) ₁₇]	182				
(H ₂ O) ⁺ [(H ₂ O) ₁₈]	182				
(H ₂ O) ⁺ [(H ₂ O) ₁₉]	182				
(H ₂ O) ⁺ [(H ₂ O) ₂₀]	67				
(H ₂ O) ⁺ [(H ₂ O) ₂₁]	62	67	266	953	655
(H ₂ O) ⁺ [(H ₂ O) ₂₂]	67	98	1162	1268	
(H ₂ O) ⁺ [(H ₂ O) ₂₃]	11	(Conf. by Abstract Only)			
(H ₂ O) ⁺ [(H ₂ O) ₂₄]	62	178	162	278	221
(H ₂ O) ⁺ [(H ₂ O) ₂₅]	256	(Conf. by Abstract Only)			
(H ₂ O) ⁺ [(H ₂ O) ₂₆]	1, 28				
(H ₂ O) ⁺ [(H ₂ O) ₂₇]	170				
(H ₂ O) ⁺ [(H ₂ O) ₂₈]	268				
(H ₂ O) ⁺ [(H ₂ O) ₂₉]	67	1162			
(H ₂ O) ⁺ [(H ₂ O) ₃₀]	162	493			
(H ₂ O) ⁺ [(H ₂ O) ₃₁]	162				
(H ₂ O) ⁺ [(H ₂ O) ₃₂]	1162				
(H ₂ O) ⁺ [(H ₂ O) ₃₃]	563	1162			
(H ₂ O) ⁺ [(H ₂ O) ₃₄]	162				
(H ₂ O) ⁺ [(H ₂ O) ₃₅]	162				
(H ₂ O) ⁺ [(H ₂ O) ₃₆]	162				
(H ₂ O) ⁺ [(H ₂ O) ₃₇]	162				
(H ₂ O) ⁺ [(H ₂ O) ₃₈]	162				
(H ₂ O) ⁺ [(H ₂ O) ₃₉]	162				
(H ₂ O) ⁺ [(H ₂ O) ₄₀]	162				
(H ₂ O) ⁺ [(H ₂ O) ₄₁]	162				
(H ₂ O) ⁺ [(H ₂ O) ₄₂]	162				
(H ₂ O) ⁺ [(H ₂ O) ₄₃]	162				
(H ₂ O) ⁺ [(H ₂ O) ₄₄]	162				
(H ₂ O) ⁺ [(H ₂ O) ₄₅]	162				
(H ₂ O) ⁺ [(H ₂ O) ₄₆]	162				
(H ₂ O) ⁺ [(H ₂ O) ₄₇]	162				
(H ₂ O) ⁺ [(H ₂ O) ₄₈]	162				
(H ₂ O) ⁺ [(H ₂ O) ₄₉]	162				
(H ₂ O) ⁺ [(H ₂ O) ₅₀]	162				
(H ₂ O) ⁺ [(H ₂ O) ₅₁]	162				
(H ₂ O) ⁺ [(H ₂ O) ₅₂]	162				
(H ₂ O) ⁺ [(H ₂ O) ₅₃]	162				
(H ₂ O) ⁺ [(H ₂ O) ₅₄]	162				
(H ₂ O) ⁺ [(H ₂ O) ₅₅]	162				
(H ₂ O) ⁺ [(H ₂ O) ₅₆]	162				
(H ₂ O) ⁺ [(H ₂ O) ₅₇]	162				
(H ₂ O) ⁺ [(H ₂ O) ₅₈]	162				
(H ₂ O) ⁺ [(H ₂ O) ₅₉]	162				
(H ₂ O) ⁺ [(H ₂ O) ₆₀]	162				
(H ₂ O) ⁺ [(H ₂ O) ₆₁]	162				
(H ₂ O) ⁺ [(H ₂ O) ₆₂]	162				
(H ₂ O) ⁺ [(H ₂ O) ₆₃]	162				
(H ₂ O) ⁺ [(H ₂ O) ₆₄]	162				
(H ₂ O) ⁺ [(H ₂ O) ₆₅]	162				
(H ₂ O) ⁺ [(H ₂ O) ₆₆]	162				
(H ₂ O) ⁺ [(H ₂ O) ₆₇]	162				
(H ₂ O) ⁺ [(H ₂ O) ₆₈]	162				
(H ₂ O) ⁺ [(H ₂ O) ₆₉]	162				
(H ₂ O) ⁺ [(H ₂ O) ₇₀]	162				
(H ₂ O) ⁺ [(H ₂ O) ₇₁]	162				
(H ₂ O) ⁺ [(H ₂ O) ₇₂]	162				
(H ₂ O) ⁺ [(H ₂ O) ₇₃]	162				
(H ₂ O) ⁺ [(H ₂ O) ₇₄]	162				
(H ₂ O) ⁺ [(H ₂ O) ₇₅]	162				
(H ₂ O) ⁺ [(H ₂ O) ₇₆]	162				
(H ₂ O) ⁺ [(H ₂ O) ₇₇]	162				
(H ₂ O) ⁺ [(H ₂ O) ₇₈]	162				
(H ₂ O) ⁺ [(H ₂ O) ₇₉]	162				
(H ₂ O) ⁺ [(H ₂ O) ₈₀]	162				
(H ₂ O) ⁺ [(H ₂ O) ₈₁]	162				
(H ₂ O) ⁺ [(H ₂ O) ₈₂]	162				
(H ₂ O) ⁺ [(H ₂ O) ₈₃]	162				
(H ₂ O) ⁺ [(H ₂ O) ₈₄]	162				
(H ₂ O) ⁺ [(H ₂ O) ₈₅]	162				
(H ₂ O) ⁺ [(H ₂ O) ₈₆]	162				
(H ₂ O) ⁺ [(H ₂ O) ₈₇]	162				
(H ₂ O) ⁺ [(H ₂ O) ₈₈]	162				
(H ₂ O) ⁺ [(H ₂ O) ₈₉]	162				
(H ₂ O) ⁺ [(H ₂ O) ₉₀]	162				
(H ₂ O) ⁺ [(H ₂ O) ₉₁]	162				
(H ₂ O) ⁺ [(H ₂ O) ₉₂]	162				
(H ₂ O) ⁺ [(H ₂ O) ₉₃]	162				
(H ₂ O) ⁺ [(H ₂ O) ₉₄]	162				
(H ₂ O) ⁺ [(H ₂ O) ₉₅]	162				
(H ₂ O) ⁺ [(H ₂ O) ₉₆]	162				
(H ₂ O) ⁺ [(H ₂ O) ₉₇]	162				
(H ₂ O) ⁺ [(H ₂ O) ₉₈]	162				
(H ₂ O) ⁺ [(H ₂ O) ₉₉]	162				
(H ₂ O) ⁺ [(H ₂ O) ₁₀₀]	162				

501	502	600	605	670
655	667	668	676	675
710	702	916	917	925
1010	1019	1020	1030	1001
1002	1106	1167	1160	1191
1152	1199	1200	1225	1230
1267	1200	1236	1257	1205
1271	1200			
(H*) μ (A)	(Cat. by Abstract Only)			
109	292	304	643	1070
1165	1201			
(H*) μ (B)				
1030				
545	033	036		
(H*) μ (C)				
1030	1200	1220		
(H*) μ (C ₀)				
710	711	712		
(H*) μ (C ₁)				
200	1105	1200		
(H*) μ (C ₂)	(Cat. by Abstract Only)			
1201				
(H*) μ (C ₃)				
66	370	1062	1200	
(H*) μ (C ₄)	(Cat. by Abstract Only)			
1201				
(H*) μ (C ₅)				
170	1062			
(H*) μ (C ₆)				
370	1062	1200		
(H*) μ (C ₇)	(Cat. by Abstract Only)			
1201				
(H*) μ (C ₈)				
710	711	712		
(H*) μ (C ₉)				
033	036			
(H*) μ (D)				
1101				
(H*) μ (E)				
005	1101			
(H*) μ (F)				
1230				
66	205	200	370	670
006	1062	1200		
(H*) μ (G)	(Cat. by Abstract Only)			
1201				
(H*) μ (H)				
66	130	205	307	670
006	1007			
(H*) μ (I)	(Cat. by Abstract Only)			
1201				
(H*) μ (J)				
66	152	254	255	307
597	667	669	670	006
(H*) μ (K)	(Cat. by Abstract Only)			
1201				
(H*) μ (L)				
1200				
(H*) μ (M)				
565				
(H*) μ (N)				
67	105	293	336	327
502	565	593	590	595
653	650	062	1071	1002
1100	1225	1230		
(H*) μ (O)	(Cat. by Abstract Only)			
1070				
(H*) μ (P)				
503	505			
(H*) μ (Q)				
79	259	901	773	702
232	001	570	603	1001
(H*) μ (R)				
0	00	01	156	709
(H*) μ (S)				
6	7	0	9	20
65	50	60	69	70
77	70	79	00	00
06	07	00	01	03
90	100	100	111	112
110	110	119	122	104
100	100	100	107	104
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741	762	763	796	753
755	772	773	770	800
809	810	811	812	815
844	815	816	818	819
839	821	822	823	828
831	832	864	887	878
871	872	880	882	887
881	892	930	940	954
955	962	964	1000	1015
1034	1030	1019	1020	1039
1052	1049	1079	1089	1100
1130	1115	1120	1129	1130
1131	1132	1134	1136	1160
1217	1251	1252	1270	
(N°)j(H)	(Col. by Abstract Only)			
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1005				
(N°)j(H ₁)				
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125	132	704	205	232
205	257	264	295	298
307	000	005	625	627
620	638	631	630	653
670	684	686	693	505
532	570	580	501	562
507	604	655	660	670
675	676	677	670	675
710	712	762	825	826
827	828	833	834	885
917	922	939	912	2000
1026	1029	1041	1061	1081
1082	1083	1084	1141	1142
1164	1167	1168	1177	1179
1199	1200	1205	1202	1267
1260	1256	1257	1254	1261
1262	1260	1271	1275	1280
(N°)j(H ₂)	(Col. by Abstract Only)			
159	300	364	695	1040
1070	1144	1149	1201	1223
(N°)j(H ₂ ,H)				
66	170	235	254	255
270	271	445	867	869
670	804	833	834	1199
1200				
(N°)j(H ₂ ,H)	(Col. by Abstract Only)			
190	209	1201		
(N°)j(H ₂)				
2	323	647	804	934
907	1044	1154		
(N°)j(H ₂ ,H)				
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43	64	64	114	117
130	141	143	161	162
163	164	232	237	236
263	265	257	254	262
293	295	290	307	329
300	341	342	363	885
620	627	628	609	680
651	654	659	660	665
686	686	699	500	501
563	506	532	541	549
570	540	501	582	507
600	609	610	611	617
610	648	685	677	710
771	775	777	770	782
784	914	917	885	990
909	1000	1010	1013	1019
1020	1054	1050	1060	1061
1082	1101	1116	1144	1167
1160	1192	1196	1199	1200
1247	1240	1256	1257	1258
1261	1262	1264	1269	1271
1284	1280			
(N°)j(H ₂ ,H)	(Col. by Abstract Only)			
109	292	344		364
643	1011	1070	1069	1201
(N°)j(H ₂ ,H)				
142	170	632	565	1100
(N°)j(H ₂)				
146	400	502	505	594
596	633	634	909	1077
1000	1229	1230		
(N°)j(H ₂ ,H)				
15	19	22	23	40

62	63	760	275	258
614	627	631	659	686
523	532	648	676	675
710	711	917	8810	1015
1020	1001	1062	1164	1195
1200	1256	1257	1271	1289
(N°)j(H ₂)	(Col. by Abstract Only)			
1201				
(N°)j(H ₂)				
264	267	645	659	362
565	567	593	594	595
763	764	765	766	810
917	1230			
(N°)j(H ₂)				
929				
(N°)j(H ₂)				
67	126	127	264	444
594	765	783	432	834
1141	1142			
(N°)j(H ₂)				
164	275	620	670	771
774	780	781	782	1110
(N°)j(H ₂)				
11	12	16	62	64
66	130	164	167	154
240	272	290	307	352
363	405	627	628	678
671	674	693	516	579
575	583	581	582	557
632	667	649	670	712
734	833	836	845	853
916	917	937	981	1022
1001	1082	1093	1167	1169
1106	1195	1199	1200	1247
1240	1269	1280		
(N°)j(H ₂)	(Col. by Abstract Only)			
344	364	1169	1201	1222
(N°)j(H ₂)				
605				
(N°)j(H ₂)				
244	659	670	562	545
593	594	595	743	744
765	783	810	1141	1142
1230				
(N°)j(H ₂)				
15	19	40	62	62
64	94	97	127	141
143	264	293	294	252
290	627	628	609	651
659	680	686	532	540
581	582	609	610	615
617	655	677	710	710
914	917	990	999	1010
1015	1020	1001	1141	1142
1144	1167	1160	1192	1236
1257	1269	1271	1264	1280
(N°)j(H ₂)	(Col. by Abstract Only)			
292	344	643	1169	
(N°)j(H ₂)				
254	255	670	670	710
711	712	833	834	848
(N°)j(H ₂)				
503				
(N°)j(H ₂)				
79				
(N°)j(H ₂)				
55	164	275	262	345
620	652	662	670	771
774	781	782	955	1110
1151	1154			
(N°)j(H ₂)				
11	12	66	167	294
307	352	617	620	452
670	671	580	581	592
632	667	669	670	710
712	1001	1167	1164	1200
1204	1200			
(N°)j(H ₂)	(Col. by Abstract Only)			
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505				
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503				
(N°)j(H ₂)				
833	834			

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585				
(H ⁺) ⁺ (H ⁺)				
15	19	23	24	48
62	63	253	618	627
659	523	532	609	410
666	700	711	1000	1019
1020	1166	1254	1257	
(H ⁺) ⁺ (H ⁺) (Cat. by Abstract Only)				
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264	503	565	1161	
(H ⁺) ⁺ (H ⁺)				
623				
(H ⁺) ⁺ (H ⁺)				
54	251	288	290	666
667	500	646	722	723
673	676	1122		
(H ⁺) ⁺ (H ⁺) (Cat. by Abstract Only)				
515				
(H ⁺) ⁺ (H ⁺)				
630	696			
(H ⁺) ⁺ (H ⁺)				
63	946			
(H ⁺) ⁺ (H ⁺)				
126				
(H ⁺) ⁺ (H ⁺)				
396	1043	1166	1200	1233
(H ⁺) ⁺ (H ⁺)				
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(H ⁺) ⁺ (H ⁺) (Cat. by Abstract Only)				
1139				
(H ⁺) ⁺ (H ⁺)				
54	399	623	1063	1100
1204	1233			
(H ⁺) ⁺ (H ⁺)				
623				
(H ⁺) ⁺ (H ⁺)				
26				
(H ⁺) ⁺ (H ⁺)				
277				
(H ⁺) ⁺ (H ⁺)				
133				
(H ⁺) ⁺ (H ⁺)				
61	67			
(H ⁺) ⁺ (H ⁺)				
511				
(H ⁺) ⁺ (H ⁺)				
1061				
(H ⁺) ⁺ (H ⁺)				
131				
(H ⁺) ⁺ (H ⁺)				
601	662			
(H ⁺) ⁺ (H ⁺)				
236	601	979		
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267				
(H ⁺) ⁺ (H ⁺)				
605				
(H ⁺)				
202				
(H ⁺) ⁺ (H ⁺)				
635	791	799	916	906
1012				
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(H ⁺) ⁺ (H ⁺)				
722	723			
(H ⁺) ⁺ (H ⁺)				
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(H ⁺) ⁺ (H ⁺)				
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906	1012			
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635	906			
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1025				
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791	799	916	906	1012
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635	916			
(H ⁺) ⁺ (H ⁺)				
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(H ⁺) ⁺ (H ⁺)				
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(H ⁺) ⁺ (H ⁺)				
167	267	606		
(H ⁺) ⁺ (H ⁺)				
167				

(H ⁺) ⁺ (H ⁺)				
16	690			
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(H ⁺) ⁺ (H ⁺)				
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(H ⁺) ⁺ (H ⁺)				
690				
(H ⁺) ⁺ (H ⁺)				
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(H ⁺) ⁺ (H ⁺)				
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(H ⁺) ⁺ (H ⁺)				
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796	797			
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976	1069	1120		
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(H ⁺) ⁺ (H ⁺)				
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722	723	1160		
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607	532	620	670	693
696	796	797	798	867
854	1166	1166	1260	1271
1273	1276	1280		
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(H ⁺) ⁺ (H ⁺)				
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65	115	120	137	216

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 (N_p⁺)⁺(CH_p) 1104 1234
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1271	1272	1280		
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 (0⁺) $\times$ (H₊)
 1211
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 1162 1207 1211 1277
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 1186 1206
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1	(H ⁺)(H ₂ , H ₂ , H ₂ , H ₂ , H ₂)	1	Afrimov, D. V., et al., <i>Phys. Rev. Lett.</i> , 28 , 1000 (1972).
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542 ($D^+, D_2^+, H_2^+, NH^+, D_2^+, H_2^+, H_2O^+, H_2O^+, H_2O^+, H_2O^+$)(Br)	E	3	Rutherford, J. A., Turner, B. L., Vroom, B. A., Negative Ion Reactions With Neutral Gases, J. CHEM. PHYS. 56 1267 (1972).
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544 ($H^+, D^+, D_2^+, H_2^+, NH^+, D_2^+, H_2^+$)(O)	E	3	Rutherford, J. A., Vroom, B. A., The Reaction Of Atomic Oxygen With Several Atmospheric Ions, J. CHEM. PHYS. 61 2514 (1974).
545 (NH^+, D_2^+)(H_2O)	E	1	Soy, R. B., Ionic Collision Processes In Gaseous $H, Cl, J. CHEM. PHYS. 57 271 (1972).$
546 ($[^{100}, ^{100}, ^{110}, ^{110}, ^{120}, ^{120}, ^{130}, ^{130}, ^{140}, ^{140}, ^{150}, ^{150}, ^{160}, ^{160}, ^{170}, ^{170}, ^{180}, ^{180}]$)(H, Br)	E	5	Hydell, G., Willenroth, A., Mann, P. H., Production Of Ultrahigh Charge States In heavy - ion Collisions, PHYS. REV. A 2 1680 (1971).
547 (He^+)(H_2)	E	3	Sohn, G. H., Marr, T. F., Additional Comment On The Vibrational Distribution Of H_2^+ Or Sigma Products From $He^+ + H_2$ Collisions, J. CHEM. PHYS. 57 2622 (1972).
548 (H^+)(H)	T	4	Solin, A., Charge Exchange Between Protons And Atomic Hydrogen Comparison Between Theory And Experiment, J. PHYS. B 4 1125 (1971).
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552 (He^+)(He)	E	5	Schorfner, R. H., Hippler, H., Bayer, H. F., Ionization Of The Resonance Transitions In $He^+ - He$ Collisions, IN ICPLAC, P.997, UNIVERSITY OF WASHINGTON PRESS, SEATTLE, WASHINGTON (1972).

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553 (He ⁺)(MgZn)	E	1	Schneer, L. D., Optical Pumping in A Flowing Helium Afterglow With Additive Metal Impurity Atoms, PHYS. REV. A 10 1300 (1974).
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556 (D ₂ D ⁺)(H ₂ S)	E	3	Schlechter, A. S., Splawa, G., Predel, P., Determination Of Cross Sections For Collisions Of Hydrogen Ions In Carbon Vapor, VIII ICPEAC, P.749, INSTITUTE OF PHYSICS, BELGRADE, YUGOSLAVIA (1973).
557 (D ₂ D ⁺)(H ₂ O)	E	3	Schlechter, A. S., Splawa, G., Predel, P., Determination Of Cross Sections For Collisions Of Hydrogen Ions In Carbon Vapor, VIII ICPEAC, P.749, INSTITUTE OF PHYSICS, BELGRADE, YUGOSLAVIA (1973).
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559 Underf	T	2	Scholar, P. P., Theory Of Simple Electron Transfer Reactions, J. PHYS. CHEM. 77 400 (1973).
560 (D ⁺)(H ⁺)(H ₂)	E	5	Schnepfer, H. W., Delville, J. P., Rolato, R., Schuel, A. B., Abdulwahab, M., Jones, R. W., Wagner, H. L., 2-Body Measurements Of Ionization And Electron Capture By Fast Positive Ions, PHYS. LETTERS A 47 61 (1974).
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576 Underf	T	5	Shayegh, H., Charge Transfer Into Highly Excited States Of Hydrogenlike Atoms At High Velocities, PHYS. REV. A 10 1506 (1974).
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579 (H ⁺)(H)	T	8	Shayegh, H., Limitation On Numerical Bounds On Transition Probabilities, PHYS. REV. A 12 2230 (1975).
580 (He ⁺)(Ar, H ₂ , H ₂ O, Ar, O ₂ , He)	E	4	Shah, N. B., Gilbody, A. B., Formation Of He ⁺ (2s) Metastable Ions In Collisions Involving 10-60 keV He ⁺ Ions, VIII ICPEAC, P.746, INSTITUTE OF PHYSICS, BELGRADE, YUGOSLAVIA (1973).

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604 Jndef	T	0	Storm, David, Lopp, Donald, Gun - Electron Model for Charge Exchange in Ion - Atom Collisions, J. CHEM. PHYS. 57 4590 (1972).
605 (H ⁺)(H)	T	4	Storm, D., Lopp, D., Variational Bounds On The 1s Charge Exchange Amplitude in Proton Hydrogen Atom Scattering, PHYS. REV. LETTERS 33 137 (1974).
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616 (H ⁺)(H)	T	4	Tal, M., Gervase, L., Detailed Balance As A Check On Impact Parameter Calculations, J. PHYS. B 6 1045 (1973).
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621 (CS)(C ₂ H ₂ , C ₂ H ₄ , C ₂ H ₆)	E	3	Tsang, S. Y., Rether, E. W., Rhee, E. P., Negative Ion Formation From Energetic Collisions Of Carbon With C ₂ H ₂ , C ₂ H ₄ , And C ₂ H ₆ , J. CHEM. PHYS. 61 2204 (1974).
622 (H ⁺)(H ₂ , H ₂)	E	5	Tashkov, Ye. A., Bektiev, I. S., Minolov, V. S., Topleva, Ye. A., Determination Of The Cross - Sections For Electron Loss And Capture By Metastable And Unexcited Helium - Like Ions With Z From 4 To 6, VII ICPEAC, P.1090, MINN-HOLLAND PUBL. CO., AMSTERDAM (1971).
623 (P ⁺ , P ²⁺ , P ³⁺ , P ⁴⁺ , P ⁵⁺ , P ⁶⁺ , P ⁷⁺ , P ⁸⁺ , P ⁹⁺ , P ¹⁰⁺ , P ¹¹⁺ , P ¹²⁺ , P ¹³⁺ , P ¹⁴⁺ , P ¹⁵⁺ , P ¹⁶⁺ , P ¹⁷⁺ , P ¹⁸⁺ , P ¹⁹⁺ , P ²⁰⁺)(H ₂)	E	5	Tashkov, Ye. A., Bektiev, I. S., Minolov, V. S., On The Anomaly In The Electron Capture Cross Sections For Fast P Ions, VIII ICPEAC, P.703, INSTITUTE OF PHYSICS, BUDAPEST, HUNGARY (1973).
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625 Review	E	5	Tashkov, Ye. A., Bektiev, I. S., Minolov, V. S., Topleva, Ye. A., On The Variation Of Cross Sections For Electron Capture Induced By Multi-Charged Ions, IX ICPEAC, P.100, UNIVERSITY OF WASHINGTON PRESS, SEATTLE, WASHINGTON (1975).
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629 (Li ⁺ , Be ²⁺ , B ³⁺)(H ₂)	E	4	Thoen, E. W., Leatherwood, L. A., Morris, J. L., Small-Angle Scattering Of Hydrogen Atoms And Protons In Various Gases, PHYS. REV. A 12 1035 (1975).
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631 (H ⁺)(H ₂ , H ₂ , H ₂ , H ₂)	E	4	Thorn, Walter R., Joles, John B., Boerstel, Seth A., Studies Of The Potential - Curve Crossing Problem. I. Analysis Of Stueckelberg's Method, PHYS. REV. A 4 1032 (1971).

REACTIONS	EXP OR THEORY	E RANGE	REFERENCE
662 $(\text{H}_2^+, \text{Cl}^+) + (\text{H}_2, \text{C}_2\text{H}_4, \text{H}_2\text{O}, \text{SO}_2, \text{O}_2, \text{C}_2\text{H}_2, \text{C}_2\text{H}_4, \text{CS}_2, \text{H}_2\text{O})$	E	1	Harwood, E., Investigation Of Ion Reactions By Means Of Photoionization-Mass Spectrometry. V. Reactions With H_2^+ And Cl^+ , DEN. SCIENCE, PHYS. CHEM. (GERMANY) 76 413 (1972).
663 $(\text{H}^+) + (\text{H}_2)$	E	4	Wettersburg, P. J., Liem, R. C., Photon - Particle Collisions: Measurement Of Charge Transfer Excitation Of The H_2^+ First Negative State And By Protons, VII ICPEAC, P.307, NORTH-HOLLAND PUBL. CO., AMSTERDAM (1971).
664 $(\text{H}^+) + (\text{H}_2\text{O})$	E	2	Meier, John, Proton, William D., Barry, D. Stephen, Charge Transfer In $\text{H}^+ - \text{H}_2\text{O}$ Collisions At Low Relative Energy, PHYS. REV. A 4 1424 (1971).
665 Review	E	2	Meier, S., Associative And Non-Associative Ion Pair Formation By Fast Atoms, DEN. SCIENCE, PHYS. CHEM. (GERMANY) 77 606 (1973).
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672 $(\text{He}^+) + (\text{H}_2, \text{CS})$	E	3	Zavitskii, A. B., Zeprevich, I. P., Ponom, G. S., Shalov, J. A., Shapov, O. B., Interference Effects In Collision Of Positron Ions With Molecules And Atomic Gases, SOVIET PHYS.-JETP LETT. 18 203 (1973).
673 $(\text{H}^+) + (\text{He})$	E	4	Zeilig, H. Joy, Cotte, P. G., Comparison Of The London - Foner Theory With Measurements Of Electron Capture In $\text{H}^+ - \text{He}$ Collisions, PHYS. REV. A 4 2381 (1971).
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RETURNED INDEX A

(AL ⁺)% (H ⁺)	360			
(AL ⁺)% (H ₂)	365			
(AL ⁺)% (O)	363			
(AR ₂ ⁺)% (AR)	361			
(AR ₂ ⁺)% (HE)	361			
(AR ₂ ⁺)% (RH)	367			
(AR ₂ ⁺)% (HE)	361			
(AR ₂ ⁺)% (HE)	361			
(AR ₂ ⁺)% (HE)	361			
(AR ₂ ⁺)% (AR)	6	13	15	101
	250	293	297	309
	321	309	329	342
(AR ₂ ⁺)% (C ₂ O ₂)	363			
(AR ₂ ⁺)% (C ₂ F ₂)	361			
(AR ₂ ⁺)% (C ₂ H ₂)	360	591	615	
(AR ₂ ⁺)% (C ₂ H ₂)	295			
(AR ₂ ⁺)% (C ₂ H ₂)	295			
(AR ₂ ⁺)% (C ₂ H ₂)	295			
(AR ₂ ⁺)% (C ₂ F ₂)	361			
(AR ₂ ⁺)% (C ₂ H ₂)	361			
(AR ₂ ⁺)% (C ₂ H ₂)	361			
(AR ₂ ⁺)% (CA)	236			
(AR ₂ ⁺)% (CB)	360	599		
(AR ₂ ⁺)% (CF ₂)	361			
(AR ₂ ⁺)% (CH ₂ CL)	295			
(AR ₂ ⁺)% (CH ₂ F)	295	675		
(AR ₂ ⁺)% (CH ₂)	295	346	403	591
(AR ₂ ⁺)% (CH ₂)	402	(Col. by Abstract Only)		
(AR ₂ ⁺)% (O)	90	91	96	297
	317	346	591	316
(AR ₂ ⁺)% (CO ₂)	240	346	521	591
(AR ₂ ⁺)% (CS)	270	425		
(AR ₂ ⁺)% (D ₂)	102	521		
(AR ₂ ⁺)% (H ₂)	102	109	297	591
	591	643		
(AR ₂ ⁺)% (H ₂ O)	90			
(AR ₂ ⁺)% (H ₂ R)	234	637		
(AR ₂ ⁺)% (HCL)	234	637		
(AR ₂ ⁺)% (H ₂)	291			
(AR ₂ ⁺)% (I ₂)	91			
(AR ₂ ⁺)% (K)	170			
(AR ₂ ⁺)% (KR)	13	260	591	172
(AR ₂ ⁺)% (N ₂)	3	90	91	93
	102	107	217	297
	430	430	529	591

(AB ⁰⁰) ₀ (B ₀ U)	306	565		
(AB ⁰⁰) ₀ (B ₀ E)	257			
(AB ⁰⁰) ₀ (B ₀ D)	13			
90	51	182	316	317
306	591			
(AB ⁰⁰) ₀ (C)	363			
(AB ⁰⁰) ₀ (B ₀)	90	182		
306	591	257	316	317
(AB ⁰⁰) ₀ (B ₀)	270			
(AB ⁰⁰) ₀ (B ₀ E)	12			
(AB ⁰⁰) ₀ (B ₀)	297	591		
306				
(AB ¹⁰) ₀ (B ₀ E)	623			
(AB ²⁰) ₀ (B ₀)	139	139	471	655
(AB ²⁰) ₀ (B ₀)	379			
(AB ²⁰) ₀ (B ₀ E)	379			
(AB ²⁰) ₀ (B ₀)	655	655		
(AB ²⁰) ₀ (B ₀ E)	655			
(AB ²⁰) ₀ (B ₀)	315			
(AB ²⁰) ₀ (B ₀ E)	623			
(AB ²⁰) ₀ (B ₀)	315			
(AB ²⁰) ₀ (B ₀ E)	623			
(AB ²⁰) ₀ (B ₀)	315	655		
(AB ²⁰) ₀ (B ₀ E)	623	655		
(AB ²⁰) ₀ (B ₀)	655			
(AB ²⁰) ₀ (B ₀ E)	655			
(AB ²⁰) ₀ (B ₀)	315	455		
(AB ²⁰) ₀ (B ₀ E)	623	555		
(AB ²⁰) ₀ (B ₀)	655			
(AB ²⁰) ₀ (B ₀ E)	655			
(AB ²⁰) ₀ (B ₀)	315			
(AB ²⁰) ₀ (B ₀ E)	623			
(AB ²⁰) ₀ (B ₀)	655			
(AB ²⁰) ₀ (B ₀ E)	655			
(AB ²⁰) ₀ (B ₀)	315			
(AB ²⁰) ₀ (B ₀ E)	623			
(B ₀) ₀ (B ₀)	403			
(B ₀) ₀ (B ₀)	403			
(B ₀) ₀ (B ₀ E)	170	403		
(B ₀) ₀ (B ₀)	170	403		
(B ₀) ₀ (B ₀ E)	403			
(B ₀) ₀ (B ₀ E)	170			
(B ₀) ₀ (B ₀)	170	403		
(B ₀) ₀ (B ₀ E)	170			
(B ₀) ₀ (B ₀)	170			
(B ₀) ₀ (B ₀ E)	170			
(B ₀) ₀ (B ₀)	170	479	622	673
(B ₀) ₀ (B ₀ E)	170			
(B ₀) ₀ (B ₀)	170			
(B ₀) ₀ (B ₀ E)	170			
(B ₀) ₀ (B ₀)	170			
(B ₀) ₀ (B ₀ E)	170			
(B ₀) ₀ (B ₀)	170			

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(C ⁺)m(CN _n)					591				
680					(CN _n ⁺)m(C _p H _n)				
(C ⁺)m(CO)					591				
680	300				(CN _n ⁺)m(C _p H _n)				
(C ⁺)m(AR)					591				
201					(CN _n ⁺)m(CD _n)				
(C ⁺)m(R)	(Cat. by Abstract Only)				30	31			
125					(CN _n ⁺)m(CN _p H _r)				
(C ⁺)m(HG)					30	31			
204	563	564			(CN _n ⁺)m(CN _p H _r)				
(C ⁺)m(H _n)					30	31			
216	200	403	563	564	(CN _n ⁺)m(CN _p)				
(C ⁺)m(H _n)	(Cat. by Abstract Only)				30	31	367	600	551
125					(CN _n ⁺)m(Cu)				
(C ⁺)m(R)					591				
201	563	564			(CN _n ⁺)m(CO _p)				
(C ⁺)m(HE)	(Cat. by Abstract Only)				591				
125					(CN _n ⁺)m(H _n)	591			
(C ⁺)m(MO _n)					591				
564					(CN _n ⁺)m(AH)				
(C ⁺)m(NO)					591				
96					(CN _n ⁺)m(NE)				
(C ⁺)m(O _n)					591				
416	201	563	564		(CN _n ⁺)m(J _p)				
(C ⁺)m(AR)					591				
250	403				(CN _n ⁺)m(ZE)				
(C ⁺)m(NE)					591				
200	250				(CN ⁺)m(CN _n)				
(C ⁺)m(H _p)					600				
403					(CL ⁺)m(Ar)				
(C ⁺)m(HE)					305				
250					(CL ⁺)m(BR)				
(C ⁺)m(HG)					305				
106					(CL ⁺)m(HG)				
(C ⁺)m(ZH)					106				
106					(CL ⁺)m(KE)				
(C ⁺)m(NE)					05	302			
170					(CL ⁺)m(DH)				
(C ⁺)m(H)					106				
606					(CL ⁻)m(CL _p)				
(C ⁺)m(H _p)					106				
170					(CL ⁻)m(Cl _p)				
(C ⁺)m(H)					160				
606					(CL ⁻)m(F _p)	102			
(C ⁺)m(H)					160				
606					(CL ⁻)m(HJ _p)				
(C ⁺)m(AR)					165				
206	450	630			(CL ⁻)m(C _p)				
(C ⁺)m(H _p)					160	102	635		
560					(CL ⁻)m(C _p)				
(C ⁺)m(H)					502				
560					(CL ⁻)m(SF _n)				
(C ⁺)m(H _p)					160				
630					(CL ⁺⁺)m(HR)				
(C ⁺)m(NE)					26--				
630					(CL ⁺⁺)m(AD)				
(C ⁺)m(HR)					266				
630					(CL ⁺⁺)m(KD)				
(C ⁺)m(H)					266				
606					(CO _p)m(H _p H _i)				
(C ⁺)m(H _p)					102				
630					(CO _p)m(NM _n)				

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(C ₀) ⁺ (R ₀)						(CS) ⁺ (SC ₀)					
317	591					531	619				
(C ₀) ⁺ (R ₀)						(CS) ⁺ (SC ₀)					
591						531					
(C ₀) ⁺ (U ₀)						(CS) ⁺ (TE ₀)					
319	591					130					
(C ₀) ⁺ (X ₀)						(CS) ⁺ (CS)					
591						29	464	599			
(C ₀) ⁺ (U ₀)						(CS) ⁺ (CS)	(Cat. by Abstract Only)				
592						21					
(C ₀) ⁺ (AR)						(CS) ⁺ (LI)					
591						490					
(C ₀) ⁺ (C ₀ F ₀)						(CS) ⁺ (R ₀)					
591						476	492				
(C ₀) ⁺ (C ₀ M ₀)						(CS) ⁺ (CS)					
591						493					
(C ₀) ⁺ (C ₀ M ₀)	662					(C ₀) ⁺ (R ₀)	(Cat. by Abstract Only)				
591						125					
(C ₀) ⁺ (C ₀ F ₀)						(C ₀) ⁺ (R ₀)	(Cat. by Abstract Only)				
591						125					
(C ₀) ⁺ (C ₀ M ₀)						(C ₀) ⁺ (R ₀)	(Cat. by Abstract Only)				
591						125					
(C ₀) ⁺ (C ₀ M ₀)						(C ₀) ⁺ (R ₀)	(Cat. by Abstract Only)				
591						125					
(C ₀) ⁺ (C ₀ M ₀)						(C ₀) ⁺ (R ₀)					
591						554					
(C ₀) ⁺ (C ₀ M ₀)						(C ₀) ⁺ (R ₀)					
591						22	428				
(C ₀) ⁺ (C ₀ F ₀)						(C ₀) ⁺ (R ₀)					
591						439	532	606			
(C ₀) ⁺ (C ₀ M ₀)						(C ₀) ⁺ (R ₀)					
591						509					
(C ₀) ⁺ (C ₀)						(C ₀) ⁺ (R ₀)					
140	204	319	321	397		445					
400	520	591	592	642		(C ₀) ⁺ (R ₀)	(Cat. by Abstract Only)				
(C ₀) ⁺ (C ₀)						79					
591						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (C ₀)						207					
662						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						22					
591	591	662				(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						94					
318	591	592				(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						439					
662						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						514					
193	320	591	662			(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						153	640				
193						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						22	260	534	556	557	
(C ₀) ⁺ (R ₀)	591	662				641					
662						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						263	326				
591						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						324	640				
(C ₀) ⁺ (R ₀)						263	370				
615						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						263	320				
365						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						153	640				
(C ₀) ⁺ (R ₀)						(C ₀) ⁺ (R ₀)					
620						153					
(C ₀) ⁺ (R ₀)						(C ₀) ⁺ (R ₀)	(Cat. by Abstract Only)				
(C ₀) ⁺ (R ₀)						79					
619						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						640					
621						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						370					
621						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						640					
621						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						814					
463						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)	(Cat. by Abstract Only)					814					
462						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						370					
463						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						814					
463	531					(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)	(Cat. by Abstract Only)					283					
462						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						282					
460						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						283					
129	531	620				(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)	(Cat. by Abstract Only)					257					
462						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						283					
531						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						283					
620						(C ₀) ⁺ (R ₀)					
(C ₀) ⁺ (R ₀)						283					
120	360	619				(C ₀) ⁺ (R ₀)					

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[illegible]

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(H ₂ O) ⁺ (H ₂)	94	687		
(H ₂ O) ⁺ (H ₂)	633			
(H ₂ O) ⁺ (C ₆ H ₅)	548			
(H ₂ O) ⁺ (FL)	541			
(H ₂ O) ⁺ (HC)	538			
(H ₂ O) ⁺ (NH)	535			
(H ₂) ⁺ (AL)	514			
(H ₂) ⁺ (AL) (Cat. by Abstract Only)	72			
(H ₂) ⁺ (AL)	1	67	131	161
	152	171	164	201
	209	236	246	256
	281	294	322	355
	379	374	414	468
	525	571	583	612
	616	632	648	646
	652			
(H ₂) ⁺ (AN) (Cat. by Abstract Only)	142	415	687	
(H ₂) ⁺ (C)	111			
(H ₂) ⁺ (C ₂ H ₅)	172	219		
(H ₂) ⁺ (C ₂ H ₅)	210			
(H ₂) ⁺ (C ₂ H ₅)	210			
(H ₂) ⁺ (C ₂ F ₅)	687			
(H ₂) ⁺ (CH ₃)	167	218		
(H ₂) ⁺ (CH ₃) (Cat. by Abstract Only)	89			
(H ₂) ⁺ (Cu)	17	218	255	
(H ₂) ⁺ (Cu) (Cat. by Abstract Only)	89			
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(H ₂) ⁺ (CN) (Cat. by Abstract Only)	89			
(H ₂) ⁺ (CS)	22	173	268	476
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	601	602	641	642
	647	652		
(H ₂) ⁺ (D)	263	326		
(H ₂) ⁺ (FL)	537	541		
(H ₂) ⁺ (HO)	105	538		
(H ₂) ⁺ (HO) (Cat. by Abstract Only)	306			
(H ₂) ⁺ (H)	23	41	42	43
	63	64	65	95
	114	115	116	117
	120	121	122	127
	137	147	148	197
	159	166	171	176
	178	199	215	220
	222	223	227	247
	267	307	313	323
	327	342	407	411
	442	445	452	462
	515	518	548	579
	577	576	579	587
	605	610	616	617
	645	667	674	648
(H ₂) ⁺ (H) (Cat. by Abstract Only)	177	332		
(H ₂) ⁺ (H)	59	61	68	110
	208	210	211	255
	263	272	275	328
	359	379	417	467
	568	632	643	

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(H*)-(H ₂) (Cat. by Abstract Only)					
89					
(H*)-(H ₂ O)					
50	94	407			
(H*)-(H*)					
404	530	531	536		
(H*)-(H*) (Cat. by Abstract Only)					
200					
(H*)-(H ₂ E)					
1	2	42	73	86	
130	138	141	143	144	
153	171	184	200	201	
202	200	200	236	246	
272	201	205	343	352	
305	394	399	414	472	
502	525	527	632	640	
667					
(H*)-(H ₂ E) (Cat. by Abstract Only)					
142	302	415	607		
(H*)-(H ₂ E*)					
323					
(H*)-(H ₂)					
145	202	412	660	506	
662					
(H*)-(H ₂)					
1	77	131	153	236	
201	294	352	571	574	
(H*)-(H ₂ L)					
145	429	652			
(H*)-(H ₂ E)					
145	200	201	470	506	
604					
(H*)-(H ₂ E) (Cat. by Abstract Only)					
605					
(H*)-(H ₂)					
640					
(H*)-(H ₂)					
26	59	201	200	210	
236	262	272	285	355	
370	434	443	611	612	
613	444	632	643		
(H*)-(H ₂) (Cat. by Abstract Only)					
607					
(H*)-(H ₂)					
145	200	201	652		
(H*)-(H ₂ E)					
1	131	104	236	272	
201	205	207	343	352	
356	374	394	506	640	
(H*)-(H ₂ E) (Cat. by Abstract Only)					
607					
(H*)-(H ₂) (Cat. by Abstract Only)					
89					
(H*)-(H ₂)					
514					
(H*)-(H ₂)					
26	193	210			
(H*)-(H ₂)					
193	544	640			
(H*)-(H ₂)					
26	50	201	210	272	
370					
(H*)-(H ₂) (Cat. by Abstract Only)					
89	607				
(H*)-(H ₂)					
50					
(H*)-(H ₂)					
652					
(H*)-(H ₂)					
514					
(H*)-(H ₂)					
1	131	212	213	236	
201	329	340	362	370	
396	446	571	572	573	
574					
(H*)-(H ₂)					
106	106				
(H*)-(H ₂)					
203					
(H*)-(H ₂)					
304					
(H*)-(H ₂)					
253					
(H*)-(H ₂)					
203					
(H*)-(H ₂)					
433					
(H*)-(H ₂)					
89					
(H*)-(H ₂)					
89	253				
(H*)-(H*)					
333	512				
(H*)-(H*)					
50	526				
(H*)-(H*)					
253					
(H*)-(H*)					
253					
(H*)-(H*)					
196	243	244			
(H*)-(H*)					
252					
(H*)-(H*)					
55	242	253			
(H*)-(H*)					
253					
(H*)-(H*)					
17					
(H*)-(H*)					
34					
(H*)-(H*)					
61					
(H*)-(H*)					
351					
(H*)-(H*)					
624					
(H*)-(H*)					
102					
(H*)-(H*)					
143					
(H*)-(H*)					
143					
(H*)-(H*)					
504					
(H*)-(H*)					
624					
(H*)-(H*)					
411					
(H*)-(H*)					
51					
(H*)-(H*)					
46	47	51			
(H*)-(H*)					
51					
(H*)-(H*)					
301					
(H*)-(H*)					
641					
(H*)-(H*)					
301					
(H*)-(H*)					
301					
(H*)-(H*)					
120					
(H*)-(H*)					
301					
(H*)-(H*)					
301					
(H*)-(H*)					
300					
(H*)-(H*) (Cat. by Abstract Only)					
72					
(H*)-(H*)					
54	224	227	240	271	
291	297	310	360	361	
437	505	591			
(H*)-(H*)					
591					
(H*)-(H*)					
591	615				
(H*)-(H*)					
591					
(H*)-(H*)					
591					
(H*)-(H*)					
591					
(H*)-(H*)					
591					
(H*)-(H*)					
591					
(H*)-(H*)					
16	507	544			
(H*)-(H*) (Cat. by Abstract Only)					
597					
(H*)-(H*)					
591					
(H*)-(H*)					
346	430	437	591		
(H*)-(H*)					

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133	160	297	346	424	69	69	70	277	300
437	551				567	567	568	568	
(NE*) (CGL)					(NE**) (CU)				
70	136	135	346	424	232				
437	591				(NE**) (H)				
(NE*) (CS)					516				
109	625	615	476	477	(NE**) (H)				
(NE*) (GA)					68	75	219	651	497
236					584	519	565		
(NE*) (H)					(NE**) (H)				
190	551				65	69	70	225	232
(NE*) (H)					277	304	567	568	580
57	100	226	227	257	(NE**) (H)				
306	637	591	591	624	9	16	69	70	75
625					113	277	304	653	567
(NE*) (H)					568	568	568		
54					(NE**) (H)				
(NE*) (H)					564				
510	511				(NE**) (H)				
(NE*) (H)					567	568	568		
254					(NE**) (H)				
(NE*) (H)					65	70	304	567	568
254					568				
(NE*) (H)					(NE**) (H)				
1	55	87	94	132	69	568			
1	100	226	226	227	(NE**) (H)				
206	309	310	311	330	567	568	568		
362	397	405	410	411	(NE**) (H)				
631	654	661	664	690	(NE**) (H)				
513	561	581	593	564	(NE**) (H)				
(NE*) (H)	(Cat. by Abstract Only)				397	568	606		
31					(1*) (H)				
(NE*) (H)					305				
16	92	291			(1*) (H)				
(NE*) (H)					334				
636					(1*) (H)				
(NE*) (H)					305				
100	412	460	477	549	(1*) (H)				
(NE*) (H)					305				
227	269	271	461	591	(1*) (H)				
(NE*) (H)					123				
362					(1*) (H)				
(NE*) (H)					123	169			
276					(1*) (H)				
(NE*) (H)					165				
65	68	52	279	280	(1*) (H)				
201	130	331	337		122				
(NE*) (H)					(1*) (H)				
197	190	195	217	227	68				
230	297	304	304	346	(1*) (H)				
367	190	436	437	438	122	169			
524					(1*) (H)				
(NE*) (H)	(Cat. by Abstract Only)				80				
300					(1*) (H)				
(NE*) (H)					48	169			
346					(1*) (H)				
(NE*) (H)					80	169	635		
279	200	201			(1*) (H)				
(NE*) (H)					80				
54	55	56	224	227	(100) (H) (Cat. by Abstract Only)				
271	279	283	291	297	25				
461					(100) (H) (Cat. by Abstract Only)				
(NE*) (H)					215				
346	437	591			(100) (H)				
(NE*) (H)					82	94			
209	297	346	437	524	(100) (H)				
591					84				
(NE*) (H)					(100) (H)				
48	57				566				
(NE*) (H)					(100) (H) (Cat. by Abstract Only)				
100	477	549			25				
(NE*) (H)					(100) (H)				
644					82	946			
(NE*) (H)					(100) (H) (Cat. by Abstract Only)				
16					25				
(NE*) (H)					(100) (H) (Cat. by Abstract Only)				
230					215				
(NE*) (H)					(100) (H)				
271	297	591			82				
(NE*) (H)					(100) (H)				
362					566				
(NE*) (H)					(100) (H) (Cat. by Abstract Only)				
16	235	420	563	599	25				
644					(100) (H)				
(NE**) (H)					82	946			
323					(100) (H)				
(NE**) (H)					169				
323					(100) (H) (Cat. by Abstract Only)				
(NE**) (H)					25				
116					(100) (H) (Cat. by Abstract Only)				
(NE**) (H)					215				

11 ions are out of sequence

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(1170)j(N ₁)	100	506	
(1170)j(N ₂)	100	(1170)j(C ₁)	
(1170)j(N ₃)	100	506	
(1170)j(N ₄)	100	(1170)j(N ₁)	
(1170)j(N ₅)	100	(1170)j(J ₁)	
(1170)j(N ₆)	100	506	
(1170)j(N ₇)	100	(1170)j(N ₁)	
(1170)j(N ₈)	100	506	
(1170)j(N ₉)	100	(1170)j(J ₁)	
(1170)j(N ₁₀)	100	506	
(1170)j(N ₁₁)	100	(1170)j(N ₁)	
(1170)j(N ₁₂)	100	506	
(1170)j(N ₁₃)	100	(1170)j(J ₁)	
(1170)j(N ₁₄)	100	506	
(1170)j(N ₁₅)	100	(1170)j(N ₁)	
(1170)j(N ₁₆)	100	506	
(1170)j(N ₁₇)	100	(1170)j(J ₁)	
(1170)j(N ₁₈)	100	506	
(1170)j(N ₁₉)	100	(1170)j(N ₁)	
(1170)j(N ₂₀)	100	506	
(1170)j(N ₂₁)	100	(1170)j(J ₁)	
(1170)j(N ₂₂)	100	506	
(1170)j(N ₂₃)	100	(1170)j(N ₁)	
(1170)j(N ₂₄)	100	506	
(1170)j(N ₂₅)	100	(1170)j(J ₁)	
(1170)j(N ₂₆)	100	506	
(1170)j(N ₂₇)	100	(1170)j(N ₁)	
(1170)j(N ₂₈)	100	506	
(1170)j(N ₂₉)	100	(1170)j(J ₁)	
(1170)j(N ₃₀)	100	506	
(1170)j(N ₃₁)	100	(1170)j(N ₁)	
(1170)j(N ₃₂)	100	506	
(1170)j(N ₃₃)	100	(1170)j(J ₁)	
(1170)j(N ₃₄)	100	506	
(1170)j(N ₃₅)	100	(1170)j(N ₁)	
(1170)j(N ₃₆)	100	506	
(1170)j(N ₃₇)	100	(1170)j(J ₁)	
(1170)j(N ₃₈)	100	506	
(1170)j(N ₃₉)	100	(1170)j(N ₁)	
(1170)j(N ₄₀)	100	506	
(1170)j(N ₄₁)	100	(1170)j(J ₁)	
(1170)j(N ₄₂)	100	506	
(1170)j(N ₄₃)	100	(1170)j(N ₁)	
(1170)j(N ₄₄)	100	506	
(1170)j(N ₄₅)	100	(1170)j(J ₁)	
(1170)j(N ₄₆)	100	506	
(1170)j(N ₄₇)	100	(1170)j(N ₁)	
(1170)j(N ₄₈)	100	506	
(1170)j(N ₄₉)	100	(1170)j(J ₁)	
(1170)j(N ₅₀)	100	506	
(1170)j(N ₅₁)	100	(1170)j(N ₁)	
(1170)j(N ₅₂)	100	506	
(1170)j(N ₅₃)	100	(1170)j(J ₁)	
(1170)j(N ₅₄)	100	506	
(1170)j(N ₅₅)	100	(1170)j(N ₁)	
(1170)j(N ₅₆)	100	506	
(1170)j(N ₅₇)	100	(1170)j(J ₁)	
(1170)j(N ₅₈)	100	506	
(1170)j(N ₅₉)	100	(1170)j(N ₁)	
(1170)j(N ₆₀)	100	506	
(1170)j(N ₆₁)	100	(1170)j(J ₁)	
(1170)j(N ₆₂)	100	506	
(1170)j(N ₆₃)	100	(1170)j(N ₁)	
(1170)j(N ₆₄)	100	506	
(1170)j(N ₆₅)	100	(1170)j(J ₁)	
(1170)j(N ₆₆)	100	506	
(1170)j(N ₆₇)	100	(1170)j(N ₁)	
(1170)j(N ₆₈)	100	506	
(1170)j(N ₆₉)	100	(1170)j(J ₁)	
(1170)j(N ₇₀)	100	506	
(1170)j(N ₇₁)	100	(1170)j(N ₁)	
(1170)j(N ₇₂)	100	506	
(1170)j(N ₇₃)	100	(1170)j(J ₁)	
(1170)j(N ₇₄)	100	506	
(1170)j(N ₇₅)	100	(1170)j(N ₁)	
(1170)j(N ₇₆)	100	506	
(1170)j(N ₇₇)	100	(1170)j(J ₁)	
(1170)j(N ₇₈)	100	506	
(1170)j(N ₇₉)	100	(1170)j(N ₁)	
(1170)j(N ₈₀)	100	506	
(1170)j(N ₈₁)	100	(1170)j(J ₁)	
(1170)j(N ₈₂)	100	506	
(1170)j(N ₈₃)	100	(1170)j(N ₁)	
(1170)j(N ₈₄)	100	506	
(1170)j(N ₈₅)	100	(1170)j(J ₁)	
(1170)j(N ₈₆)	100	506	
(1170)j(N ₈₇)	100	(1170)j(N ₁)	
(1170)j(N ₈₈)	100	506	
(1170)j(N ₈₉)	100	(1170)j(J ₁)	
(1170)j(N ₉₀)	100	506	
(1170)j(N ₉₁)	100	(1170)j(N ₁)	
(1170)j(N ₉₂)	100	506	
(1170)j(N ₉₃)	100	(1170)j(J ₁)	
(1170)j(N ₉₄)	100	506	
(1170)j(N ₉₅)	100	(1170)j(N ₁)	
(1170)j(N ₉₆)	100	506	
(1170)j(N ₉₇)	100	(1170)j(J ₁)	
(1170)j(N ₉₈)	100	506	
(1170)j(N ₉₉)	100	(1170)j(N ₁)	
(1170)j(N ₁₀₀)	100	506	

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(0,*) (M) (M ₂ *)						474			
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(0,*) (M) (P ₁)						250	251		
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(0,*) (M) (P ₂ *)						(07*) (M) (M)			
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(0,*) (M) (M)						(07*) (M) (M)			
501	431					376			
(0,*) (M) (O)						(07*) (M) (M)			
504						170	376		
(0,*) (M) (P ₂)						(07*) (M) (P ₂)			
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(0,*) (M) (P ₂)						(07*) (M) (M)			
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542						376			
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(0,*) (M) (M)						(07*) (M) (M)			
125	(Col. by Abstract Only)					376	396		
(0,*) (M) (M)						(07*) (M) (M)			
146	530					150			
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(0,*) (M) (M)						260			
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(0,*) (M) (O)						623			
303	504					(07*) (M) (M)			
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326	596					(07*) (M) (M)			
(0,*) (M) (O)						623			
496	510	511				(07*) (M) (M)			
(0,*) (M) (M)						623			
146						(07*) (M) (M)			
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(0,*) (M) (M)						623			
160						(07*) (M) (M)			
(0,*) (M) (P ₂)						623			
253						(07*) (M) (M)			
(0,*) (M) (P ₂)						623			
253						(07*) (M) (M)			
(0,*) (M) (P ₂)						623			
160						(07*) (M) (M)			
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(0,*) (M) (O)						623			
610	(Col. by Abstract Only)					(07*) (M) (M)			
(0,*) (M) (P ₂)						623			
160	229	253	404	522		(07*) (M) (M)			
520	530					(07*) (M) (M)			
(0,*) (M) (P ₂)						623			
542						(07*) (M) (M)			
(0,*) (M) (M)						623			
160						(07*) (M) (M)			
(0,*) (M) (M)						623			
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