

Auger rates for Ni-, Cu-, and Zn-like ions

U. I. Safronova¹, W. R. Johnson¹, and J. R. Albritton²

¹Department of Physics, University of Notre Dame, Notre Dame, IN 46556

²Lawrence Livermore National Laboratory, PO Box 808, Livermore, CA 94551

September 19, 2000

Abstract

Relativistic calculations of nonradiative transition rates to K , L , and M -shell vacancy states in Ni-, Cu-, and Zn-like ions with $Z=32, 36, 42, 47, 56, 60, 66, 74, 83$, and 92 are performed. Auger and Coster-Kronig transition probabilities are calculated using both Dirac-Hartree-Fock and model-potential wave functions. Tabulated data are presented for K - and L -shells Auger rates in Ni-, Cu-, and Zn-like ions, for M -shell Auger rates in Zn-like ions, and for Coster-Kronig rates in Cu-like ions. Results obtained by averaging over angular momentum substates are also presented and semi-empirical formulas are given for the average rates.

Contents

1	INTRODUCTION	2
2	Auger Transitions	3
2.1	Rate formulas	4
2.2	Atomic Kinetics	5
2.3	Averages	5
3	Result and Discussion	5
3.1	Sample Calculations	6
3.2	Average Auger and Coster-Kronig rates	6
3.3	Scaled average Auger rates	7
4	Conclusion	8
A	Autoionization rates for Ni-like ions	9
B	Interchange Symmetry	11

List of Tables

I	K -shell Auger rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Ni-, Cu-, and Zn-like ions	15
II	L_1 -shell Auger rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Ni-, Cu-, and Zn-like ions	15
III	L_2 -shell Auger rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Ni-, Cu-, and Zn-like ions	15
IV	L_3 -shell Auger rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Ni-, Cu-, and Zn-like ions	15
V	M_1 -shell Auger rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Zn-like ions	15
VI	M_2 -shell Auger rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Zn-like ions	15
VII	M_3 -shell Auger rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Zn-like ions	15
VIII	M_4 -shell Auger rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Zn-like ions	15
IX	M_5 -shell Auger rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Zn-like ions	15
X	Coster-Kronig rates $A(n_0l_0j_0, n_0l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Cu-like ions	15

1 INTRODUCTION

Nickel-like ions are found in astrophysical and Tokamak plasmas [1, 2] as well as plasmas produced in the laboratory by high-power lasers [3, 4]. Quantitative data for both radiative and nonradiative transitions in Ni-like ions are needed to study kinetics in these plasmas. In the present paper, we evaluate autoionization rates in Ni-like, Cu-like and Zn-like ions for selected nuclear charges ranging from $Z = 32$ to 92 to fulfill this need in part.

We do a comprehensive study of all possible autoionizing transitions starting from a hole in the K , L , or M shell of each of the ions considered. For Ni-like ions, we consider all possible arrangements of the two holes in the final state after autoionization. For Cu-like ions, we again start from an initial hole in either the K , L , or M shell and study transitions in which a valence electron with n ranging from 4 to 7 is ionized, leaving a single hole in the core. Finally, for Zn-like ions, we study transitions from states with a K , L , or M -shell hole and two valence electrons with principal quantum numbers ranging from 4 to 7. The bound-state and continuum wave functions for each ion are obtained by solving the “frozen-core” Dirac-Hartree-Fock (DHF) equations, where the core is taken to be the closed-shell nickel-like ion in its ground state. For the sake of simplicity, we work in lowest-order perturbation theory and ignore the multiplet structure of the excited states. For each value of Z , autoionization rates are determined as functions of the principal and angular-momentum quantum numbers ($n_0l_0j_0$) of the initial hole state, and the quantum numbers ($n_1l_1j_1$) and ($n_2l_2j_2$) of the two ionized electrons.

Because of the large number of ionization and excitation states making up the ensemble, modeling of the entire plasma kinetics is often practical only at a reduced level of description. To this end, the autoionization rate $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ is averaged over the angular momentum quantum numbers to obtain rates $A(n_0, n_1, n_2)$ that are functions of principal quantum numbers only. We show that these averaged rates are amenable to scaling, so that modestly accurate rates for any such atom may be obtained from simple formulae and a table of parameters. The average rates are also compared to a semi-empirical formula that results from three successive simplifications that have been made in the past when *ab-initio* calculations were not available: 1) ignoring exchange and retaining only dipole contributions, 2) factoring the two-particle interaction integral into a product of two one-particle interactions, and 3) replacing the acceleration form of the one-electron radial integral involving the continuum wave function by its length form. Approximation 1) is found to be least harmful, while approximations 2) and 3) almost always lead to large errors in comparison with exact data. We find, nevertheless, that the formula for average rates resulting from these three approximations is in fair agreement with our *ab-initio* calculations.

Studies of nonradiative transition rates for satellites of Ne-like resonance lines were made by Chen [5] and Nilsen [6], using different modifications of the multiconfiguration Dirac-Fock (MCDF) method. The continuum wave functions in Ref. [5] were obtained by solving the Dirac equations without exchange, whereas, distorted-wave Dirac continuum functions from the YODA code were used in [6]. Recently, [7, 8], rates for doubly-excited $1s^22s2p^63lnl'$ and $1s^22s^22p^53lnl'$ states, with n up to 8, for ions with $Z = 26$ and 29 were evaluated using Cowan’s multi-configuration Hartree-Fock code and the YODA code. In these studies, as in the present calculations, the number of levels increases rapidly with increasing n .

During the past 50 years, there have been numerous calculations of K -shell Auger rates, among which those of McGuire [9], and Walters and Bhalla [10] are particularly noteworthy. A detailed review of experimental and theoretical results up to 1971 was given by Bambynek *et al.* [11], and a review of results up to 1981 was given by Åberg and Howat [12]. More recently, relativistic calculations of K -shell [13] and L -shell [14] Auger rates for selected high- Z ions were reported by Chen *et al.*. Benchmark relativistic calculations of Auger and Coster-Kronig rates for selected elements with atomic numbers $Z=18-96$ were reported by Chen *et al.* in Ref. [15].

2 Auger Transitions

In this paper, autoionization rates are calculated for Ni-like, Cu-like, and Zn-like ions using orbitals determined in a self-consistent potential of the closed Ni-like core. When we discuss Ni-like ions

here and later, we refer to ions with a closed $3d^{10}$ structure. We do not consider the case of neutral Ni, which has a $3d^8 4s^2$ ground-state. The Ni-like core wave function is represented by $|0\rangle$ in second quantization. The wave function for the initial state of a Ni-like ion having a hole with quantum numbers $(n_0 l_0 j_0)$ is $a_0|0\rangle$, where the subscript 0 on the annihilation operator a_0 refers to the entire set of quantum numbers n_0, l_0, j_0 , and m_0 . The wave function for the autoionized final state of the Ni-like ion which has two holes with quantum numbers $(n_1 l_1 j_1)$ and $(n_2 l_2 j_2)$ and a continuum electron with momentum \mathbf{p} and spin-projection λ is given by $a_{\mathbf{p}\lambda}^\dagger a_1 a_2|0\rangle$, where $a_{\mathbf{p}\lambda}^\dagger$ is the creation operator for the continuum electron. Similarly, the wave function of the initial state of a Cu-like ion with a hole $(n_0 l_0 j_0)$ and a single valence electron $(n_1 l_1 j_1)$ is $a_0 a_1^\dagger|0\rangle$, while the wave function of the corresponding final state, which has a continuum electron and a hole with quantum numbers $(n_2 l_2 j_2)$ is $a_{\mathbf{p}\lambda}^\dagger a_2|0\rangle$. Finally, for the case of a Zn-like ion with a hole in $(n_0 l_0 j_0)$ and two valence electrons $(n_1 l_1 j_1)$ and $(n_2 l_2 j_2)$, the initial-state wave function is $a_0 a_1^\dagger a_2^\dagger|0\rangle$ and the final state wave function is $a_{\mathbf{p}\lambda}^\dagger|0\rangle$. Summarizing, we consider the three possibilities:

$$\begin{aligned} a_0|0\rangle &\rightarrow a_{\mathbf{p}\lambda}^\dagger a_1 a_2|0\rangle && \text{Ni-like ions} \\ a_0 a_2^\dagger|0\rangle &\rightarrow a_{\mathbf{p}\lambda}^\dagger a_1|0\rangle && \text{Cu-like ions} \\ a_0 a_1^\dagger a_2^\dagger|0\rangle &\rightarrow a_{\mathbf{p}\lambda}^\dagger|0\rangle && \text{Zn-like ions} \end{aligned}$$

2.1 Rate formulas

A detailed derivation of the formula for the autoionization rate for the case of Ni-like ions is given in Appendix A; since autoionization of Cu- and Zn-like ions can be treated in a closely parallel way, and lead to an essentially identical formulae, we quote only the final results for these cases. For all three cases, the autoionization rate is given by the formula

$$A(n_0 l_0 j_0, n_1 l_1 j_1, n_2 l_2 j_2) = \frac{2\pi}{(2j_0 + 1)} \eta_{12}^2 \sum_{ijL} \frac{1}{[L]} |Z_L(\epsilon l j, n_0 l_0 j_0, n_2 l_2 j_2, n_1 l_1 j_1)|^2, \quad (1)$$

where η_{12} is a normalization factor given by

$$\eta_{12} = \begin{cases} 1/\sqrt{2} & (n_1 l_1 j_1) = (n_2 l_2 j_2) \\ 1 & \text{otherwise} \end{cases}$$

This is the ‘‘per-hole/per-shell/per-shell’’ rate. To obtain the ‘‘per-hole/per-electron/per-electron’’ rate used in plasma kinetics studies, one simply multiplies the rate given in Eq. (1) by the statistical weight g_{12} of the two-electron state $(n_1 l_1 j_1, n_2 l_2 j_2)$:

$$g_{12} = \begin{cases} \frac{1}{j_1(2j_1 + 1)}, & \text{for } (n_1 l_1 j_1) = (n_2 l_2 j_2), \\ \frac{1}{(2j_1 + 1)(2j_2 + 1)}, & \text{otherwise.} \end{cases}$$

In Appendix B, we show that the rates given above by Eq. (1) are invariant with respect to interchange of $(n_1 l_1 j_1)$ and $(n_2 l_2 j_2)$. The rate in Eq. (1) is evaluated numerically using Dirac-Fock or relativistic model potential wave functions. The Breit interaction is not included in the calculation. Energies are determined from eigenvalues of the Dirac-Fock or model potential equations.

2.2 Atomic Kinetics

For the sake of definiteness, we illustrate the use of our Auger rates in an atomic kinetics scheme. It is common to account the plasma ensemble according to the number of electrons, N_i , occupying the subshell ($n_i l_i j_i$). The initial state (N_0, N_1, N_2) decays to the final state ($N_0 + 1, N_1 - 1, N_2 - 1$), and the time rate of change of the probability or fraction of atoms with occupations (N_0, N_1, N_2) may be written

$$\begin{aligned} \frac{dF(N_0, N_1, N_2)}{dt} = & -F(N_0, N_1, N_2)(D_0 - N_0) N_1 N_2 A(0, 1, 2) \\ & + F(N_0 - 1, N_1 + 1, N_2 + 1)[D_0 - (N_0 - 1)](N_1 + 1)(N_2 + 1) A(\tilde{0}, \tilde{1}, \tilde{2}), \end{aligned} \quad (2)$$

where $D_0 = 2j_0 + 1$. In the above equation, we designate the autoionization rate for the state ($N_0 + 1, N_1 - 1, N_2 - 1$) by $A(\tilde{0}, \tilde{1}, \tilde{2})$. Here we record only the active level occupations, and the rate is used in its “per-hole/per-electron/per-electron” form; note the explicit occupation factors in the two terms. The first term on the right-hand-side represents the loss from the state due to the Auger process, and the second represents its gain from the Auger process acting on an “adjacent” state. In the special case that ($n_1 l_1 j_1$) and ($n_2 l_2 j_2$) are the same, we have initial and final states with occupation numbers (N_0, N_1) and ($N_0 + 1, N_1 - 2$); and the associated rate equation:

$$\begin{aligned} \frac{dF(N_0, N_1)}{dt} = & -F(N_0, N_1)(D_0 - N_0) \frac{N_1(N_1 - 1)}{2} A(0, 1) \\ & + F(N_0 - 1, N_1 + 2)[D_0 - (N_0 - 1)] \frac{(N_1 + 2)(N_1 + 1)}{2} A(\tilde{0}, \tilde{1}). \end{aligned} \quad (3)$$

2.3 Averages

For plasma applications [16, 17], it is often useful to consider rates averaged over atomic subshells. To obtain such rates, it should be noted that the number of electrons in a shell with principal quantum number n is $2n^2$. The number of two-particle states with principal quantum numbers n_1 and n_2 is $4n_1^2 n_2^2$ when $n_1 \neq n_2$ and $2n_1^4 - n_1^2$ for $n_1 = n_2$. Consequently, the average rates in the per-hole/per-electron/per-electron form are given by

$$A(n_0, n_1, n_2) = \frac{1}{8n_0^2 n_1^2 n_2^2} \sum_{l_1 j_1} \sum_{l_2 j_2} \sum_{l_0 j_0} (2j_0 + 1) A(n_0 l_0 j_0, n_1 l_1 j_1, n_2 l_2 j_2), \quad n_1 \neq n_2 \quad (4)$$

$$A(n_0, n_1, n_1) = \frac{1}{2n_0^2 (2n_1^4 - n_1^2)} \sum_{l_1 j_1} \sum_{l_2 j_2} \sum_{l_0 j_0} (2j_0 + 1) A(n_0 l_0 j_0, n_1 l_1 j_1, n_1 l_2 j_2), \quad n_1 = n_2 \quad (5)$$

The factor $2j_0 + 1$ occurs in above formulas since the rate given in Eq. (1) was averaged over magnetic substates of the initial hole state ($n_0 l_0 j_0$) and summed over completely filled subshells ($n_1 l_1 j_1$) and ($n_2 l_2 j_2$).

3 Result and Discussion

We first compare the present calculations with previous calculations from [15], which were carried out for neutral atoms. For this purpose, we evaluate Auger and Coster-Kronig (CK) rates in neutral Zn using various different central potentials to determine the electron orbitals: the Dirac-Fock (DF) potential, a Dirac-Hartree model potential for a closed-core ion (MP), and Dirac-Hartree potentials with a hole in the $1s$ shell (MP-1s) or $2s$ shell (MP-2s). The comparisons are shown in Table A, It

is seen that the K -shell rates calculated using the MP-1s potential and the L_1 rates calculated in the MP-2s potential are in closest agreement with the MCHF results of [15]. The K -shell Auger rates are found to be insensitive to the potential. The largest differences between our calculations and those of Ref. [15] are for CK transitions which occur for energies near threshold. For these CK transitions, small differences in the energies of the continuum electron lead to rather large differences in the decay rates. Our calculations for neutral atoms are in satisfactory agreement with the benchmark calculations of Ref. [15]. As the ionic charge increases, details of the potential become less important, and the present calculations become more and more precise.

3.1 Sample Calculations

The remaining calculations are carried out using only the DF and MP potentials described above. These closed-shell potentials, provide natural starting points for future improvements of the present calculations using many-body perturbation theory (MBPT). Accurate MBPT calculations have already been carried out for energies and radiative transition probabilities in many-electron systems in Refs. [18, 19], for example.

Auger and Coster-Kronig rates for Ni-, Cu-, and Zn-like ions are given in Tables I–X. The K -shell Auger rates are presented in Table I as $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ with $n_0l_0j_0=1s_{1/2}$. The L_1 , L_2 , and L_3 rates are presented in Tables II, III, and IV as $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ with $n_0l_0j_0=2s_{1/2}$, $2p_{1/2}$, and $2p_{3/2}$, respectively. The M_1 , M_2 , M_3 , M_4 and M_5 rates are presented in Tables V, VI, VII, VIII, and IX as $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ with $n_0l_0j_0=3s_{1/2}$, $3p_{1/2}$, $3p_{3/2}$, $3d_{3/2}$, and $3d_{5/2}$, respectively. In Table X, we list Coster-Kronig rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ for Cu-like ions with $n_1=n_0=2$ or 3, and $n_2=4$ –7. It was found that the CK rates are nonzero for only a few Ni-like ions ($Z=32,36$) and it seemed unreasonable to tabulate these few values. From preliminary calculations in Zn-like ions, we found the CK rates to be similar to those tabulated for Cu-like ions. However, the resulting tables would be much-much larger since the $3lj$ hole would be replaced by a $4lj$ hole!

To limit the size of the tables we list only those rates for which $A > 10^{-3}$ mau. Thus, for example, rates for only 31 of the possible 36 configurations for K -shell Auger transitions in Ni are listed; the remaining rates fall below the cut-off. In the tables, we present results obtained by using the MP potential, since the MP energies are somewhat closer to experimental energies than are the DF energies. The rates for Ni-like ions are seen to change very slowly with Z ; by contrast, those for Zn-like ions increase by a factor of 600 from $Z=32$ to $Z=92$.

3.2 Average Auger and Coster-Kronig rates

In Tables B–F, we present average Auger and Coster-Kronig rates in Ni-, Cu-, and Zn-like ions with $Z=32$ –92. In these tables, we again compare results calculated using the DF and MP potentials. The two sets of Auger rates for Ni-like ions given in Table B differ by 5–10% for low- Z ions and 1–5% for high- Z ions. The smallest difference between the two sets occurs for the K -shell Auger transitions: $A(1\ 2\ 2)$, $A(1\ 2\ 3)$, and $A(1\ 3\ 3)$. The L -shell Auger rates $A(2\ 3\ 3)$ are more sensitive to the potential. The average K - and L -shell Auger rates increase smoothly with increasing Z .

Auger and Coster-Kronig rates for Cu-like ions are calculated for all $(n_2l_2j_2)$ valence states $n_2 \leq 7$ with all possible values of (l_2j_2) . The 920 distinct configurations for Auger rates and 520 distinct configurations for CK rates, respectively, are taken into account. Average Auger and CK rates for Cu-like ions are presented in Tables C and D. Comparison of rates calculated by using the DF and MP potentials shows that only low-lying states in low- Z ions are sensitive to the choice of potential. Two sets of results for $A(1\ 2\ 4)$ and $A(1\ 3\ 4)$ differ by 18% for $Z=32$ and by only 2% for $Z=92$. The difference in the two sets of data is larger for L -shell transitions than for K -shell

transitions in low- Z ions. As can be seen from the Table C, the difference between the two sets of data for $A(2\ 3\ 4)$ is 38% for $Z=32$; however, with increasing n and Z , the difference becomes smaller and for U^{+63} , it is only 1-2%. The average K - and L -shell Auger rates for Cu-like ions smoothly increase with increasing Z ; this increase is much larger than for the Ni-like ions discussed in the previous paragraph: the ratio of A -values for $Z=92$ and $Z=32$ is about 20-40 for Cu-like ions and 2-4 for Ni-like ions.

In Table D, we present average L - and M -shells Coster-Kronig rates for Cu-like ions in the range $Z=32$ –92 calculated. As can be seen, A vanishes for some of the $A(2\ 2\ 4)$, $A(3\ 3\ 4)$, and $A(3\ 3\ 4)$ transitions. The Coster-Kronig transitions are transitions within a given shell, $n_0=n_1$, and the energy of the continuum electron ϵ_p equals $\epsilon_1 - \epsilon_0 + \epsilon_2$. When $\epsilon_1 - \epsilon_0$ is very small and can not compensate for the valence energy ϵ_2 , the transition is energetically forbidden. Consequently, the CK rates are very sensitive to energies. Since, as noted previously, MP energies are generally in better agreement with experimental energies than are DF energies, we present only the MP results in Table D. The CK rate is important, when is it is allowed, because the A -values for Coster-Kronig transitions are larger than the A -values for other autoionization transitions such as those shown in Table C.

Auger rates in Zn-like ions are calculated for all $(n_1l_1j_1, n_2l_2j_2)$ configurations with $n_1 \leq 7$ and $n_2 \leq 7$ including all possible (l_1j_1) and (l_2j_2) . There are 28, 45, 66, and 91 configurations with $n_1=n_2=4, 5, 6,$ and 7 , respectively. The number of configurations with $n_1 \neq n_2$ is much larger: 63 configurations with $n_1=4, n_2=5$; 77 and 99 configurations with $n_1=4$ and 5 , and $n_2=6$, respectively; and 91, 117, and 143 configurations with $n_1=4, 5, 6$ and $n_2=7$, respectively. That gives a total of 820 different configurations in the case of K -shell Auger rates. The number of configurations increases by factor of 3–5 for L -shell or M -shell Auger rates. The final number of configurations for K -, L -, and M -shells Auger rates in Zn-like ions is equal to 7380 for each Z . The resulting $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ -values are averaged over lj using Eqs. (4) and (5). Average Auger rates for Zn-like ions with $Z=32$ –92 are given in Tables E and F. In these tables, we compare average Auger rates for Zn-like ions, calculated using DF and MP potentials. As can be seen, A -values of low-lying states ($n_1=4, 5$) are sensitive to the starting potentials. Even for K -shell Auger rates, the difference between values of $A(1\ 4\ 4)$ and $A(1\ 4\ 5)$ given in Tables E and F about 40% for ions with $Z=32$. This difference decreases slowly with Z and even for $Z=92$, it is about 5%. The Z -dependence of the average K -, L - and M -shell As for Ni-like and Cu-like ions, the A -values smoothly increase with Z ; the increase for Zn-like ions being larger than that for Cu-like ions: the ratio of A -values for $Z=92$ and $Z=32$ is about 100–200 for Zn-like ions and 20–40 for Cu-like ions. The above comments pertain to average K - and L -shell Auger rates in Zn-like ions; The M -shell rates change more slowly: the ratio of A -values for $Z=92$ and $Z=32$ is about 10-30 for the M -shell in Zn-like ions.

3.3 Scaled average Auger rates

As discussed in the previous subsection, the average Auger rates change smoothly with Z and rate curves for different values of n for valence electrons are similar. For plasma applications, it is useful to have results in analytical rather than numerical form.

We can approximate the average rates for Cu-like ions reasonably well with the formula

$$A(n_0, n_1, n_2) = A_0^{\text{Cu}}(n_0, n_1) \frac{(Z - 28)}{(n_2)^5}, \quad (6)$$

where the constant $A_0^{\text{Cu}}(1, 2) = 0.36 \pm 0.02$ mau, $A_0^{\text{Cu}}(1, 3) = 0.032 \pm 0.002$ mau, and $A_0^{\text{Cu}}(2, 3) = 1.40 \pm 0.05$ mau. With the aid of this approximation, we can predict $A(1\ 2\ n)$, $A(1\ 3\ n)$, and

$A(2\ 3\ n)$ for $n > 7$ and arbitrary Z .

Similar formulas can be developed for average Auger rates in Zn-like ions. We find:

$$A(n_0, n_1, n_2) = A_0^{Zn}(n_0) \frac{(Z - 29)}{(n_1 n_2)^5}, \quad (7)$$

where $A^{Zn}(1) = 5.75 \pm 0.75$ mau, $A^{Zn}(2) = 185 \pm 35$ mau, and $A^{Zn}(3) = 3500 \pm 500$ mau. Using these approximations, we can predict $A(n_0, n_1, n_2)$ for $n > 7$ and arbitrary Z . It should be noted that the $A(3\ 4\ 7)$ rates are sensitive to threshold energies and we did not obtain a smooth Z - and n_2 -dependence for $A(3\ 4\ n_2)$. We were also unable to find reasonable approximations of the type given in Eqs. (6) and (7) for Ni-like ions, or for CK rates in Cu-like ions.

Badnell [20] proposed a semi-empirical formula of the following type to describe average Auger rates:

$$A(n_0, n_1, n_2) = A_0 \frac{(n_0 n_1)^3}{2(n_1^2 - n_0^2)^3 n_2^5} \frac{Z_{n_2}^2}{[(n_0 Z_{n_1})^2 - (n_1 Z_{n_0})^2]}, \quad (8)$$

where $A_0 = 3.74 \times 10^{16} \text{ s}^{-1} = 905$ mau. The quantities $Z_{n_k} = Z - \sigma_{n_k}$ in this formula are ‘‘screened’’ charges for electrons in the n_k shell. This formula gives a reasonable approximation to the average rates obtained from the present Dirac-Fock calculations provided we choose $\sigma_1 = 0.625$, $\sigma_2 = 6.706$, $\sigma_3 = 17.44$, $\sigma_4 = 26.25$, $\sigma_5 = 27.61$, $\sigma_6 = 27.57$, and $\sigma_7 = 27.67$. To illustrate the quality of the approximation given by Eq. (8), we compare average DF rates for Ni-like ions with values obtained from Eq. (8) in Fig. 1. In this figure, Δ is the percent difference between average rates determined by formula (8) and Dirac-Fock rates; this difference ranges from 3% to 30%. In Fig. 2, we make similar comparisons for Cu-like ions. We present Δ_S , the percent difference between average rates determined by (8) and DF rates, and Δ_F the percent difference in rates determined by (6) and DF rates. We find that the rates obtained from Eq. (8) remain in close agreement with the DF values. Finally, for Zn-like ions, we show in Fig. 3 the percent error Δ_S between average rates determined by (8) and DF rates, and Δ_F the difference between rates from (7) and DF rates. The differences between average DF rates and the rates from (8) range from 10% to 80%. The best agreement between the two sets of data is obtained for $A(3\ 4\ 4)$, and the disagreement increases up to 300% with increasing difference between n_0 and n_1 [$A(1\ 4\ 4)$, $A(1\ 5\ 6)$]. We conclude, that the semi-empirical formula (8) is a useful approximation for Ni-like and Cu-like ions, and for low-lying excited states of Zn-like ions.

The screened-hydrogenic approximation [16, 17, 20] is often used to obtain Auger rates for use in plasma diagnostic applications. To assess the quality of this approximation, we present in Table G, a comparison of average DF rates with rates obtained using screened hydrogenic functions (designated by SC) for Ni-, Cu-, and Zn-like Ag ($Z=47$). The differences range from 10% to 300%.

4 Conclusion

In summary, a systematic study of the Auger and Coster-Kronig rates of K , L , and M -shell vacancy states in Ni-, Cu-, and Zn-like ions with $Z=32-92$ is performed. All possible valence $4l-7l$ electrons in Cu- and Zn-like ions are included. The calculations are carried out using both the non-local Dirac-Fock potential and a local Dirac-Hartree model potential. Comparison of transition rates calculated by using the DF and MP potentials shows that only low-lying states of low- Z ions are sensitive to the potential. There are larger differences between the two sets of data for L-shell transitions than for K -shell transitions for low- Z ions.

In Tables I-X, we give Auger and Coster-Kronig rates $A(n_0 l_0 j_0, n_1 l_1 j_1, n_2 l_2 j_2)$ satisfying the cut-off criterion $A < 10^{-3}$ mau for ions with nuclear charges $Z=32-92$. These rates were calculated

using a local Dirac-Hartree model potential. The tables include K - and L -shell Auger rates in Ni-, Cu-, and Zn-like ions, M -shell Auger rates in Zn-like ions, and the L - and M -shell Coster-Kronig rates in Cu-like ions.

Auger and Coster-Kronig rates averaged over lj subshells were also presented in Tables B-F. These average rates are useful for plasma applications. The average Auger and Coster-Kronig rates are presented for all possible states in Ni-like ions and for all possible $4l-7l$ valence electrons in Cu- and Zn-like ions with $Z=32-92$. These data are scaled over Z and n of the valence electron. On the basis of the scaled data, we can predict average Auger rates for K - and L -vacancy states for $n_1 > 7$ or $n_2 > 7$ and arbitrary Z . We also find that the semi-empirical formula (8) for average rates often used in plasma studies provides a reasonable approximation to our *ab-initio* calculations, provided screening parameters are appropriately adjusted.

Acknowledgments

The work of WRJ was supported in part by National Science Foundation Grant No. PHY-99-70666. UIS acknowledges partial support by Grant No. B503968 from Lawrence Livermore National Laboratory. The work of JRA was performed under the auspices of the U. S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48.

A Autoionization rates for Ni-like ions

For autoionization of Ni-like ions, the initial and final states are

$$|I\rangle = a_0|0\rangle \quad (9)$$

$$|F\rangle = \eta_{12} a_{\mathbf{p}\lambda}^\dagger a_1 a_2 |0\rangle, \quad (10)$$

where $|0\rangle$ is the state vector of the closed-shell atom Ni-like core. The quantity η_{12} is a normalization factor:

$$\eta_{12} = \begin{cases} 1/\sqrt{2} & \text{for } (n_1 l_1 j_1) = (n_2 l_2 j_2) \\ 1 & \text{otherwise} \end{cases}$$

We start our analysis using the expression for the lowest-order S -matrix element in terms of interaction Hamiltonian:

$$\begin{aligned} S_{FI} &= i \int \langle F | H_I(t) | I \rangle dt \\ &= 2\pi i \delta(E_F - E_I) \langle F | H_I | I \rangle. \end{aligned} \quad (11)$$

Squaring the S -matrix element and substituting the interaction time for one factor of $\delta(E_F - E_I)$, we find that the interaction rate is

$$W_{FI} = 2\pi \delta(E_F - E_I) |\langle F | H_I | I \rangle|^2. \quad (12)$$

Substituting the number of states in momentum interval d^3p and integrating over energy, we find that the probability per second for transitions into $d\Omega_p$ is given by

$$dw_{FI} = \frac{V}{(2\pi)^2} \frac{p\epsilon}{c^2} |\langle F | H_I | I \rangle|^2 d\Omega_p. \quad (13)$$

The matrix element must be evaluated at energy $\epsilon = \epsilon_{\mathbf{p}} = \epsilon_1 + \epsilon_2 - \epsilon_0$, where, for example, the subscript 0 represents the quantum numbers (n_0, l_0, j_0) .

The initial and final states above are eigenstates of the unperturbed Hamiltonian H_0 . The interaction Hamiltonian $H_I = V$ is the residual Coulomb interaction, which is given by

$$V = \frac{1}{2} \sum_{ijkl} v_{ijkl} : a_i^\dagger a_j^\dagger a_l a_k : - \sum_{ij} U_{ij} : a_i^\dagger a_j : \quad (14)$$

in second quantization. The Breit interaction should be added to V for high- Z atoms. The matrix element of the interaction Hamiltonian is

$$\begin{aligned} \langle F | H_I | I \rangle &= \frac{\eta_{12}}{2} \sum_{ijkl} v_{ijkl} \langle 0 | a_2^\dagger a_1^\dagger a_{\epsilon j l} : a_i^\dagger a_j^\dagger a_l a_k : a_0 | 0 \rangle \\ &= \eta_{12} \tilde{v}_{\epsilon 0 2 1} = \eta_{12} (v_{\epsilon 0 2 1} - v_{\epsilon 0 1 2}) . \end{aligned} \quad (15)$$

The final electron has energy ϵ , momentum \mathbf{p} and is in a polarization state χ_λ . The partial-wave decomposition of the corresponding scattering wave function, which is asymptotically a plane wave, plus an *incoming* spherical wave (appropriate to final states in ionization processes) is given by

$$\psi_{\epsilon \mathbf{p} \lambda}(\mathbf{r}) = \sqrt{\frac{(2\pi)^3 c^2}{\epsilon p V}} \sum_{jlm} \left[\Omega_{jlm}^\dagger(\hat{p}) \chi_\lambda \right] i^{l-1} e^{-i\delta_{lj}} w_{\epsilon ljm}(\mathbf{r}). \quad (16)$$

In this equation, Ω_{ljm}^\dagger is a spherical spinor, l is the orbital angular momentum, δ_{lj} is the scattering phase shift, and $w_{\epsilon ljm}(\mathbf{r})$ is a continuum solution to the Dirac equation with energy ϵ and angular momentum components $(l j m)$. The partial-wave component of the scattering wave function $w_{\epsilon ljm}(\mathbf{r})$ is given by

$$w_{\epsilon ljm}(\mathbf{r}) = \frac{1}{r} \begin{pmatrix} i S_{lj}(r) \Omega_{jlm}(\hat{r}) \\ T_{lj}(r) \Omega_{jl'm}(\hat{r}) \end{pmatrix}, \quad (17)$$

where asymptotically the radial wave functions take the form

$$\begin{aligned} S_{lj}(r) &\rightarrow \sqrt{\frac{\epsilon + mc^2}{\pi c^2 p}} \cos \left(pr + \nu \log 2pr - (l+1) \frac{\pi}{2} + \delta_{jl} \right) \\ T_{lj}(r) &\rightarrow \sqrt{\frac{\epsilon - mc^2}{\pi c^2 p}} \sin \left(pr + \nu \log 2pr - (l+1) \frac{\pi}{2} + \delta_{jl} \right). \end{aligned} \quad (18)$$

Substituting the scattering wave function into the matrix element leads to the expression

$$\tilde{v}_{\epsilon 0 2 1} = \sqrt{\frac{(2\pi)^3 c^2}{\epsilon p V}} \sum_{\kappa m} \left[\chi_\lambda^\dagger \Omega_{ljm}(\hat{p}) \right] i^{-l-1} e^{i\delta_{lj}} \tilde{v}_{\epsilon ljm 0 2 1}. \quad (19)$$

Summing over spins (λ) and integrating over scattering angles, we find the transition rate to from a specific initial state I to a specific final state F is

$$A_{FI} = 2\pi \eta_{12}^2 \sum_{\kappa m} |\tilde{v}_{\epsilon ljm 0 2 1}|^2. \quad (20)$$

We may decompose the matrix element of the interaction as

$$\tilde{v}_{\epsilon ljm 0 2 1} = \sum_{LM_L} (-1)^{j+j_0+L-m-m_0-M_L} \begin{pmatrix} j & j_2 & L \\ -m & m_2 & M_L \end{pmatrix} \begin{pmatrix} L & j_0 & j_1 \\ -M_L & -m_0 & -m_1 \end{pmatrix} Z_L(\epsilon l j m 0 2 1). \quad (21)$$

In this expression, the quantity

$$Z_L(abcd) = X_L(abcd) + [L] \sum_K \left\{ \begin{array}{ccc} a & c & L \\ b & d & K \end{array} \right\} X_K(abdc), \quad (22)$$

where

$$X_L(abcd) = \langle a \| C_L \| c \rangle \langle b \| C_L \| d \rangle \int_0^\infty \int_0^\infty dr dr' \frac{r^L}{r^{L+1}} (G_a G_c + F_a F_c) (G_b G_d + F_b F_d)'. \quad (23)$$

In the above, G_k and F_k are radial components of the Dirac orbital for an electron with quantum number set $a = (n_a l_a j_a)$ and C_L is a normalized spherical harmonic.

Averaging over initial hole substates and summing over all possible final magnetic substates, we find (in atomic units)

$$A(n_0 l_0 j_0, n_1 l_1 j_1, n_2 l_2 j_2) = \frac{2\pi}{[j_0]} \eta_{12}^2 \sum_{l_j L} \frac{1}{[L]} |Z_L(\epsilon l j, n_0 l_0 j_0, n_2 l_2 j_2, n_1 l_1 j_1)|^2. \quad (24)$$

Here we use A to designate the Auger rate/ion for transitions to final two-hole states of the appropriate symmetry. The atomic unit of frequency in the above equations is

$$\begin{aligned} [T^{-1}] &= 4.134137 \times 10^{16} \text{ sec}^{-1} \\ &= 27.21138 \text{ eV}. \end{aligned}$$

B Interchange Symmetry

It is of interest to compare the rate to final state $(n_1 l_1 j_1, n_2 l_2 j_2)$ with the rate to $(n_2 l_2 j_2, n_1 l_1 j_1)$. One expects the rates to these two possible states to be identical, since the states differ only by sign; however, the formula (24) appears to be unsymmetrical with respect to interchange of final states. From the definition

$$Z_L(abcd) = X_L(abcd) + [L] \sum_K \left\{ \begin{array}{ccc} a & c & L \\ b & d & K \end{array} \right\} X_K(abdc), \quad (25)$$

it follows

$$\begin{aligned} \sum_L \frac{1}{[L]} [Z_L(abcd)]^2 &= \sum_L \frac{1}{[L]} [X_L(abcd)]^2 \\ &+ 2 \sum_{LK} \left\{ \begin{array}{ccc} a & c & L \\ b & d & K \end{array} \right\} X_K(abdc) X_L(abcd) \\ &+ \sum_{LKK'} [L] \left\{ \begin{array}{ccc} a & c & L \\ b & d & K \end{array} \right\} \left\{ \begin{array}{ccc} a & c & L \\ b & d & K' \end{array} \right\} X_K(abdc) X_{K'}(abdc) \\ &= \sum_L \frac{1}{[L]} [X_L(abcd)]^2 + \sum_L \frac{1}{[L]} [X_L(abdc)]^2 \\ &+ 2 \sum_{LK} \left\{ \begin{array}{ccc} a & c & L \\ b & d & K \end{array} \right\} X_K(abdc) X_L(abcd), \end{aligned} \quad (26)$$

where we have used the orthogonality relation

$$\sum_L [L] \begin{Bmatrix} a & c & L \\ b & d & K \end{Bmatrix} \begin{Bmatrix} a & c & L \\ b & d & K' \end{Bmatrix} = \frac{\delta_{KK'}}{[K]}. \quad (27)$$

The final expression in Eq. (26) is manifestly symmetric with respect to the interchange of c and d ; consequently, the rate in Eq. (24) is symmetric with respect to interchange of final hole states $n_1 l_1 j_1$ and $n_2 l_2 j_2$.

EXPLANATION OF TABLES

TABLES I-IX. Auger rates $A(n_0l_0j_0, n_1l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Ni-, Cu-, and Zn-like ions.

The nuclear charge $Z=32$, etc. of the ions is given in the column headings. In the first column, we give the configuration $n_0l_0j_0, n_1l_1j_1, n_2l_2j_2$ describing one of the following processes:

$$\begin{array}{ll}
 a_{n_0l_0j_0}|0\rangle \rightarrow a_{\mathbf{p}\lambda}^\dagger a_{n_1l_1j_1} a_{n_2l_2j_2}|0\rangle & \text{Ni-like ions} \\
 a_{n_0l_0j_0} a_{n_2l_2j_2}^\dagger|0\rangle \rightarrow a_{\mathbf{p}\lambda}^\dagger a_{n_1l_1j_1}|0\rangle & \text{Cu-like ions} \\
 a_{n_0l_0j_0} a_{n_1l_1j_1}^\dagger a_{n_2l_2j_2}^\dagger|0\rangle \rightarrow a_{\mathbf{p}\lambda}^\dagger|0\rangle & \text{Zn-like ions}
 \end{array}$$

The following notation is used: $ns=ns_{1/2}$, $np=np_{3/2}$, $np^*=np_{1/2}$, $nd=nd_{5/2}$, $nd^*=nd_{3/2}$, $nf=nf_{7/2}$, $nf^*=nf_{5/2}$, $ng=ng_{9/2}$, $ng^*=ng_{7/2}$, $nh=nh_{11/2}$, $nh^*=nh_{9/2}$. We also use $a[-b]=a^{-b}$, $a[+b]=a^{+b}$, and $a[0]=a$ to represent powers of ten.

The rows contain the ‘‘per-hole/per-shell/per-shell’’ Auger rates in milliatomic units (mau); $1 \text{ mau} = 0.02721138 \text{ eV} = 4.134137 \times 10^{13} \text{ s}^{-1}$. Only those rates satisfying the restriction $A > 10^{-3} \text{ mau}$ are tabulated.

TABLE X. Coster-Kronig rates $A(n_0l_0j_0, n_0l_1j_1, n_2l_2j_2)$ (in mau) as function of Z for Cu-like ions.

In the first column, we give the configuration $n_0l_0j_0, n_1l_1j_1, n_2l_2j_2$ describing the Coster-Kronig process $a_{n_0l_0j_0} a_{n_2l_2j_2}^\dagger|0\rangle \rightarrow a_{\mathbf{p}\lambda}^\dagger a_{n_1l_1j_1}|0\rangle$ with $n_1 = n_0$.

The remaining notation is the same as that for TABLES I-IX.

References

- [1] A. V. Vinogradov and V. N. Shlyaptsev, *Sov. J. Quantum Electron.* **13**, 303 (1983).
- [2] P. L. Hagelstein and R. K. Jung, *At. Data Nucl. Data Tables* **37**, 121 (1987).
- [3] P. Quinet and E. Biemont, *Phys. Scr.* **43**, 150 (1991).
- [4] S.H. Glenzer et al., *Phys. Rev. Lett.* **82**, 97 (1999).
- [5] M. H. Chen, *Phys. Rev. A* **40**, 2365 (1989).
- [6] J. Nilsen, *At. Data Nucl. Data Tables* **41**, 131 (1989).
- [7] R.Bruch, U.I. Safronova, A.S. Shlyaptseva, J. Nilsen and D. Schneider, *Phys. Scr.* **57**, 334 (1998).
- [8] R.Bruch, U.I. Safronova, A.S. Shlyaptseva, J. Nilsen and D. Schneider, *J. Quant. Spectrosc. Radiat. Transfer* **60**, 605 (1998).
- [9] E. G. McGuire, *Phys. Rev.* **185**, 1 (1969).
- [10] D. L. Walters and C. P. Bhalla, *At. Data* **3**, 301 (1971)
- [11] W. Bambynek, B. Crasemann, R. W. FINK, H.-U. Freund, H. Mark, C. D. Swift, R. E. Price, and P. Venugopala Rao, *Rev. Mod. Phys.* **44**, 716 (1972).
- [12] T. Åberg and G. Howat, in *Handbuch der Physik*, **XXXI**, edited by S. Flügge (Springer-Verlag, Berlin, 1982), p. 469.
- [13] M. H. Chen, B. Crasemann, and H. Mark, *Phys. Rev. A* **21**, 436 (1981).
- [14] M. H. Chen, E. Laiman, B. Crasemann, M. Aoyagi and H. Mark, *Phys. Rev. A* **19**, 2253 (1979).
- [15] M. H. Chen, B. Crasemann, and H. Mark, *At. Data Nucl. Data Tables* **24**, 13 (1979).
- [16] J. R. Albritton and B. G. Wilson, *Phys. Rev. Lett.* **83**, 1594 (1999).
- [17] D. E. Post, R. V. Jensen. C. B. Tarter, W. H. Grasberger. and W. A. Lokke, *At. Data Nucl. Data Tables* **20**, 397 (1977).
- [18] M. S. Safronova, W. R. Johnson, and U. I. Safronova, *Phys. Rev. A* **53**, 4036 (1996).
- [19] U. I. Safronova, W. R. Johnson, and A. E. Livingston, *Phys. Rev. A* **60**, 996 (1999).
- [20] N.R. Badnell, private communication.

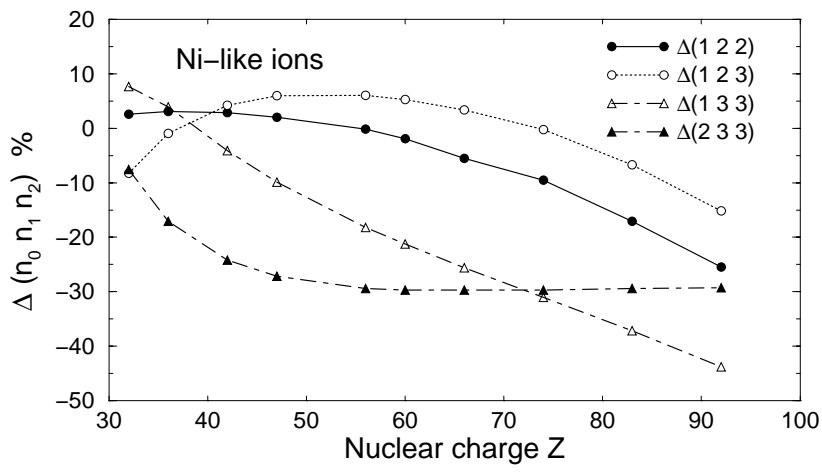


FIG. 1. Percent difference Δ between average rates from Eq. (8) and Dirac-Fock rates for Ni-like ions.

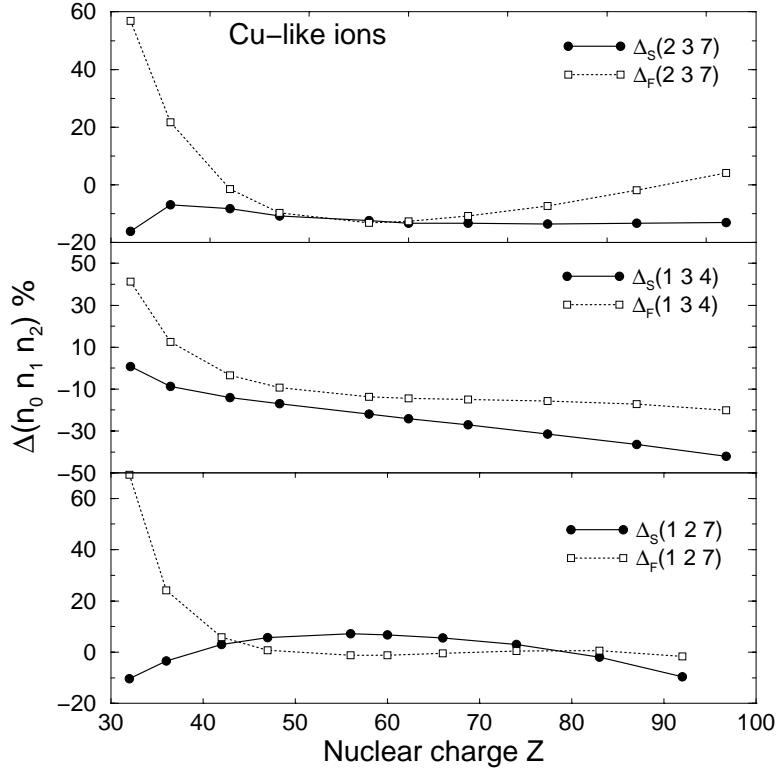


FIG. 2. Percent difference Δ_S between average rates from Eq. (8) and Dirac-Fock rates, and percent difference Δ_F between Eq. (6) and Dirac-Fock rates for Cu-like ions.

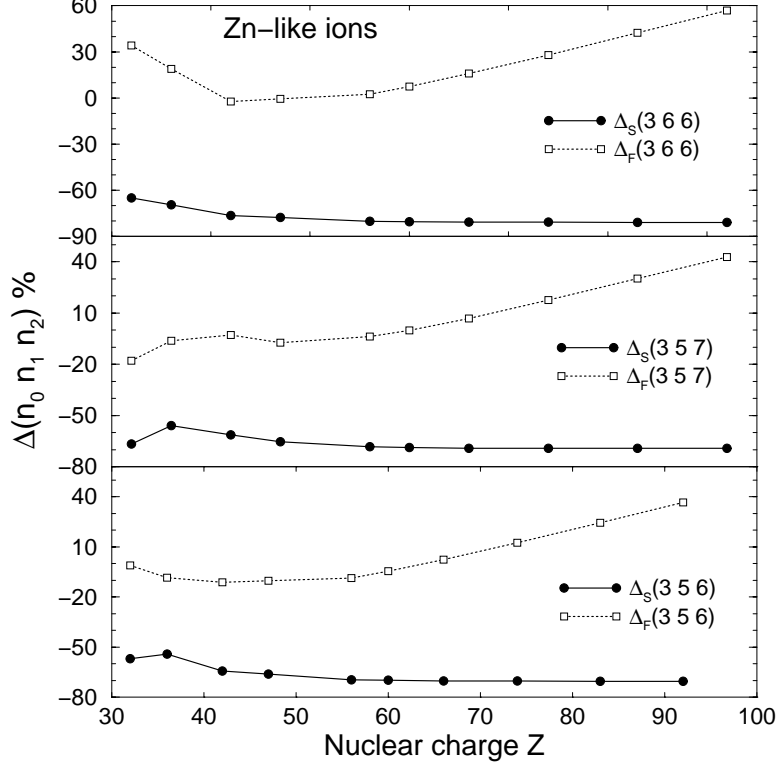


FIG. 3. Percent difference Δ_S between average rates from Eq. (8) and Dirac-Fock rates, and percent difference Δ_F between Eq. (7) and Dirac-Fock rates for Zn-like ions.

Table A: K-shell Auger rates and L₁-shell Coster-Kronig rates (in mau) for zinc, $Z=30$. The headings DF and MP are defined in the text. The heading Chen refers to data from Ref. [15].

K-shell Auger transitions				L ₁ -shell Coster-Kronig and Auger transitions					
$1s n_1 j_1 n_2 j_2$	DF	MP	MP-1s	Chen	$2s n_1 j_1 n_2 j_2$	DF	MP	MP-2s	Chen
$1s 2s_{1/2} 2s_{1/2}$	1.844	1.738	1.817	2.084	$2s 2p_{1/2} 3p_{1/2}$	8.459	9.731	17.722	17.852
$1s 2s_{1/2} 2p_{1/2}$	2.099	1.972	2.135	2.329	$2s 2p_{1/2} 3p_{3/2}$	9.385	9.684	24.848	25.612
$1s 2s_{1/2} 2p_{3/2}$	3.708	3.503	3.783	4.094	$2s 2p_{1/2} 3d_{3/2}$	17.149	28.179	17.610	20.978
$1s 2p_{1/2} 2p_{1/2}$	0.362	0.338	0.381	0.415	$2s 2p_{3/2} 3d_{3/2}$	42.619	67.213	41.941	50.604
$1s 2p_{1/2} 2p_{3/2}$	8.697	8.261	9.211	9.723	$2s 2p_{3/2} 3d_{5/2}$	55.874	93.338	60.961	71.619
$1s 2p_{3/2} 2p_{3/2}$	4.758	4.529	5.051	5.373	$2s 3s_{1/2} 3d_{5/2}$	1.789	2.964	2.523	2.881
$1s 2s_{1/2} 3s_{1/2}$	0.481	0.500	0.490	0.564	$2s 2p_{1/2} 3d_{5/2}$	26.241	47.655	28.337	34.015
$1s 2s_{1/2} 3p_{1/2}$	0.266	0.280	0.277	0.306	$2s 2p_{1/2} 4s_{1/2}$	1.284	1.775	1.894	1.618
$1s 2s_{1/2} 3p_{3/2}$	0.466	0.495	0.487	0.534	$2s 2p_{3/2} 3s_{1/2}$	0.000	34.634	42.157	40.266
$1s 2s_{1/2} 3d_{3/2}$	0.012	0.015	0.013	0.017	$2s 2p_{3/2} 3p_{1/2}$	18.610	8.953	21.018	22.132
$1s 2s_{1/2} 3d_{5/2}$	0.013	0.021	0.018	0.023	$2s 2p_{3/2} 3p_{3/2}$	39.858	23.729	45.255	47.366
$1s 2p_{1/2} 3s_{1/2}$	0.235	0.244	0.248	0.269	$2s 2p_{3/2} 4s_{1/2}$	2.270	3.194	3.371	2.897
$1s 2p_{1/2} 3p_{1/2}$	0.087	0.091	0.094	0.102	$2s 3s_{1/2} 3s_{1/2}$	0.928	1.023	0.961	0.990
$1s 2p_{1/2} 3p_{3/2}$	0.949	1.018	1.030	1.087	$2s 3s_{1/2} 3p_{1/2}$	1.688	1.838	1.735	1.804
$1s 2p_{1/2} 3d_{3/2}$	0.016	0.020	0.018	0.024	$2s 3s_{1/2} 3p_{3/2}$	3.233	3.571	3.356	3.500
$1s 2p_{1/2} 3d_{5/2}$	0.047	0.073	0.065	0.086	$2s 3s_{1/2} 3d_{3/2}$	1.493	2.018	1.727	1.960
$1s 2p_{3/2} 3s_{1/2}$	0.415	0.434	0.439	0.472	$2s 3s_{1/2} 4s_{1/2}$	0.100	0.179	0.144	0.134
$1s 2p_{3/2} 3p_{1/2}$	0.951	1.014	1.030	1.090	$2s 3p_{1/2} 3p_{1/2}$	0.026	0.035	0.026	
$1s 2p_{3/2} 3p_{3/2}$	1.051	1.131	1.145	1.222	$2s 3p_{1/2} 3p_{3/2}$	0.048	0.054	0.056	0.061
$1s 2p_{3/2} 3d_{3/2}$	0.073	0.094	0.084	0.104	$2s 3p_{1/2} 3d_{3/2}$	0.021	0.021	0.024	0.029
$1s 2p_{3/2} 3d_{5/2}$	0.057	0.090	0.080	0.105	$2s 3p_{1/2} 3d_{5/2}$	0.324	0.473	0.488	0.571
$1s 3s_{1/2} 3s_{1/2}$	0.031	0.036	0.033	0.038	$2s 3p_{1/2} 4s_{1/2}$	0.079	0.140	0.115	0.107
$1s 3s_{1/2} 3p_{1/2}$	0.030	0.035	0.032	0.035	$2s 3p_{3/2} 3p_{3/2}$	0.081	0.105	0.087	0.085
$1s 3s_{1/2} 3p_{3/2}$	0.052	0.061	0.057	0.062	$2s 3p_{3/2} 3d_{3/2}$	0.396	0.470	0.495	0.580
$1s 3s_{1/2} 3d_{3/2}$	0.001	0.002	0.001		$2s 3p_{3/2} 3d_{5/2}$	0.234	0.341	0.358	0.415
$1s 3s_{1/2} 3d_{5/2}$	0.001	0.002	0.002		$2s 3p_{3/2} 4s_{1/2}$	0.150	0.272	0.223	0.208
$1s 3p_{1/2} 3p_{1/2}$	0.005	0.006	0.006		$2s 3d_{3/2} 3d_{3/2}$	0.031	0.054	0.046	0.058
$1s 3p_{1/2} 3p_{3/2}$	0.105	0.126	0.116	0.124	$2s 3d_{3/2} 3d_{5/2}$	1.681	3.423	2.434	3.022
$1s 3p_{1/2} 3d_{3/2}$	0.001	0.002	0.002		$2s 3d_{3/2} 4s_{1/2}$	0.067	0.149	0.111	0.114
$1s 3p_{1/2} 3d_{5/2}$	0.004	0.007	0.006		$2s 3d_{5/2} 3d_{5/2}$	0.378	0.924	0.665	0.828
$1s 3p_{3/2} 3p_{3/2}$	0.058	0.071	0.065	0.070	$2s 3d_{5/2} 4s_{1/2}$	0.080	0.219	0.162	0.167
$1s 3p_{3/2} 3d_{3/2}$	0.007	0.010	0.008	0.010	$2s 4s_{1/2} 4s_{1/2}$	0.003		0.005	0.005
$1s 3p_{3/2} 3d_{5/2}$	0.005	0.009	0.007	0.010					
$1s 3d_{3/2} 3d_{3/2}$	0.000	0.000	0.000						
$1s 3d_{3/2} 3d_{5/2}$	0.000	0.001	0.000						
$1s 3d_{5/2} 3d_{5/2}$	0.000	0.000	0.000						

Table B: Average Auger Rates $A(n_0, n_1, n_2)$ in mau for Ni-like ions

Z	Dirac-Fock potential				Model potential			
	A(1 2 2)	A(1 2 3)	A(1 3 3)	A(2 3 3)	A(1 2 2)	A(1 2 3)	A(1 3 3)	A(2 3 3)
32	7.93[-1]	3.87[-2]	2.24[-3]	1.50[-1]	7.60[-1]	3.74[-2]	2.18[-3]	1.34[-1]
36	8.41[-1]	4.62[-2]	2.98[-3]	2.11[-1]	8.13[-1]	4.39[-2]	2.79[-3]	1.91[-1]
42	9.06[-1]	5.70[-2]	4.17[-3]	2.92[-1]	8.82[-1]	5.42[-2]	3.88[-3]	2.69[-1]
47	9.56[-1]	6.52[-2]	5.15[-3]	3.47[-1]	9.34[-1]	6.22[-2]	4.81[-3]	3.25[-1]
56	1.04[+0]	7.86[-2]	6.83[-3]	4.25[-1]	1.02[+0]	7.57[-2]	6.45[-3]	4.04[-1]
60	1.08[+0]	8.43[-2]	7.55[-3]	4.52[-1]	1.06[+0]	8.14[-2]	7.16[-3]	4.32[-1]
66	1.14[+0]	9.26[-2]	8.62[-3]	4.87[-1]	1.13[+0]	8.95[-2]	8.22[-3]	4.68[-1]
74	1.24[+0]	1.04[-1]	1.01[-2]	5.24[-1]	1.22[+0]	1.01[-1]	9.67[-3]	5.06[-1]
83	1.38[+0]	1.19[-1]	1.18[-2]	5.57[-1]	1.36[+0]	1.16[-1]	1.15[-2]	5.41[-1]
92	1.57[+0]	1.38[-1]	1.40[-2]	5.85[-1]	1.55[+0]	1.35[-1]	1.36[-2]	5.71[-1]

Table C: Average Auger Rates $A(n_0, n_1, n_2)$ in mau for Cu-like ions

Z	Dirac-Fock potential				Model potential			
	A(1 2 4)	A(1 2 5)	A(1 2 6)	A(1 2 7)	A(1 2 4)	A(1 2 5)	A(1 2 6)	A(1 2 7)
32	1.61[-3]	3.49[-4]	1.23[-4]	5.06[-5]	1.88[-3]	4.16[-4]	1.35[-4]	5.46[-5]
36	3.65[-3]	9.09[-4]	3.27[-4]	1.38[-4]	4.03[-3]	1.01[-3]	3.51[-4]	1.47[-4]
42	6.59[-3]	1.79[-3]	6.56[-4]	2.83[-4]	7.03[-3]	1.91[-3]	6.92[-4]	2.99[-4]
47	8.83[-3]	2.49[-3]	9.18[-4]	4.04[-4]	9.28[-3]	2.62[-3]	9.66[-4]	4.22[-4]
56	1.25[-2]	3.64[-3]	1.37[-3]	6.08[-4]	1.29[-2]	3.77[-3]	1.42[-3]	6.30[-4]
60	1.40[-2]	4.12[-3]	1.56[-3]	6.93[-4]	1.44[-2]	4.25[-3]	1.61[-3]	7.16[-4]
66	1.61[-2]	4.81[-3]	1.83[-3]	8.17[-4]	1.65[-2]	4.94[-3]	1.88[-3]	8.41[-4]
74	1.90[-2]	5.73[-3]	2.19[-3]	9.81[-4]	1.94[-2]	5.86[-3]	2.24[-3]	1.01[-3]
83	2.24[-2]	6.81[-3]	2.61[-3]	1.17[-3]	2.28[-2]	6.94[-3]	2.67[-3]	1.20[-3]
92	2.65[-2]	8.08[-3]	3.10[-3]	1.39[-3]	2.69[-2]	8.22[-3]	3.16[-3]	1.42[-3]
Z	Dirac-Fock potential				Model potential			
	A(1 3 4)	A(1 3 5)	A(1 3 6)	A(1 3 7)	A(1 3 4)	A(1 3 5)	A(1 3 6)	A(1 3 7)
32	8.84[-5]	1.91[-5]	6.58[-6]	2.69[-6]	1.04[-4]	2.28[-5]	7.41[-6]	2.98[-6]
36	2.22[-4]	5.52[-5]	1.93[-5]	8.07[-6]	2.41[-4]	6.04[-5]	2.09[-5]	8.77[-6]
42	4.53[-4]	1.23[-4]	4.38[-5]	1.87[-5]	4.73[-4]	1.28[-4]	4.63[-5]	2.00[-5]
47	6.55[-4]	1.84[-4]	6.76[-5]	2.88[-5]	6.73[-4]	1.89[-4]	6.95[-5]	3.04[-5]
56	1.01[-3]	2.95[-4]	1.09[-4]	4.76[-5]	1.03[-3]	3.00[-4]	1.12[-4]	4.98[-5]
60	1.17[-3]	3.43[-4]	1.27[-4]	5.61[-5]	1.18[-3]	3.48[-4]	1.31[-4]	5.84[-5]
66	1.40[-3]	4.16[-4]	1.55[-4]	6.87[-5]	1.41[-3]	4.21[-4]	1.60[-4]	7.12[-5]
74	1.71[-3]	5.12[-4]	1.93[-4]	8.57[-5]	1.72[-3]	5.18[-4]	1.98[-4]	8.85[-5]
83	2.08[-3]	6.27[-4]	2.37[-4]	1.06[-4]	2.09[-3]	6.33[-4]	2.43[-4]	1.09[-4]
92	2.50[-3]	7.58[-4]	2.87[-4]	1.28[-4]	2.52[-3]	7.66[-4]	2.94[-4]	1.32[-4]
Z	Dirac-Fock potential				Model potential			
	A(2 3 4)	A(2 3 5)	A(2 3 6)	A(2 3 7)	A(2 3 4)	A(2 3 5)	A(2 3 6)	A(2 3 7)
32	4.32[-3]	1.06[-3]	4.76[-4]	2.12[-4]	5.96[-3]	1.45[-3]	4.96[-4]	2.07[-4]
36	1.26[-2]	3.35[-3]	1.29[-3]	5.47[-4]	1.47[-2]	3.83[-3]	1.36[-3]	5.86[-4]
42	2.64[-2]	7.41[-3]	2.76[-3]	1.19[-3]	2.84[-2]	7.85[-3]	2.89[-3]	1.26[-3]
47	3.75[-2]	1.08[-2]	4.05[-3]	1.75[-3]	3.92[-2]	1.12[-2]	4.18[-3]	1.85[-3]
56	5.48[-2]	1.62[-2]	6.11[-3]	2.68[-3]	5.61[-2]	1.65[-2]	6.30[-3]	2.82[-3]
60	6.13[-2]	1.82[-2]	6.92[-3]	3.06[-3]	6.25[-2]	1.86[-2]	7.12[-3]	3.20[-3]
66	6.99[-2]	2.10[-2]	8.01[-3]	3.55[-3]	7.09[-2]	2.13[-2]	8.22[-3]	3.71[-3]
74	7.94[-2]	2.40[-2]	9.25[-3]	4.13[-3]	8.03[-2]	2.44[-2]	9.46[-3]	4.29[-3]
83	8.81[-2]	2.69[-2]	1.04[-2]	4.67[-3]	8.90[-2]	2.73[-2]	1.06[-2]	4.82[-3]
92	9.54[-2]	2.93[-2]	1.14[-2]	5.12[-3]	9.63[-2]	2.97[-2]	1.16[-2]	5.27[-3]

Table D: Average Coster-Kronig Rates $A(n_0, n_0, n_2)$ (in mau) for Cu-like ions, calculated using Model Potential method

Z	$n_0=2$				$n_0=3$			
	$A(2\ 2\ 4)$	$A(2\ 2\ 5)$	$A(2\ 2\ 6)$	$A(2\ 2\ 7)$	$A(3\ 3\ 4)$	$A(3\ 3\ 5)$	$A(3\ 3\ 6)$	$A(3\ 3\ 7)$
32	2.92[-2]	7.66[-3]	2.59[-3]	1.08[-3]	8.36[-2]	1.74[-2]	5.71[-3]	2.41[-3]
36	4.96[-2]	1.51[-2]	5.99[-3]	2.60[-3]	1.22[-1]	5.04[-2]	1.94[-2]	8.71[-3]
42	7.12[-2]	2.61[-2]	1.21[-2]	5.47[-3]	9.34[-3]	5.10[-2]	4.01[-2]	1.98[-2]
47	4.92[-2]	3.50[-2]	1.61[-2]	7.75[-3]	4.27[-3]	2.39[-2]	3.51[-2]	2.58[-2]
56	4.15[-2]	3.47[-2]	2.16[-2]	1.09[-2]	0.00[+0]	3.61[-3]	1.40[-2]	2.16[-2]
60	0.00[+0]	3.39[-2]	1.79[-2]	1.23[-2]	0.00[+0]	0.00[+0]	3.27[-3]	2.02[-2]
66	0.00[+0]	4.27[-2]	1.96[-2]	1.19[-2]	0.00[+0]	0.00[+0]	3.44[-3]	9.27[-3]
74	0.00[+0]	5.56[-2]	2.15[-2]	9.67[-3]	0.00[+0]	0.00[+0]	3.16[-3]	9.54[-3]
83	0.00[+0]	5.33[-2]	2.18[-2]	1.00[-2]	0.00[+0]	0.00[+0]	3.29[-3]	9.78[-3]
92	0.00[+0]	5.47[-2]	2.18[-2]	9.96[-3]	0.00[+0]	0.00[+0]	4.09[-3]	1.95[-2]

Table E: Average Auger Rates $A(n_0, n_1, n_2)$ in mau for Zn-like ions. Dirac-Fock potential

Z	$A(1\ 4\ 4)$	$A(1\ 4\ 5)$	$A(1\ 4\ 6)$	$A(1\ 4\ 7)$	$A(1\ 5\ 5)$	$A(1\ 5\ 6)$	$A(1\ 5\ 7)$	$A(1\ 6\ 6)$	$A(1\ 6\ 7)$	$A(1\ 7\ 7)$
32	3.84[-6]	8.02[-7]	3.05[-7]	1.28[-7]	1.76[-7]	6.64[-8]	2.77[-8]	2.18[-8]	8.99[-9]	3.66[-9]
36	1.81[-5]	4.36[-6]	1.64[-6]	6.97[-7]	1.10[-6]	4.08[-7]	1.73[-7]	1.43[-7]	5.97[-8]	2.53[-8]
42	5.39[-5]	1.41[-5]	5.33[-6]	2.30[-6]	3.89[-6]	1.44[-6]	6.20[-7]	5.26[-7]	2.24[-7]	9.74[-8]
47	9.09[-5]	2.47[-5]	9.07[-6]	4.08[-6]	7.05[-6]	2.54[-6]	1.14[-6]	9.48[-7]	4.19[-7]	1.85[-7]
56	1.64[-4]	4.61[-5]	1.76[-5]	7.76[-6]	1.37[-5]	5.10[-6]	2.25[-6]	1.94[-6]	8.44[-7]	3.77[-7]
60	1.97[-4]	5.60[-5]	2.14[-5]	9.49[-6]	1.68[-5]	6.28[-6]	2.78[-6]	2.40[-6]	1.05[-6]	4.70[-7]
66	2.47[-4]	7.11[-5]	2.73[-5]	1.21[-5]	2.15[-5]	8.08[-6]	3.59[-6]	3.11[-6]	1.36[-6]	6.13[-7]
74	3.16[-4]	9.16[-5]	3.52[-5]	1.57[-5]	2.80[-5]	1.05[-5]	4.70[-6]	4.08[-6]	1.79[-6]	8.09[-7]
83	3.97[-4]	1.16[-4]	4.46[-5]	1.99[-5]	3.56[-5]	1.34[-5]	6.01[-6]	5.21[-6]	2.30[-6]	1.04[-6]
92	4.89[-4]	1.43[-4]	5.51[-5]	2.46[-5]	4.41[-5]	1.66[-5]	7.43[-6]	6.46[-6]	2.85[-6]	1.29[-6]
Z	$A(2\ 4\ 4)$	$A(2\ 4\ 5)$	$A(2\ 4\ 6)$	$A(2\ 4\ 7)$	$A(2\ 5\ 5)$	$A(2\ 5\ 6)$	$A(2\ 5\ 7)$	$A(2\ 6\ 6)$	$A(2\ 6\ 7)$	$A(2\ 7\ 7)$
32	1.39[-4]	3.25[-5]	2.01[-5]	1.01[-5]	8.08[-6]	4.89[-6]	2.44[-6]	1.70[-6]	8.38[-7]	3.56[-7]
36	8.19[-4]	2.10[-4]	9.23[-5]	4.12[-5]	5.68[-5]	2.42[-5]	1.07[-5]	8.76[-6]	3.80[-6]	1.64[-6]
42	2.57[-3]	6.93[-4]	2.77[-4]	1.20[-4]	1.96[-4]	7.57[-5]	3.30[-5]	2.81[-5]	1.21[-5]	5.35[-6]
47	4.29[-3]	1.18[-3]	4.39[-4]	2.01[-4]	3.39[-4]	1.23[-4]	5.60[-5]	4.65[-5]	2.07[-5]	9.21[-6]
56	7.28[-3]	2.04[-3]	7.86[-4]	3.45[-4]	5.95[-4]	2.24[-4]	9.81[-5]	8.49[-5]	3.67[-5]	1.65[-5]
60	8.49[-3]	2.38[-3]	9.19[-4]	4.05[-4]	6.99[-4]	2.63[-4]	1.16[-4]	1.00[-4]	4.34[-5]	1.95[-5]
66	1.01[-2]	2.86[-3]	1.10[-3]	4.87[-4]	8.41[-4]	3.16[-4]	1.40[-4]	1.21[-4]	5.26[-5]	2.37[-5]
74	1.20[-2]	3.40[-3]	1.31[-3]	5.84[-4]	1.00[-3]	3.78[-4]	1.68[-4]	1.45[-4]	6.32[-5]	2.85[-5]
83	1.37[-2]	3.92[-3]	1.51[-3]	6.75[-4]	1.16[-3]	4.37[-4]	1.94[-4]	1.67[-4]	7.34[-5]	3.31[-5]
92	1.52[-2]	4.35[-3]	1.68[-3]	7.52[-4]	1.29[-3]	4.86[-4]	2.16[-4]	1.87[-4]	8.21[-5]	3.70[-5]
Z	$A(3\ 4\ 4)$	$A(3\ 4\ 5)$	$A(3\ 4\ 6)$	$A(3\ 4\ 7)$	$A(3\ 5\ 5)$	$A(3\ 5\ 6)$	$A(3\ 5\ 7)$	$A(3\ 6\ 6)$	$A(3\ 6\ 7)$	$A(3\ 7\ 7)$
32	1.63[-2]	3.16[-3]	2.37[-3]	1.29[-3]	6.34[-4]	4.27[-4]	2.43[-4]	1.30[-4]	7.56[-5]	3.44[-5]
36	3.94[-2]	9.14[-3]	4.23[-3]	2.21[-3]	2.17[-3]	9.31[-4]	4.39[-4]	3.41[-4]	1.45[-4]	5.95[-5]
42	8.58[-2]	2.17[-2]	8.78[-3]	4.15[-3]	5.53[-3]	2.11[-3]	8.91[-4]	7.70[-4]	3.22[-4]	1.43[-4]
47	1.24[-1]	3.25[-2]	1.21[-2]	5.85[-3]	8.14[-3]	2.89[-3]	1.30[-3]	1.05[-3]	4.65[-4]	2.06[-4]
56	1.83[-1]	4.85[-2]	1.89[-2]	8.51[-3]	1.17[-2]	4.26[-3]	1.87[-3]	1.52[-3]	6.53[-4]	2.86[-4]
60	1.91[-1]	5.42[-2]	2.12[-2]	9.45[-3]	1.29[-2]	4.68[-3]	2.07[-3]	1.67[-3]	7.15[-4]	3.12[-4]
66	2.26[-1]	6.19[-2]	2.41[-2]	1.08[-2]	1.44[-2]	5.21[-3]	2.31[-3]	1.85[-3]	7.92[-4]	3.44[-4]
74	2.30[-1]	7.01[-2]	2.73[-2]	1.24[-2]	1.60[-2]	5.77[-3]	2.55[-3]	2.03[-3]	8.71[-4]	3.79[-4]
83	2.22[-1]	7.74[-2]	3.02[-2]	1.38[-2]	1.74[-2]	6.25[-3]	2.76[-3]	2.20[-3]	9.37[-4]	4.08[-4]
92	2.02[-1]	8.23[-2]	3.25[-2]	1.50[-2]	1.86[-2]	6.64[-3]	2.94[-3]	2.33[-3]	1.25[-3]	4.31[-4]

Table F: Average Auger Rates $A(n_0, n_1, n_2)$ in mau for Zn-like ions. Model potential

Z	A(1 4 4)	A(1 4 5)	A(1 4 6)	A(1 4 7)	A(1 5 5)	A(1 5 6)	A(1 5 7)	A(1 6 6)	A(1 6 7)	A(1 7 7)
32	5.42[-6]	1.15[-6]	3.74[-7]	1.50[-7]	2.59[-7]	8.21[-8]	3.31[-8]	2.70[-8]	1.07[-8]	4.36[-9]
36	2.28[-5]	5.53[-6]	1.91[-6]	8.01[-7]	1.41[-6]	4.78[-7]	2.01[-7]	1.68[-7]	6.94[-8]	2.94[-8]
42	6.30[-5]	1.65[-5]	5.97[-6]	2.57[-6]	4.57[-6]	1.62[-6]	6.97[-7]	5.92[-7]	2.52[-7]	1.09[-7]
47	1.03[-4]	2.80[-5]	1.03[-5]	4.49[-6]	8.00[-6]	2.88[-6]	1.26[-6]	1.08[-6]	4.63[-7]	2.04[-7]
56	1.79[-4]	5.05[-5]	1.89[-5]	8.37[-6]	1.50[-5]	5.51[-6]	2.43[-6]	2.09[-6]	9.13[-7]	4.08[-7]
60	2.14[-4]	6.08[-5]	2.29[-5]	1.02[-5]	1.82[-5]	6.73[-6]	2.99[-6]	2.57[-6]	1.13[-6]	5.05[-7]
66	2.65[-4]	7.63[-5]	2.90[-5]	1.29[-5]	2.31[-5]	8.60[-6]	3.83[-6]	3.31[-6]	1.45[-6]	6.54[-7]
74	3.35[-4]	9.73[-5]	3.71[-5]	1.66[-5]	2.98[-5]	1.11[-5]	4.97[-6]	4.31[-6]	1.90[-6]	8.57[-7]
83	4.17[-4]	1.22[-4]	4.67[-5]	2.09[-5]	3.76[-5]	1.41[-5]	6.31[-6]	5.47[-6]	2.40[-6]	1.09[-6]
92	5.10[-4]	1.50[-4]	5.74[-5]	2.57[-5]	4.62[-5]	1.74[-5]	7.77[-6]	6.74[-6]	2.95[-6]	1.35[-6]
Z	A(2 4 4)	A(2 4 5)	A(2 4 6)	A(2 4 7)	A(2 5 5)	A(2 5 6)	A(2 5 7)	A(2 6 6)	A(2 6 7)	A(2 7 7)
32	2.88[-4]	6.75[-5]	2.31[-5]	9.68[-6]	1.68[-5]	5.65[-6]	2.36[-6]	1.97[-6]	8.12[-7]	3.44[-7]
36	1.23[-3]	3.10[-4]	1.10[-4]	4.72[-5]	8.24[-5]	2.88[-5]	1.23[-5]	1.04[-5]	4.38[-6]	1.89[-6]
42	3.23[-3]	8.58[-4]	3.15[-4]	1.38[-4]	2.39[-4]	8.59[-5]	3.75[-5]	3.19[-5]	1.37[-5]	6.03[-6]
47	5.04[-3]	1.37[-3]	5.10[-4]	2.24[-4]	3.90[-4]	1.42[-4]	6.25[-5]	5.33[-5]	2.31[-5]	1.03[-5]
56	8.08[-3]	2.25[-3]	8.49[-4]	3.78[-4]	6.55[-4]	2.41[-4]	1.07[-4]	9.15[-5]	4.00[-5]	1.79[-5]
60	9.28[-3]	2.60[-3]	9.86[-4]	4.40[-4]	7.62[-4]	2.81[-4]	1.25[-4]	1.07[-4]	4.69[-5]	2.10[-5]
66	1.09[-2]	3.08[-3]	1.17[-3]	5.24[-4]	9.06[-4]	3.35[-4]	1.49[-4]	1.28[-4]	5.62[-5]	2.52[-5]
74	1.28[-2]	3.63[-3]	1.38[-3]	6.20[-4]	1.07[-3]	3.98[-4]	1.78[-4]	1.52[-4]	6.70[-5]	3.01[-5]
83	1.45[-2]	4.14[-3]	1.58[-3]	7.11[-4]	1.23[-3]	4.56[-4]	2.04[-4]	1.75[-4]	7.70[-5]	3.47[-5]
92	1.60[-2]	4.57[-3]	1.75[-3]	7.88[-4]	1.36[-3]	5.05[-4]	2.26[-4]	1.94[-4]	8.53[-5]	3.85[-5]
Z	A(3 4 4)	A(3 4 5)	A(3 4 6)	A(3 4 7)	A(3 5 5)	A(3 5 6)	A(3 5 7)	A(3 6 6)	A(3 6 7)	A(3 7 7)
32	4.12[-2]	1.30[-2]	4.53[-3]	1.93[-3]	2.23[-3]	7.08[-4]	2.94[-4]	2.27[-4]	9.23[-5]	3.83[-5]
36	5.96[-2]	1.83[-2]	6.65[-3]	2.88[-3]	3.85[-3]	1.31[-3]	5.59[-4]	4.60[-4]	1.94[-4]	8.38[-5]
42	9.93[-2]	3.02[-2]	1.13[-2]	5.04[-3]	7.18[-3]	2.54[-3]	1.12[-3]	9.13[-4]	3.94[-4]	1.72[-4]
47	1.36[-1]	4.07[-2]	1.54[-2]	6.94[-3]	9.85[-3]	3.49[-3]	1.54[-3]	1.26[-3]	5.38[-4]	2.34[-4]
56	1.31[-1]	5.67[-2]	2.15[-2]	9.73[-3]	1.35[-2]	4.76[-3]	2.10[-3]	1.69[-3]	7.23[-4]	3.13[-4]
60	2.12[-1]	6.20[-2]	2.37[-2]	1.08[-2]	1.47[-2]	5.17[-3]	2.28[-3]	1.83[-3]	7.83[-4]	3.39[-4]
66	1.95[-1]	6.92[-2]	2.66[-2]	1.21[-2]	1.61[-2]	5.68[-3]	2.50[-3]	2.00[-3]	8.55[-4]	3.70[-4]
74	1.84[-1]	7.69[-2]	2.97[-2]	1.35[-2]	1.76[-2]	6.20[-3]	2.73[-3]	2.18[-3]	9.26[-4]	4.00[-4]
83	1.55[-1]	8.17[-2]	3.24[-2]	1.49[-2]	1.89[-2]	6.65[-3]	2.93[-3]	2.33[-3]	9.89[-4]	4.26[-4]
92	1.09[-1]	9.05[-2]	3.46[-2]	1.60[-2]	2.00[-2]	7.01[-3]	3.08[-3]	2.44[-3]	1.04[-3]	4.48[-4]

Table G: Average Auger Rates $A(n_0, n_1, n_2)$ in mau for for Ni-, Cu-, and Zn-like Ag, calculated by Dirac-Fock (DF) and screend-hydrogenic (SC) functions.

n_0	n_1	n_2	DF	SC	n_0	n_1	n_2	DF	SC
Ni-like Ag									
1	2	2	9.56[-1]	6.98[-1]	1	3	3	5.15[-3]	2.63[-3]
1	2	3	6.52[-2]	3.70[-2]	2	3	3	3.47[-1]	1.32[-1]
Cu-like Ag									
1	2	4	8.83[-3]	5.79[-3]	1	3	6	6.76[-5]	4.74[-5]
1	2	5	2.49[-3]	1.66[-3]	1	3	7	2.88[-5]	2.17[-5]
1	2	6	9.18[-4]	6.68[-4]	2	3	4	3.75[-2]	2.06[-2]
1	2	7	4.04[-4]	3.06[-4]	2	3	5	1.08[-2]	5.90[-3]
1	3	4	6.55[-4]	4.11[-4]	2	3	6	4.05[-3]	2.38[-3]
1	3	5	1.84[-4]	1.18[-4]	2	3	7	1.75[-3]	1.09[-3]
Zn-like Ag									
1	4	4	9.09[-5]	8.29[-5]	2	5	6	1.23[-4]	5.08[-5]
1	4	5	2.47[-5]	2.37[-5]	2	5	7	5.60[-5]	2.33[-5]
1	4	6	9.07[-6]	9.56[-6]	2	6	6	4.65[-5]	2.03[-5]
1	4	7	4.08[-6]	4.38[-6]	2	6	7	2.07[-5]	9.32[-6]
1	5	5	7.05[-6]	7.23[-6]	2	7	7	9.21[-6]	3.88[-6]
1	5	6	2.54[-6]	2.92[-6]	3	4	4	1.24[-1]	1.12[-1]
1	5	7	1.14[-6]	1.34[-6]	3	4	5	3.25[-2]	3.19[-2]
1	6	6	9.48[-7]	1.44[-6]	3	4	6	1.21[-2]	1.29[-2]
1	6	7	4.19[-7]	6.58[-7]	3	4	7	5.85[-3]	5.91[-3]
1	7	7	1.85[-7]	2.97[-7]	3	5	5	8.14[-3]	2.89[-3]
2	4	4	4.29[-3]	1.90[-3]	3	5	6	2.89[-3]	1.17[-3]
2	4	5	1.18[-3]	5.45[-4]	3	5	7	1.30[-3]	5.35[-4]
2	4	6	4.39[-4]	2.20[-4]	3	6	6	1.05[-3]	3.23[-4]
2	4	7	2.01[-4]	1.01[-4]	3	6	7	4.65[-4]	1.48[-4]
2	5	5	3.39[-4]	1.26[-4]	3	7	7	2.06[-4]	5.08[-5]

TABLE I. K -shell Auger rates $A(n_0j_0l_0, n_1j_1l_1, n_2j_2l_2)$ (in mau) as function of Z for Ni-, Cu-, and Zn-like ions.

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
Ni-like ions										
$1s2s2s$	1.82[0]	1.97[0]	2.21[0]	2.44[0]	2.91[0]	3.16[0]	3.15[0]	4.34[0]	5.51[0]	7.24[0]
$1s2s2p^*$	2.08[0]	2.30[0]	2.65[0]	2.97[0]	3.67[0]	4.06[0]	4.06[0]	5.99[0]	8.05[0]	1.13[1]
$1s2s2p$	3.64[0]	3.88[0]	4.18[0]	4.40[0]	4.78[0]	4.94[0]	4.94[0]	5.49[0]	5.86[0]	6.27[0]
$1s2p^*2p^*$	3.58[-1]	3.89[-1]	4.30[-1]	4.61[-1]	5.15[-1]	5.39[-1]	5.39[-1]	6.23[-1]	6.82[-1]	7.44[-1]
$1s2p^*2p$	8.67[0]	9.27[0]	1.00[1]	1.05[1]	1.13[1]	1.17[1]	1.17[1]	1.26[1]	1.32[1]	1.36[1]
$1s2p2p$	4.72[0]	4.97[0]	5.22[0]	5.35[0]	5.43[0]	5.41[0]	5.41[0]	5.14[0]	4.81[0]	4.36[0]
$1s2s3s$	4.97[-1]	5.70[-1]	6.99[-1]	8.17[-1]	1.06[0]	1.18[0]	1.18[0]	1.74[0]	2.28[0]	3.05[0]
$1s2s3p^*$	2.77[-1]	3.34[-1]	4.35[-1]	5.28[-1]	7.27[-1]	8.33[-1]	8.33[-1]	1.35[0]	1.89[0]	2.72[0]
$1s2s3p$	4.79[-1]	5.58[-1]	6.84[-1]	7.84[-1]	9.53[-1]	1.02[0]	1.02[0]	1.27[0]	1.44[0]	1.61[0]
$1s2s3d^*$	1.34[-2]	2.12[-2]	3.32[-2]	4.34[-2]	6.18[-2]	7.02[-2]	7.02[-2]	1.01[-1]	1.22[-1]	1.44[-1]
$1s2s3d$	1.84[-2]	2.85[-2]	4.30[-2]	5.41[-2]	7.15[-2]	7.80[-2]	7.80[-2]	9.57[-2]	1.03[-1]	1.07[-1]
$1s2p^*3s$	2.45[-1]	2.84[-1]	3.54[-1]	4.18[-1]	5.55[-1]	6.28[-1]	6.28[-1]	9.80[-1]	1.34[0]	1.91[0]
$1s2p^*3p^*$	9.05[-2]	1.07[-1]	1.33[-1]	1.54[-1]	1.90[-1]	2.05[-1]	2.05[-1]	2.58[-1]	2.92[-1]	3.28[-1]
$1s2p^*3p$	9.93[-1]	1.16[0]	1.41[0]	1.60[0]	1.92[0]	2.05[0]	2.05[0]	2.46[0]	2.71[0]	2.95[0]
$1s2p^*3d^*$	1.84[-2]	2.89[-2]	4.47[-2]	5.76[-2]	7.93[-2]	8.83[-2]	8.83[-2]	1.17[-1]	1.34[-1]	1.49[-1]
$1s2p^*3d$	6.60[-2]	1.02[-1]	1.53[-1]	1.91[-1]	2.46[-1]	2.64[-1]	2.64[-1]	3.06[-1]	3.13[-1]	3.07[-1]
$1s2p3s$	4.27[-1]	4.78[-1]	5.57[-1]	6.19[-1]	7.18[-1]	7.58[-1]	7.58[-1]	8.84[-1]	9.56[-1]	1.02[0]
$1s2p3p^*$	9.92[-1]	1.15[0]	1.39[0]	1.57[0]	1.84[0]	1.95[0]	1.95[0]	2.26[0]	2.41[0]	2.52[0]
$1s2p3p$	1.10[0]	1.26[0]	1.49[0]	1.65[0]	1.86[0]	1.93[0]	1.93[0]	2.03[0]	2.00[0]	1.91[0]
$1s2p3d^*$	8.50[-2]	1.32[-1]	1.99[-1]	2.51[-1]	3.30[-1]	3.60[-1]	3.60[-1]	4.33[-1]	4.57[-1]	4.62[-1]
$1s2p3d$	8.09[-2]	1.24[-1]	1.84[-1]	2.26[-1]	2.84[-1]	3.01[-1]	3.01[-1]	3.28[-1]	3.20[-1]	2.95[-1]
$1s3s3s$	3.36[-2]	4.07[-2]	5.44[-2]	6.74[-2]	9.45[-2]	1.08[-1]	1.08[-1]	1.71[-1]	2.30[-1]	3.14[-1]
$1s3s3p^*$	3.27[-2]	4.15[-2]	5.84[-2]	7.50[-2]	1.11[-1]	1.30[-1]	1.30[-1]	2.24[-1]	3.20[-1]	4.69[-1]
$1s3s3p$	5.65[-2]	6.91[-2]	9.15[-2]	1.11[-1]	1.44[-1]	1.58[-1]	1.58[-1]	2.06[-1]	2.35[-1]	2.65[-1]
$1s3s3d^*$	1.45[-3]	2.39[-3]	4.03[-3]	5.54[-3]	8.42[-3]	9.74[-3]	9.74[-3]	1.46[-2]	1.78[-2]	2.11[-2]
$1s3s3d$	1.98[-3]	3.20[-3]	5.20[-3]	6.87[-3]	9.63[-3]	1.07[-2]	1.07[-2]	1.36[-2]	1.47[-2]	1.53[-2]
$1s3p^*3p^*$	5.46[-3]	7.00[-3]	9.75[-3]	1.21[-2]	1.65[-2]	1.84[-2]	1.84[-2]	2.50[-2]	2.93[-2]	3.38[-2]
$1s3p^*3p$	1.14[-1]	1.44[-1]	1.96[-1]	2.40[-1]	3.14[-1]	3.45[-1]	3.45[-1]	4.45[-1]	5.03[-1]	5.57[-1]
$1s3p^*3d^*$	1.65[-3]	2.77[-3]	4.72[-3]	6.45[-3]	9.58[-3]	1.09[-2]	1.09[-2]	1.54[-2]	1.79[-2]	2.02[-2]
$1s3p^*3d$	6.21[-3]	1.03[-2]	1.69[-2]	2.24[-2]	3.08[-2]	3.39[-2]	3.39[-2]	4.05[-2]	4.15[-2]	4.02[-2]
$1s3p3p$	6.36[-2]	7.93[-2]	1.06[-1]	1.27[-1]	1.60[-1]	1.71[-1]	1.71[-1]	2.00[-1]	2.08[-1]	2.08[-1]
$1s3p3d^*$	8.08[-3]	1.35[-2]	2.29[-2]	3.10[-2]	4.52[-2]	5.10[-2]	5.10[-2]	6.82[-2]	7.64[-2]	8.17[-2]
$1s3p3d$	7.53[-3]	1.24[-2]	2.05[-2]	2.70[-2]	3.73[-2]	4.09[-2]	4.09[-2]	4.89[-2]	5.01[-2]	4.86[-2]
Cu-like ions										
$1s2s4s$	5.09[-2]	9.64[-2]	1.62[-1]	2.16[-1]	3.16[-1]	3.64[-1]	4.45[-1]	5.75[-1]	7.68[-1]	1.04[0]
$1s2s4p^*$	2.36[-2]	5.36[-2]	9.97[-2]	1.39[-1]	2.19[-1]	2.60[-1]	3.32[-1]	4.54[-1]	6.50[-1]	9.52[-1]
$1s2s4p$	4.17[-2]	9.16[-2]	1.60[-1]	2.12[-1]	2.95[-1]	3.29[-1]	3.79[-1]	4.45[-1]	5.21[-1]	6.01[-1]
$1s2p^*4s$	2.46[-2]	4.70[-2]	7.98[-2]	1.07[-1]	1.59[-1]	1.85[-1]	2.31[-1]	3.07[-1]	4.29[-1]	6.16[-1]
$1s2p^*4p$	8.54[-2]	1.86[-1]	3.22[-1]	4.21[-1]	5.74[-1]	6.35[-1]	7.20[-1]	8.27[-1]	9.41[-1]	1.05[0]
$1s2p^*4d$	6.31[-3]	1.78[-2]	3.88[-2]	5.70[-2]	8.69[-2]	9.82[-2]	1.13[-1]	1.27[-1]	1.37[-1]	1.40[-1]
$1s2p4s$	4.30[-2]	7.89[-2]	1.26[-1]	1.58[-1]	2.06[-1]	2.24[-1]	2.48[-1]	2.76[-1]	3.04[-1]	3.28[-1]
$1s2p4p^*$	8.35[-2]	1.81[-1]	3.10[-1]	4.00[-1]	5.33[-1]	5.82[-1]	6.47[-1]	7.20[-1]	7.83[-1]	8.28[-1]
$1s2p4p$	9.44[-2]	2.03[-1]	3.42[-1]	4.35[-1]	5.60[-1]	6.01[-1]	6.48[-1]	6.86[-1]	7.00[-1]	6.84[-1]
$1s2p4d^*$	7.97[-3]	2.27[-2]	5.01[-2]	7.43[-2]	1.15[-1]	1.32[-1]	1.54[-1]	1.77[-1]	1.96[-1]	2.05[-1]
$1s2p4d$	7.73[-3]	2.16[-2]	4.67[-2]	6.78[-2]	1.01[-1]	1.12[-1]	1.26[-1]	1.37[-1]	1.40[-1]	1.35[-1]
$1s3s4s$	6.87[-3]	1.37[-2]	2.52[-2]	3.56[-2]	5.63[-2]	6.66[-2]	8.41[-2]	1.12[-1]	1.54[-1]	2.13[-1]
$1s3s4p^*$	2.79[-3]	6.66[-3]	1.34[-2]	1.98[-2]	3.35[-2]	4.07[-2]	5.35[-2]	7.54[-2]	1.10[-1]	1.64[-1]
$1s3p^*4s$	3.29[-3]	6.85[-3]	1.32[-2]	1.92[-2]	3.19[-2]	3.85[-2]	5.02[-2]	7.02[-2]	1.02[-1]	1.51[-1]
$1s3p^*4p$	9.84[-3]	2.33[-2]	4.50[-2]	6.31[-2]	9.43[-2]	1.07[-1]	1.26[-1]	1.50[-1]	1.75[-1]	1.99[-1]
$1s3p4p^*$	9.63[-3]	2.27[-2]	4.39[-2]	6.14[-2]	9.12[-2]	1.04[-1]	1.21[-1]	1.42[-1]	1.64[-1]	1.84[-1]
$1s3p4p$	1.09[-2]	2.56[-2]	4.86[-2]	6.70[-2]	9.59[-2]	1.07[-1]	1.21[-1]	1.35[-1]	1.45[-1]	1.49[-1]
$1s2s5s$	1.59[-2]	3.60[-2]	6.67[-2]	9.24[-2]	1.41[-1]	1.64[-1]	2.03[-1]	2.65[-1]	3.56[-1]	4.85[-1]
$1s2s5p^*$	8.26[-3]	2.11[-2]	4.23[-2]	6.12[-2]	9.97[-2]	1.20[-1]	1.54[-1]	2.13[-1]	3.07[-1]	4.51[-1]
$1s2s5p$	1.47[-2]	3.62[-2]	6.85[-2]	9.37[-2]	1.35[-1]	1.53[-1]	1.79[-1]	2.12[-1]	2.51[-1]	2.93[-1]
$1s2p^*5s$	7.66[-3]	1.74[-2]	3.25[-2]	4.52[-2]	6.97[-2]	8.20[-2]	1.03[-1]	1.38[-1]	1.94[-1]	2.79[-1]
$1s2p^*5p$	3.00[-2]	7.33[-2]	1.36[-1]	1.84[-1]	2.60[-1]	2.91[-1]	3.34[-1]	3.88[-1]	4.46[-1]	5.03[-1]

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
Cu-like ions										
$1s2p5s$	1.34[-2]	2.93[-2]	5.11[-2]	6.68[-2]	9.02[-2]	9.90[-2]	1.11[-1]	1.24[-1]	1.37[-1]	1.48[-1]
$1s2p5p^*$	2.92[-2]	7.08[-2]	1.30[-1]	1.74[-1]	2.39[-1]	2.64[-1]	2.96[-1]	3.31[-1]	3.62[-1]	3.82[-1]
$1s2p5p$	3.32[-2]	7.99[-2]	1.45[-1]	1.91[-1]	2.54[-1]	2.76[-1]	3.01[-1]	3.22[-1]	3.32[-1]	3.28[-1]
$1s2p5d^*$	3.42[-3]	1.02[-2]	2.37[-2]	3.61[-2]	5.79[-2]	6.67[-2]	7.87[-2]	9.19[-2]	1.03[-1]	1.08[-1]
$1s2s6s$	7.04[-3]	1.74[-2]	3.39[-2]	4.81[-2]	7.49[-2]	8.79[-2]	1.09[-1]	1.44[-1]	1.94[-1]	2.64[-1]
$1s2s6p^*$	3.89[-3]	1.05[-2]	2.20[-2]	3.25[-2]	5.39[-2]	6.50[-2]	8.43[-2]	1.17[-1]	1.69[-1]	2.48[-1]
$1s2s6p$	6.92[-3]	1.81[-2]	3.57[-2]	4.98[-2]	7.36[-2]	8.36[-2]	9.83[-2]	1.18[-1]	1.40[-1]	1.64[-1]
$1s2p^*6s$	3.39[-3]	8.39[-3]	1.64[-2]	2.34[-2]	3.69[-2]	4.36[-2]	5.51[-2]	7.43[-2]	1.04[-1]	1.50[-1]
$1s2p^*6p^*$	1.27[-3]	3.35[-3]	6.68[-3]	9.37[-3]	1.39[-2]	1.58[-2]	1.85[-2]	2.19[-2]	2.56[-2]	2.91[-2]
$1s2p^*6p$	1.41[-2]	3.66[-2]	7.09[-2]	9.76[-2]	1.40[-1]	1.58[-1]	1.82[-1]	2.13[-1]	2.47[-1]	2.79[-1]
$1s2p^*6d$	1.42[-3]	4.30[-3]	1.02[-2]	1.56[-2]	2.49[-2]	2.87[-2]	3.35[-2]	3.86[-2]	4.24[-2]	4.40[-2]
$1s2p6s$	5.92[-3]	1.41[-2]	2.59[-2]	3.46[-2]	4.77[-2]	5.26[-2]	5.92[-2]	6.68[-2]	7.39[-2]	7.97[-2]
$1s2p6p^*$	1.37[-2]	3.53[-2]	6.75[-2]	9.17[-2]	1.28[-1]	1.42[-1]	1.60[-1]	1.80[-1]	1.97[-1]	2.08[-1]
$1s2p6p$	1.56[-2]	3.99[-2]	7.54[-2]	1.01[-1]	1.37[-1]	1.50[-1]	1.65[-1]	1.78[-1]	1.84[-1]	1.82[-1]
$1s2p6d^*$	1.80[-3]	5.49[-3]	1.31[-2]	2.03[-2]	3.30[-2]	3.82[-2]	4.54[-2]	5.33[-2]	5.98[-2]	6.35[-2]
$1s2p6d$	1.74[-3]	5.24[-3]	1.23[-2]	1.85[-2]	2.89[-2]	3.28[-2]	3.75[-2]	4.17[-2]	4.36[-2]	4.26[-2]
$1s3p^*6p$	1.63[-3]	4.58[-3]	9.91[-3]	1.46[-2]	2.31[-2]	2.67[-2]	3.20[-2]	3.88[-2]	4.60[-2]	5.30[-2]
$1s3p6p^*$	1.58[-3]	4.44[-3]	9.58[-3]	1.41[-2]	2.20[-2]	2.53[-2]	3.00[-2]	3.57[-2]	4.14[-2]	4.63[-2]
$1s3p6p$	1.81[-3]	5.04[-3]	1.07[-2]	1.56[-2]	2.35[-2]	2.66[-2]	3.07[-2]	3.49[-2]	3.82[-2]	3.97[-2]
$1s2s7s$	3.73[-3]	9.71[-3]	1.96[-2]	2.82[-2]	4.46[-2]	5.25[-2]	6.56[-2]	8.65[-2]	1.17[-1]	1.60[-1]
$1s2s7p^*$	2.14[-3]	6.02[-3]	1.29[-2]	1.93[-2]	3.24[-2]	3.92[-2]	5.11[-2]	7.12[-2]	1.03[-1]	1.51[-1]
$1s2s7p$	3.81[-3]	1.04[-2]	2.10[-2]	2.97[-2]	4.44[-2]	5.07[-2]	5.99[-2]	7.20[-2]	8.61[-2]	1.01[-1]
$1s2p^*7s$	1.80[-3]	4.68[-3]	9.49[-3]	1.37[-2]	2.18[-2]	2.59[-2]	3.29[-2]	4.45[-2]	6.26[-2]	9.01[-2]
$1s2p^*7p$	7.78[-3]	2.09[-2]	4.16[-2]	5.79[-2]	8.45[-2]	9.53[-2]	1.11[-1]	1.30[-1]	1.51[-1]	1.71[-1]
$1s2p^*7d$	8.35[-4]	2.58[-3]	6.20[-3]	9.61[-3]	1.55[-2]	1.79[-2]	2.10[-2]	2.43[-2]	2.68[-2]	2.80[-2]
$1s2p7s$	3.14[-3]	7.87[-3]	1.49[-2]	2.02[-2]	2.83[-2]	3.13[-2]	3.53[-2]	4.00[-2]	4.43[-2]	4.78[-2]
$1s2p7p^*$	7.54[-3]	2.01[-2]	3.95[-2]	5.43[-2]	7.69[-2]	8.54[-2]	9.65[-2]	1.09[-1]	1.19[-1]	1.26[-1]
$1s2p7p$	8.60[-3]	2.28[-2]	4.42[-2]	6.00[-2]	8.27[-2]	9.05[-2]	9.98[-2]	1.08[-1]	1.13[-1]	1.12[-1]
$1s2p7d^*$	1.06[-3]	3.29[-3]	7.98[-3]	1.25[-2]	2.05[-2]	2.38[-2]	2.84[-2]	3.35[-2]	3.78[-2]	4.01[-2]
$1s2p7d$	1.03[-3]	3.15[-3]	7.45[-3]	1.15[-2]	1.80[-2]	2.05[-2]	2.35[-2]	2.63[-2]	2.76[-2]	2.70[-2]
$1s3p^*7p$	8.97[-4]	2.62[-3]	5.82[-3]	8.70[-3]	1.39[-2]	1.61[-2]	1.94[-2]	2.36[-2]	2.81[-2]	3.25[-2]
$1s3p7p^*$	8.70[-4]	2.53[-3]	5.61[-3]	8.35[-3]	1.32[-2]	1.52[-2]	1.81[-2]	2.16[-2]	2.51[-2]	2.80[-2]
$1s3p7p$	9.97[-4]	2.88[-3]	6.30[-3]	9.24[-3]	1.42[-2]	1.61[-2]	1.86[-2]	2.13[-2]	2.33[-2]	2.43[-2]

Zn-like ions										
$1s4s4p^*$	2.81[-4]	1.10[-3]	3.03[-3]	5.07[-3]	9.61[-3]	1.21[-2]	1.63[-2]	2.37[-2]	3.54[-2]	5.31[-2]
$1s4s4p$	4.95[-4]	1.87[-3]	4.85[-3]	7.65[-3]	1.28[-2]	1.50[-2]	1.83[-2]	2.25[-2]	2.72[-2]	3.17[-2]
$1s4p^*4p$	8.29[-4]	3.67[-3]	1.01[-2]	1.62[-2]	2.74[-2]	3.22[-2]	3.92[-2]	4.80[-2]	5.73[-2]	6.58[-2]
$1s4p4p$	4.71[-4]	2.07[-3]	5.58[-3]	8.82[-3]	1.44[-2]	1.66[-2]	1.96[-2]	2.28[-2]	2.53[-2]	2.67[-2]
$1s4p4d^*$	6.41[-5]	3.67[-4]	1.28[-3]	2.33[-3]	4.54[-3]	5.57[-3]	7.08[-3]	8.97[-3]	1.09[-2]	1.24[-2]
$1s4s5s$	2.19[-4]	8.64[-4]	2.40[-3]	4.00[-3]	7.44[-3]	9.19[-3]	1.21[-2]	1.69[-2]	2.38[-2]	3.35[-2]
$1s4s5p^*$	9.82[-5]	4.33[-4]	1.29[-3]	2.23[-3]	4.38[-3]	5.54[-3]	7.60[-3]	1.11[-2]	1.67[-2]	2.52[-2]
$1s4s5p$	1.74[-4]	7.41[-4]	2.07[-3]	3.38[-3]	5.87[-3]	6.98[-3]	8.62[-3]	1.08[-2]	1.31[-2]	1.54[-2]
$1s4p^*5s$	8.73[-5]	4.08[-4]	1.23[-3]	2.14[-3]	4.22[-3]	5.34[-3]	7.31[-3]	1.07[-2]	1.60[-2]	2.41[-2]
$1s4p^*5p$	2.91[-4]	1.44[-3]	4.26[-3]	7.08[-3]	1.24[-2]	1.48[-2]	1.82[-2]	2.25[-2]	2.72[-2]	3.15[-2]
$1s4p5s$	1.54[-4]	6.95[-4]	1.97[-3]	3.23[-3]	5.60[-3]	6.65[-3]	8.18[-3]	1.02[-2]	1.23[-2]	1.43[-2]
$1s4p5p^*$	2.89[-4]	1.44[-3]	4.24[-3]	7.03[-3]	1.23[-2]	1.46[-2]	1.79[-2]	2.21[-2]	2.65[-2]	3.04[-2]
$1s4p5p$	3.31[-4]	1.63[-3]	4.73[-3]	7.73[-3]	1.31[-2]	1.52[-2]	1.82[-2]	2.14[-2]	2.40[-2]	2.55[-2]
$1s4s6s$	9.71[-5]	4.17[-4]	1.22[-3]	2.08[-3]	3.96[-3]	4.92[-3]	6.54[-3]	9.15[-3]	1.30[-2]	1.82[-2]
$1s4p^*6p$	1.37[-4]	7.21[-4]	2.22[-3]	3.75[-3]	6.70[-3]	8.01[-3]	9.94[-3]	1.24[-2]	1.50[-2]	1.75[-2]
$1s4p6p^*$	1.36[-4]	7.16[-4]	2.20[-3]	3.71[-3]	6.59[-3]	7.86[-3]	9.71[-3]	1.20[-2]	1.44[-2]	1.66[-2]
$1s4p6p$	1.56[-4]	8.14[-4]	2.46[-3]	4.10[-3]	7.06[-3]	8.28[-3]	9.94[-3]	1.18[-2]	1.33[-2]	1.42[-2]
$1s4s7s$	5.15[-5]	2.33[-4]	7.04[-4]	1.22[-3]	2.35[-3]	2.94[-3]	3.93[-3]	5.51[-3]	7.82[-3]	1.10[-2]
$1s4s7p^*$	2.54[-5]	1.24[-4]	3.93[-4]	7.02[-4]	1.42[-3]	1.82[-3]	2.52[-3]	3.72[-3]	5.62[-3]	8.47[-3]
$1s4s7p$	4.52[-5]	2.12[-4]	6.35[-4]	1.07[-3]	1.93[-3]	2.31[-3]	2.89[-3]	3.65[-3]	4.50[-3]	5.34[-3]
$1s4p^*7s$	2.05[-5]	1.10[-4]	3.60[-4]	6.49[-4]	1.32[-3]	1.69[-3]	2.33[-3]	3.44[-3]	5.18[-3]	7.80[-3]
$1s4p^*7p$	7.55[-5]	4.12[-4]	1.30[-3]	2.23[-3]	4.03[-3]	4.84[-3]	6.03[-3]	7.56[-3]	9.20[-3]	1.07[-2]
$1s4p7s$	3.61[-5]	1.87[-4]	5.77[-4]	9.78[-4]	1.76[-3]	2.10[-3]	2.61[-3]	3.27[-3]	3.97[-3]	4.63[-3]

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
Zn-like ions										
$1s4p7p^*$	7.48[-5]	4.09[-4]	1.29[-3]	2.20[-3]	3.95[-3]	4.72[-3]	5.85[-3]	7.28[-3]	8.74[-3]	1.00[-2]
$1s4p7p$	8.59[-5]	4.66[-4]	1.45[-3]	2.43[-3]	4.25[-3]	5.00[-3]	6.03[-3]	7.18[-3]	8.13[-3]	8.70[-3]
$1s5s5s$	3.42[-5]	1.61[-4]	4.92[-4]	8.54[-4]	1.65[-3]	2.06[-3]	2.76[-3]	3.88[-3]	5.50[-3]	7.75[-3]
$1s5s5p^*$	3.05[-5]	1.61[-4]	5.23[-4]	9.42[-4]	1.92[-3]	2.46[-3]	3.40[-3]	5.02[-3]	7.59[-3]	1.14[-2]
$1s5s5p$	5.41[-5]	2.75[-4]	8.42[-4]	1.43[-3]	2.57[-3]	3.09[-3]	3.85[-3]	4.85[-3]	5.94[-3]	6.99[-3]
$1s5p^*5p$	1.02[-4]	5.65[-4]	1.80[-3]	3.08[-3]	5.57[-3]	6.68[-3]	8.31[-3]	1.04[-2]	1.26[-2]	1.46[-2]
$1s5p^*5d$	7.33[-6]	4.81[-5]	1.83[-4]	3.44[-4]	6.68[-4]	8.07[-4]	9.93[-4]	1.19[-3]	1.31[-3]	1.33[-3]
$1s5p5p$	5.81[-5]	3.21[-4]	1.00[-3]	1.69[-3]	2.97[-3]	3.49[-3]	4.22[-3]	5.03[-3]	5.70[-3]	6.11[-3]
$1s5p5d^*$	9.65[-6]	6.47[-5]	2.54[-4]	4.91[-4]	1.02[-3]	1.27[-3]	1.65[-3]	2.15[-3]	2.65[-3]	3.07[-3]
$1s5p5d$	9.13[-6]	5.99[-5]	2.29[-4]	4.30[-4]	8.45[-4]	1.03[-3]	1.27[-3]	1.55[-3]	1.75[-3]	1.85[-3]
$1s5s6s$	3.03[-5]	1.55[-4]	5.00[-4]	8.89[-4]	1.76[-3]	2.21[-3]	2.97[-3]	4.20[-3]	5.98[-3]	8.43[-3]
$1s5s6p^*$	1.44[-5]	8.03[-5]	2.72[-4]	4.99[-4]	1.04[-3]	1.33[-3]	1.86[-3]	2.76[-3]	4.18[-3]	6.32[-3]
$1s5s6p$	2.55[-5]	1.38[-4]	4.39[-4]	7.61[-4]	1.40[-3]	1.69[-3]	2.12[-3]	2.69[-3]	3.31[-3]	3.92[-3]
$1s5p^*6s$	1.35[-5]	7.74[-5]	2.65[-4]	4.88[-4]	1.02[-3]	1.31[-3]	1.82[-3]	2.70[-3]	4.09[-3]	6.17[-3]
$1s5p^*6p$	4.79[-5]	2.83[-4]	9.34[-4]	1.63[-3]	3.01[-3]	3.63[-3]	4.54[-3]	5.72[-3]	6.96[-3]	8.10[-3]
$1s5p6s$	2.40[-5]	1.32[-4]	4.27[-4]	7.40[-4]	1.36[-3]	1.64[-3]	2.06[-3]	2.60[-3]	3.19[-3]	3.76[-3]
$1s5p6p^*$	4.78[-5]	2.82[-4]	9.31[-4]	1.62[-3]	2.99[-3]	3.60[-3]	4.50[-3]	5.65[-3]	6.86[-3]	7.94[-3]
$1s5p6p$	5.48[-5]	3.21[-4]	1.04[-3]	1.80[-3]	3.20[-3]	3.80[-3]	4.61[-3]	5.54[-3]	6.31[-3]	6.79[-3]
$1s5s7s$	1.60[-5]	8.69[-5]	2.89[-4]	5.21[-4]	1.05[-3]	1.32[-3]	1.78[-3]	2.53[-3]	3.61[-3]	5.09[-3]
$1s5s7p^*$	7.91[-6]	4.59[-5]	1.60[-4]	2.97[-4]	6.25[-4]	8.06[-4]	1.13[-3]	1.68[-3]	2.55[-3]	3.85[-3]
$1s5s7p$	1.41[-5]	7.88[-5]	2.58[-4]	4.53[-4]	8.45[-4]	1.02[-3]	1.29[-3]	1.65[-3]	2.04[-3]	2.42[-3]
$1s5p^*7s$	7.17[-6]	4.32[-5]	1.53[-4]	2.85[-4]	6.02[-4]	7.77[-4]	1.09[-3]	1.62[-3]	2.45[-3]	3.70[-3]
$1s5p^*7p$	2.64[-5]	1.62[-4]	5.48[-4]	9.68[-4]	1.81[-3]	2.19[-3]	2.75[-3]	3.48[-3]	4.25[-3]	4.96[-3]
$1s5p7s$	1.27[-5]	7.39[-5]	2.46[-4]	4.33[-4]	8.06[-4]	9.77[-4]	1.23[-3]	1.56[-3]	1.92[-3]	2.25[-3]
$1s5p7p^*$	2.63[-5]	1.61[-4]	5.45[-4]	9.62[-4]	1.79[-3]	2.17[-3]	2.71[-3]	3.42[-3]	4.15[-3]	4.80[-3]
$1s5p7p$	3.02[-5]	1.83[-4]	6.12[-4]	1.07[-3]	1.93[-3]	2.29[-3]	2.80[-3]	3.37[-3]	3.86[-3]	4.16[-3]
$1s6s6s$	6.71[-6]	3.75[-5]	1.27[-4]	2.31[-4]	4.67[-4]	5.91[-4]	8.01[-4]	1.14[-3]	1.63[-3]	2.29[-3]
$1s6s6p^*$	6.36[-6]	3.87[-5]	1.38[-4]	2.59[-4]	5.49[-4]	7.09[-4]	9.95[-4]	1.48[-3]	2.25[-3]	3.40[-3]
$1s6s6p$	1.13[-5]	6.63[-5]	2.23[-4]	3.94[-4]	7.39[-4]	8.97[-4]	1.13[-3]	1.44[-3]	1.78[-3]	2.11[-3]
$1s6p^*6p$	2.25[-5]	1.41[-4]	4.84[-4]	8.60[-4]	1.61[-3]	1.96[-3]	2.46[-3]	3.11[-3]	3.79[-3]	4.42[-3]
$1s6s6p$	1.13[-5]	6.63[-5]	2.23[-4]	3.94[-4]	7.39[-4]	8.97[-4]	1.13[-3]	1.44[-3]	1.78[-3]	2.11[-3]
$1s6p^*6p$	2.25[-5]	1.41[-4]	4.84[-4]	8.60[-4]	1.61[-3]	1.96[-3]	2.46[-3]	3.11[-3]	3.79[-3]	4.42[-3]
$1s6p6p$	1.29[-5]	8.01[-5]	2.72[-4]	4.76[-4]	8.66[-4]	1.03[-3]	1.26[-3]	1.52[-3]	1.75[-3]	1.89[-3]
$1s6s7s$	7.11[-6]	4.19[-5]	1.47[-4]	2.71[-4]	5.56[-4]	7.06[-4]	9.61[-4]	1.37[-3]	1.96[-3]	2.77[-3]
$1s6s7p^*$	3.50[-6]	2.21[-5]	8.10[-5]	1.54[-4]	3.30[-4]	4.28[-4]	6.03[-4]	9.02[-4]	1.37[-3]	2.07[-3]
$1s6s7p$	6.23[-6]	3.80[-5]	1.31[-4]	2.35[-4]	4.46[-4]	5.44[-4]	6.91[-4]	8.84[-4]	1.10[-3]	1.30[-3]
$1s6p^*7s$	3.37[-6]	2.16[-5]	7.96[-5]	1.51[-4]	3.25[-4]	4.22[-4]	5.94[-4]	8.89[-4]	1.35[-3]	2.04[-3]
$1s6p^*7p$	1.24[-5]	8.05[-5]	2.84[-4]	5.11[-4]	9.72[-4]	1.18[-3]	1.49[-3]	1.89[-3]	2.32[-3]	2.71[-3]
$1s6p7s$	5.99[-6]	3.70[-5]	1.28[-4]	2.30[-4]	4.38[-4]	5.34[-4]	6.77[-4]	8.65[-4]	1.07[-3]	1.26[-3]
$1s6p7p^*$	1.24[-5]	8.04[-5]	2.83[-4]	5.10[-4]	9.68[-4]	1.18[-3]	1.48[-3]	1.88[-3]	2.30[-3]	2.67[-3]
$1s6p7p$	1.42[-5]	9.16[-5]	3.19[-4]	5.65[-4]	1.04[-3]	1.25[-3]	1.53[-3]	1.86[-3]	2.14[-3]	2.31[-3]
$1s7s7p^*$	1.85[-6]	1.23[-5]	4.67[-5]	8.98[-5]	1.96[-4]	2.55[-4]	3.60[-4]	5.40[-4]	8.24[-4]	1.24[-3]
$1s7p^*7p$	6.82[-6]	4.60[-5]	1.66[-4]	3.03[-4]	5.82[-4]	7.10[-4]	9.00[-4]	1.15[-3]	1.40[-3]	1.64[-3]

TABLE II. L_1 -shell Auger rates $A(n_0j_0l_0, n_1j_1l_1, n_2j_2l_2)$ (in mau) as function of Z for Ni-, Cu-, and Zn-like ions.

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
Ni-like ions										
$2s3s3s$	9.77[-1]	1.08[0]	1.27[0]	1.43[0]	1.70[0]	1.82[0]	1.82[0]	2.26[0]	2.59[0]	3.01[0]
$2s3s3p^*$	1.77[0]	2.02[0]	2.46[0]	2.81[0]	3.40[0]	3.66[0]	3.66[0]	4.61[0]	5.35[0]	6.28[0]
$2s3s3p$	3.41[0]	3.87[0]	4.66[0]	5.28[0]	6.25[0]	6.63[0]	6.63[0]	7.84[0]	8.56[0]	9.27[0]
$2s3s3d^*$	1.77[0]	2.49[0]	3.43[0]	4.09[0]	5.00[0]	5.32[0]	5.32[0]	6.16[0]	6.52[0]	6.78[0]
$2s3s3d$	2.58[0]	3.62[0]	4.95[0]	5.84[0]	7.01[0]	7.38[0]	7.38[0]	8.14[0]	8.28[0]	8.19[0]
$2s3p^*3p^*$	2.64[-2]	2.60[-2]	2.54[-2]	2.44[-2]	2.18[-2]	2.06[-2]	2.06[-2]	1.65[-2]	1.40[-2]	1.16[-2]
$2s3p^*3p$	5.55[-2]	7.80[-2]	1.14[-1]	1.43[-1]	1.84[-1]	1.99[-1]	1.99[-1]	2.38[-1]	2.64[-1]	2.99[-1]
$2s3p^*3d^*$	2.41[-2]	3.66[-2]	5.93[-2]	8.09[-2]	1.23[-1]	1.43[-1]	1.43[-1]	2.15[-1]	2.66[-1]	3.23[-1]
$2s3p^*3d$	5.14[-1]	7.72[-1]	1.14[0]	1.43[0]	1.87[0]	2.05[0]	2.05[0]	2.60[0]	2.93[0]	3.24[0]
$2s3p3p$	8.79[-2]	1.02[-1]	1.24[-1]	1.42[-1]	1.70[-1]	1.82[-1]	1.82[-1]	2.29[-1]	2.73[-1]	3.35[-1]
$2s3p3d^*$	5.07[-1]	7.20[-1]	9.67[-1]	1.10[0]	1.17[0]	1.15[0]	1.15[0]	8.98[-1]	6.80[-1]	4.95[-1]
$2s3p3d$	3.66[-1]	5.17[-1]	6.93[-1]	7.85[-1]	8.34[-1]	8.18[-1]	8.18[-1]	6.57[-1]	5.36[-1]	4.66[-1]
$2s3d^*3d^*$	4.71[-2]	8.76[-2]	1.49[-1]	1.95[-1]	2.58[-1]	2.77[-1]	2.77[-1]	3.10[-1]	3.04[-1]	2.79[-1]
$2s3d^*3d$	2.53[0]	4.33[0]	6.70[0]	8.26[0]	1.02[1]	1.08[1]	1.08[1]	1.18[1]	1.18[1]	1.13[1]
$2s3d3d$	6.89[-1]	1.19[0]	1.86[0]	2.29[0]	2.84[0]	2.99[0]	2.99[0]	3.21[0]	3.13[0]	2.92[0]
Cu-like ions										
$2s3s4s$	1.80[-1]	3.22[-1]	5.09[-1]	6.44[-1]	8.54[-1]	9.41[-1]	1.07[0]	1.24[0]	1.46[0]	1.72[0]
$2s3s4p^*$	1.49[-1]	3.19[-1]	5.51[-1]	7.23[-1]	9.95[-1]	1.11[0]	1.27[0]	1.50[0]	1.78[0]	2.13[0]
$2s3s4p$	2.94[-1]	6.26[-1]	1.07[0]	1.39[0]	1.88[0]	2.07[0]	2.33[0]	2.66[0]	3.00[0]	3.35[0]
$2s3s4d^*$	1.60[-1]	3.98[-1]	7.67[-1]	1.05[0]	1.47[0]	1.63[0]	1.84[0]	2.08[0]	2.30[0]	2.49[0]
$2s3s4d$	2.38[-1]	5.86[-1]	1.12[0]	1.51[0]	2.08[0]	2.29[0]	2.54[0]	2.79[0]	2.97[0]	3.07[0]
$2s3p^*4s$	1.43[-1]	2.58[-1]	4.07[-1]	5.11[-1]	6.70[-1]	7.35[-1]	8.31[-1]	9.63[-1]	1.13[0]	1.35[0]
$2s3p^*4d^*$	1.97[-3]	5.29[-3]	1.35[-2]	2.32[-2]	4.43[-2]	5.43[-2]	6.94[-2]	8.92[-2]	1.11[-1]	1.33[-1]
$2s3p^*4d$	4.31[-2]	1.02[-1]	1.89[-1]	2.55[-1]	3.61[-1]	4.06[-1]	4.72[-1]	5.61[-1]	6.68[-1]	7.86[-1]
$2s3p4s$	2.76[-1]	4.95[-1]	7.73[-1]	9.61[-1]	1.23[0]	1.33[0]	1.47[0]	1.63[0]	1.80[0]	1.96[0]
$2s3p4p$	1.33[-2]	2.79[-2]	4.67[-2]	5.98[-2]	7.92[-2]	8.69[-2]	9.86[-2]	1.16[-1]	1.44[-1]	1.84[-1]
$2s3p4d^*$	4.13[-2]	9.14[-2]	1.48[-1]	1.75[-1]	1.86[-1]	1.78[-1]	1.57[-1]	1.19[-1]	7.48[-2]	4.90[-2]
$2s3p4d$	3.03[-2]	6.65[-2]	1.09[-1]	1.32[-1]	1.44[-1]	1.40[-1]	1.25[-1]	9.46[-2]	6.05[-2]	4.42[-2]
$2s3d^*4s$	1.38[-1]	3.06[-1]	5.45[-1]	7.12[-1]	9.39[-1]	1.02[0]	1.11[0]	1.20[0]	1.27[0]	1.31[0]
$2s3d^*4p^*$	2.57[-3]	7.71[-3]	1.82[-2]	2.83[-2]	4.72[-2]	5.56[-2]	6.80[-2]	8.41[-2]	1.02[-1]	1.19[-1]
$2s3d^*4p$	4.36[-2]	1.16[-1]	2.21[-1]	2.90[-1]	3.61[-1]	3.74[-1]	3.73[-1]	3.45[-1]	2.87[-1]	2.19[-1]
$2s3d^*4d^*$	8.58[-3]	2.82[-2]	6.71[-2]	1.00[-1]	1.50[-1]	1.68[-1]	1.88[-1]	2.05[-1]	2.09[-1]	2.01[-1]
$2s3d^*4d$	2.18[-1]	6.08[-1]	1.20[0]	1.61[0]	2.15[0]	2.32[0]	2.52[0]	2.70[0]	2.81[0]	2.83[0]
$2s3d4s$	2.01[-1]	4.45[-1]	7.87[-1]	1.02[0]	1.32[0]	1.41[0]	1.51[0]	1.59[0]	1.61[0]	1.58[0]
$2s3d4p^*$	4.24[-2]	1.18[-1]	2.43[-1]	3.42[-1]	4.99[-1]	5.60[-1]	6.44[-1]	7.45[-1]	8.45[-1]	9.35[-1]
$2s3d4p$	3.22[-2]	8.59[-2]	1.65[-1]	2.17[-1]	2.72[-1]	2.81[-1]	2.81[-1]	2.61[-1]	2.24[-1]	1.87[-1]
$2s3d4d^*$	2.14[-1]	5.99[-1]	1.18[0]	1.58[0]	2.08[0]	2.24[0]	2.41[0]	2.55[0]	2.61[0]	2.58[0]
$2s3d4d$	1.20[-1]	3.40[-1]	6.84[-1]	9.28[-1]	1.25[0]	1.35[0]	1.46[0]	1.54[0]	1.56[0]	1.52[0]
$2s3s5s$	5.52[-2]	1.17[-1]	2.02[-1]	2.65[-1]	3.64[-1]	4.05[-1]	4.64[-1]	5.45[-1]	6.45[-1]	7.63[-1]
$2s3s5p^*$	5.21[-2]	1.25[-1]	2.32[-1]	3.14[-1]	4.48[-1]	5.03[-1]	5.84[-1]	6.94[-1]	8.30[-1]	9.93[-1]
$2s3s5p$	1.03[-1]	2.46[-1]	4.54[-1]	6.10[-1]	8.53[-1]	9.48[-1]	1.08[0]	1.25[0]	1.43[0]	1.60[0]
$2s3s5d^*$	6.83[-2]	1.75[-1]	3.49[-1]	4.85[-1]	6.95[-1]	7.75[-1]	8.82[-1]	1.01[0]	1.12[0]	1.23[0]
$2s3s5d$	1.01[-1]	2.58[-1]	5.09[-1]	7.01[-1]	9.86[-1]	1.09[0]	1.22[0]	1.35[0]	1.46[0]	1.52[0]
$2s3s5f$	3.86[-5]	1.88[-3]	1.94[-2]	4.89[-2]	1.16[-1]	1.45[-1]	1.84[-1]	2.24[-1]	2.51[-1]	2.60[-1]
$2s3p^*5s$	4.31[-2]	9.02[-2]	1.52[-1]	1.95[-1]	2.60[-1]	2.86[-1]	3.25[-1]	3.78[-1]	4.46[-1]	5.32[-1]
$2s3p^*5d$	1.79[-2]	4.23[-2]	7.76[-2]	1.04[-1]	1.48[-1]	1.66[-1]	1.94[-1]	2.32[-1]	2.79[-1]	3.33[-1]
$2s3p5s$	8.30[-2]	1.73[-1]	2.88[-1]	3.66[-1]	4.77[-1]	5.18[-1]	5.73[-1]	6.39[-1]	7.06[-1]	7.67[-1]
$2s3p5f^*$	3.55[-5]	1.81[-3]	1.79[-2]	4.28[-2]	9.01[-2]	1.06[-1]	1.21[-1]	1.25[-1]	1.11[-1]	8.41[-2]
$2s3d^*5s$	4.14[-2]	1.06[-1]	2.02[-1]	2.69[-1]	3.61[-1]	3.91[-1]	4.29[-1]	4.64[-1]	4.89[-1]	5.02[-1]
$2s3d^*5p$	1.53[-2]	4.55[-2]	9.36[-2]	1.27[-1]	1.65[-1]	1.73[-1]	1.76[-1]	1.67[-1]	1.44[-1]	1.13[-1]
$2s3d^*5d^*$	3.66[-3]	1.25[-2]	3.05[-2]	4.63[-2]	7.07[-2]	7.93[-2]	8.95[-2]	9.81[-2]	1.01[-1]	9.81[-2]
$2s3d^*5d$	9.14[-2]	2.56[-1]	5.05[-1]	6.74[-1]	8.91[-1]	9.60[-1]	1.04[0]	1.12[0]	1.17[0]	1.19[0]
$2s3d^*5f$	8.57[-5]	4.76[-3]	5.12[-2]	1.29[-1]	2.95[-1]	3.63[-1]	4.50[-1]	5.29[-1]	5.71[-1]	5.66[-1]
$2s3d5s$	6.03[-2]	1.54[-1]	2.91[-1]	3.85[-1]	5.06[-1]	5.43[-1]	5.84[-1]	6.15[-1]	6.22[-1]	6.05[-1]
$2s3d5p^*$	1.48[-2]	4.57[-2]	1.01[-1]	1.45[-1]	2.17[-1]	2.46[-1]	2.84[-1]	3.30[-1]	3.75[-1]	4.13[-1]
$2s3d5p$	1.13[-2]	3.40[-2]	7.08[-2]	9.67[-2]	1.26[-1]	1.33[-1]	1.35[-1]	1.29[-1]	1.13[-1]	9.52[-2]

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
Cu-like ions										
$2s3d5d^*$	8.96[-2]	2.52[-1]	4.95[-1]	6.56[-1]	8.56[-1]	9.15[-1]	9.81[-1]	1.03[0]	1.06[0]	1.05[0]
$2s3d5d$	5.03[-2]	1.44[-1]	2.91[-1]	3.94[-1]	5.28[-1]	5.69[-1]	6.15[-1]	6.51[-1]	6.64[-1]	6.51[-1]
$2s3d5f^*$	9.30[-5]	5.20[-3]	5.61[-2]	1.42[-1]	3.27[-1]	4.04[-1]	5.02[-1]	5.95[-1]	6.49[-1]	6.51[-1]
$2s3d5f$	7.46[-5]	4.15[-3]	4.45[-2]	1.11[-1]	2.54[-1]	3.11[-1]	3.82[-1]	4.45[-1]	4.72[-1]	4.59[-1]
$2s3s6s$	2.43[-2]	5.59[-2]	1.01[-1]	1.35[-1]	1.90[-1]	2.13[-1]	2.46[-1]	2.90[-1]	3.44[-1]	4.08[-1]
$2s3s6p^*$	2.45[-2]	6.23[-2]	1.20[-1]	1.66[-1]	2.40[-1]	2.71[-1]	3.17[-1]	3.78[-1]	4.54[-1]	5.43[-1]
$2s3s6p$	4.86[-2]	1.23[-1]	2.36[-1]	3.23[-1]	4.60[-1]	5.15[-1]	5.92[-1]	6.87[-1]	7.89[-1]	8.91[-1]
$2s3s6d^*$	3.56[-2]	9.33[-2]	1.89[-1]	2.66[-1]	3.85[-1]	4.30[-1]	4.92[-1]	5.63[-1]	6.33[-1]	6.95[-1]
$2s3s6d$	5.28[-2]	1.37[-1]	2.76[-1]	3.84[-1]	5.47[-1]	6.06[-1]	6.81[-1]	7.60[-1]	8.24[-1]	8.65[-1]
$2s3p^*6s$	1.89[-2]	4.24[-2]	7.40[-2]	9.62[-2]	1.30[-1]	1.43[-1]	1.63[-1]	1.90[-1]	2.24[-1]	2.68[-1]
$2s3p^*6d$	9.19[-3]	2.20[-2]	4.01[-2]	5.36[-2]	7.63[-2]	8.60[-2]	1.01[-1]	1.21[-1]	1.46[-1]	1.76[-1]
$2s3p6s$	3.64[-2]	8.13[-2]	1.41[-1]	1.81[-1]	2.38[-1]	2.59[-1]	2.87[-1]	3.21[-1]	3.55[-1]	3.85[-1]
$2s3p6p$	2.12[-3]	5.18[-3]	9.48[-3]	1.25[-2]	1.71[-2]	1.90[-2]	2.17[-2]	2.60[-2]	3.26[-2]	4.25[-2]
$2s3d^*6s$	1.81[-2]	4.98[-2]	9.80[-2]	1.32[-1]	1.80[-1]	1.95[-1]	2.14[-1]	2.32[-1]	2.44[-1]	2.50[-1]
$2s3d^*6p$	7.21[-3]	2.27[-2]	4.86[-2]	6.71[-2]	8.91[-2]	9.42[-2]	9.71[-2]	9.35[-2]	8.16[-2]	6.50[-2]
$2s3d^*6d^*$	1.91[-3]	6.64[-3]	1.66[-2]	2.54[-2]	3.91[-2]	4.39[-2]	4.97[-2]	5.47[-2]	5.68[-2]	5.52[-2]
$2s3d^*6d$	4.72[-2]	1.33[-1]	2.64[-1]	3.51[-1]	4.62[-1]	4.97[-1]	5.38[-1]	5.78[-1]	6.06[-1]	6.19[-1]
$2s3d6s$	2.64[-2]	7.24[-2]	1.41[-1]	1.89[-1]	2.52[-1]	2.71[-1]	2.92[-1]	3.08[-1]	3.11[-1]	3.02[-1]
$2s3d6p^*$	6.93[-3]	2.27[-2]	5.17[-2]	7.60[-2]	1.15[-1]	1.31[-1]	1.52[-1]	1.76[-1]	2.00[-1]	2.21[-1]
$2s3d6p$	5.35[-3]	1.70[-2]	3.70[-2]	5.16[-2]	6.90[-2]	7.30[-2]	7.52[-2]	7.26[-2]	6.45[-2]	5.46[-2]
$2s3d6d^*$	4.63[-2]	1.31[-1]	2.58[-1]	3.41[-1]	4.42[-1]	4.71[-1]	5.03[-1]	5.29[-1]	5.41[-1]	5.39[-1]
$2s3d6d$	2.60[-2]	7.52[-2]	1.53[-1]	2.07[-1]	2.77[-1]	2.98[-1]	3.22[-1]	3.42[-1]	3.49[-1]	3.43[-1]
$2s3s7s$	1.29[-2]	3.11[-2]	5.81[-2]	7.88[-2]	1.12[-1]	1.26[-1]	1.46[-1]	1.73[-1]	2.06[-1]	2.44[-1]
$2s3s7p^*$	1.35[-2]	3.56[-2]	7.05[-2]	9.83[-2]	1.44[-1]	1.63[-1]	1.91[-1]	2.29[-1]	2.75[-1]	3.29[-1]
$2s3s7p$	2.67[-2]	7.04[-2]	1.39[-1]	1.92[-1]	2.77[-1]	3.11[-1]	3.59[-1]	4.18[-1]	4.82[-1]	5.46[-1]
$2s3s7d^*$	2.09[-2]	5.56[-2]	1.14[-1]	1.62[-1]	2.35[-1]	2.64[-1]	3.02[-1]	3.47[-1]	3.91[-1]	4.31[-1]
$2s3s7d$	3.10[-2]	8.19[-2]	1.67[-1]	2.34[-1]	3.35[-1]	3.72[-1]	4.19[-1]	4.69[-1]	5.11[-1]	5.38[-1]
$2s3p^*7s$	9.91[-3]	2.34[-2]	4.19[-2]	5.48[-2]	7.45[-2]	8.23[-2]	9.39[-2]	1.10[-1]	1.30[-1]	1.55[-1]
$2s3p^*7p$	4.35[-4]	1.37[-3]	3.20[-3]	4.97[-3]	7.59[-3]	8.74[-3]	9.88[-3]	1.16[-2]	1.32[-2]	1.49[-2]
$2s3p^*7d$	5.37[-3]	1.28[-2]	2.37[-2]	3.21[-2]	4.51[-2]	5.09[-2]	5.90[-2]	7.18[-2]	8.69[-2]	1.05[-1]
$2s3p7s$	1.91[-2]	4.48[-2]	7.95[-2]	1.03[-1]	1.37[-1]	1.49[-1]	1.66[-1]	1.85[-1]	2.05[-1]	2.22[-1]
$2s3p7p^*$	4.22[-4]	1.33[-3]	3.09[-3]	4.71[-3]	7.08[-3]	8.02[-3]	9.12[-3]	1.06[-2]	1.22[-2]	1.43[-2]
$2s3p7p$	1.19[-3]	2.94[-3]	5.41[-3]	7.42[-3]	1.01[-2]	1.13[-2]	1.27[-2]	1.55[-2]	1.94[-2]	2.55[-2]
$2s3d^*7s$	9.51[-3]	2.74[-2]	5.53[-2]	7.54[-2]	1.03[-1]	1.12[-1]	1.23[-1]	1.34[-1]	1.41[-1]	1.43[-1]
$2s3d^*7p$	3.97[-3]	1.30[-2]	2.85[-2]	3.98[-2]	5.37[-2]	5.70[-2]	5.91[-2]	5.74[-2]	5.05[-2]	4.06[-2]
$2s3d^*7d^*$	1.12[-3]	3.96[-3]	1.00[-2]	1.54[-2]	2.39[-2]	2.69[-2]	3.05[-2]	3.37[-2]	3.50[-2]	3.41[-2]
$2s3d^*7d$	2.76[-2]	7.87[-2]	1.56[-1]	2.07[-1]	2.72[-1]	2.93[-1]	3.17[-1]	3.40[-1]	3.57[-1]	3.66[-1]
$2s3d7s$	1.39[-2]	3.98[-2]	7.98[-2]	1.08[-1]	1.45[-1]	1.56[-1]	1.68[-1]	1.78[-1]	1.79[-1]	1.74[-1]
$2s3d7p^*$	3.81[-3]	1.29[-2]	3.02[-2]	4.48[-2]	6.85[-2]	7.79[-2]	9.07[-2]	1.06[-1]	1.20[-1]	1.32[-1]
$2s3d7p$	2.95[-3]	9.77[-3]	2.18[-2]	3.07[-2]	4.17[-2]	4.44[-2]	4.61[-2]	4.48[-2]	4.01[-2]	3.40[-2]
$2s3d7d^*$	2.71[-2]	7.73[-2]	1.52[-1]	2.01[-1]	2.59[-1]	2.77[-1]	2.95[-1]	3.10[-1]	3.16[-1]	3.15[-1]
$2s3d7d$	1.52[-2]	4.44[-2]	9.06[-2]	1.23[-1]	1.64[-1]	1.77[-1]	1.91[-1]	2.03[-1]	2.07[-1]	2.04[-1]
Zn-like ions										
$2s4s4s$	8.08[-3]	2.33[-2]	4.89[-2]	6.89[-2]	1.01[-1]	1.14[-1]	1.33[-1]	1.58[-1]	1.90[-1]	2.27[-1]
$2s4s4p^*$	1.21[-2]	4.08[-2]	9.15[-2]	1.32[-1]	1.97[-1]	2.23[-1]	2.62[-1]	3.15[-1]	3.81[-1]	4.61[-1]
$2s4s4p$	2.38[-2]	8.00[-2]	1.78[-1]	2.54[-1]	3.71[-1]	4.16[-1]	4.79[-1]	5.54[-1]	6.34[-1]	7.10[-1]
$2s4s4d^*$	1.25[-2]	4.89[-2]	1.22[-1]	1.83[-1]	2.76[-1]	3.10[-1]	3.56[-1]	4.06[-1]	4.51[-1]	4.86[-1]
$2s4s4d$	1.86[-2]	7.20[-2]	1.78[-1]	2.63[-1]	3.90[-1]	4.35[-1]	4.89[-1]	5.42[-1]	5.78[-1]	5.93[-1]
$2s4s4f^*$	2.28[-6]	1.73[-4]	2.38[-3]	6.83[-3]	1.84[-2]	2.38[-2]	3.15[-2]	4.02[-2]	4.71[-2]	5.08[-2]
$2s4s4f$	3.01[-6]	2.26[-4]	3.08[-3]	8.75[-3]	2.30[-2]	2.94[-2]	3.81[-2]	4.71[-2]	5.29[-2]	5.43[-2]
$2s4p^*4p$	3.96[-4]	1.92[-3]	5.56[-3]	8.99[-3]	1.48[-2]	1.70[-2]	2.00[-2]	2.34[-2]	2.69[-2]	3.12[-2]
$2s4p^*4d^*$	2.09[-4]	1.06[-3]	3.59[-3]	6.60[-3]	1.31[-2]	1.61[-2]	2.06[-2]	2.65[-2]	3.28[-2]	3.90[-2]
$2s4p^*4d$	3.58[-3]	1.58[-2]	4.09[-2]	6.25[-2]	9.89[-2]	1.14[-1]	1.36[-1]	1.65[-1]	1.98[-1]	2.33[-1]
$2s4p^*4f^*$	5.62[-7]	5.38[-5]	8.35[-4]	2.54[-3]	7.35[-3]	9.77[-3]	1.33[-2]	1.76[-2]	2.15[-2]	2.44[-2]
$2s4p^*4f$	2.57[-6]	2.32[-4]	3.46[-3]	1.03[-2]	2.90[-2]	3.82[-2]	5.15[-2]	6.69[-2]	7.98[-2]	8.74[-2]
$2s4p4p$	5.08[-4]	1.93[-3]	4.45[-3]	6.41[-3]	9.40[-3]	1.06[-2]	1.22[-2]	1.47[-2]	1.85[-2]	2.41[-2]
$2s4p4d^*$	3.57[-3]	1.49[-2]	3.50[-2]	4.84[-2]	6.15[-2]	6.30[-2]	6.14[-2]	5.36[-2]	4.02[-2]	2.65[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Zn-like ions										
$2s4p4d$	2.68[-3]	1.12[-2]	2.67[-2]	3.77[-2]	4.92[-2]	5.08[-2]	5.00[-2]	4.39[-2]	3.35[-2]	2.39[-2]
$2s4p4f^*$	3.11[-6]	2.76[-4]	3.96[-3]	1.13[-2]	2.93[-2]	3.68[-2]	4.59[-2]	5.25[-2]	5.23[-2]	4.54[-2]
$2s4p4f$	2.49[-6]	2.24[-4]	3.24[-3]	9.34[-3]	2.42[-2]	3.06[-2]	3.82[-2]	4.41[-2]	4.46[-2]	4.01[-2]
$2s4d^*4d^*$	3.90[-4]	2.25[-3]	7.29[-3]	1.22[-2]	2.05[-2]	2.35[-2]	2.73[-2]	3.09[-2]	3.29[-2]	3.29[-2]
$2s4d^*4d$	1.86[-2]	8.53[-2]	2.20[-1]	3.26[-1]	4.77[-1]	5.29[-1]	5.92[-1]	6.55[-1]	7.03[-1]	7.29[-1]
$2s4d^*4f$	7.78[-6]	6.71[-4]	9.24[-3]	2.58[-2]	6.53[-2]	8.26[-2]	1.05[-1]	1.28[-1]	1.43[-1]	1.47[-1]
$2s4d4d$	5.23[-3]	2.46[-2]	6.52[-2]	9.85[-2]	1.47[-1]	1.64[-1]	1.84[-1]	2.02[-1]	2.14[-1]	2.17[-1]
$2s4d4f^*$	8.64[-6]	7.47[-4]	1.04[-2]	2.92[-2]	7.57[-2]	9.68[-2]	1.26[-1]	1.57[-1]	1.80[-1]	1.91[-1]
$2s4d4f$	7.08[-6]	6.24[-4]	8.88[-3]	2.53[-2]	6.60[-2]	8.43[-2]	1.09[-1]	1.33[-1]	1.47[-1]	1.49[-1]
$2s4s5s$	4.95[-3]	1.68[-2]	3.84[-2]	5.58[-2]	8.42[-2]	9.59[-2]	1.13[-1]	1.36[-1]	1.64[-1]	1.97[-1]
$2s4s5p^*$	4.22[-3]	1.60[-2]	3.86[-2]	5.74[-2]	8.85[-2]	1.01[-1]	1.20[-1]	1.46[-1]	1.78[-1]	2.16[-1]
$2s4s5p$	8.35[-3]	3.15[-2]	7.54[-2]	1.11[-1]	1.68[-1]	1.91[-1]	2.22[-1]	2.61[-1]	3.02[-1]	3.41[-1]
$2s4s5d^*$	5.33[-3]	2.15[-2]	5.55[-2]	8.45[-2]	1.30[-1]	1.48[-1]	1.70[-1]	1.96[-1]	2.21[-1]	2.40[-1]
$2s4s5d$	7.92[-3]	3.17[-2]	8.09[-2]	1.22[-1]	1.84[-1]	2.07[-1]	2.35[-1]	2.63[-1]	2.84[-1]	2.95[-1]
$2s4p^*5s$	3.63[-3]	1.43[-2]	3.41[-2]	5.03[-2]	7.63[-2]	8.70[-2]	1.03[-1]	1.24[-1]	1.50[-1]	1.82[-1]
$2s4p^*5p$	1.39[-4]	7.53[-4]	2.34[-3]	3.90[-3]	6.63[-3]	7.71[-3]	9.16[-3]	1.08[-2]	1.25[-2]	1.45[-2]
$2s4p^*5d^*$	8.74[-5]	4.58[-4]	1.65[-3]	3.16[-3]	6.53[-3]	8.12[-3]	1.05[-2]	1.35[-2]	1.67[-2]	1.97[-2]
$2s4p^*5d$	1.49[-3]	6.55[-3]	1.69[-2]	2.57[-2]	4.07[-2]	4.70[-2]	5.63[-2]	6.87[-2]	8.34[-2]	9.95[-2]
$2s4p5s$	7.15[-3]	2.80[-2]	6.64[-2]	9.68[-2]	1.44[-1]	1.62[-1]	1.87[-1]	2.17[-1]	2.49[-1]	2.79[-1]
$2s4p5p^*$	1.38[-4]	7.49[-4]	2.32[-3]	3.86[-3]	6.53[-3]	7.57[-3]	8.96[-3]	1.06[-2]	1.23[-2]	1.42[-2]
$2s4p5p$	3.50[-4]	1.47[-3]	3.57[-3]	5.28[-3]	7.92[-3]	8.94[-3]	1.04[-2]	1.25[-2]	1.57[-2]	2.07[-2]
$2s4d^*5s$	3.75[-3]	1.70[-2]	4.51[-2]	6.89[-2]	1.06[-1]	1.19[-1]	1.37[-1]	1.56[-1]	1.73[-1]	1.86[-1]
$2s4d^*5p^*$	7.57[-5]	4.40[-4]	1.59[-3]	2.98[-3]	5.96[-3]	7.35[-3]	9.42[-3]	1.21[-2]	1.49[-2]	1.77[-2]
$2s4d^*5p$	1.25[-3]	5.89[-3]	1.49[-2]	2.14[-2]	2.85[-2]	2.98[-2]	2.98[-2]	2.71[-2]	2.15[-2]	1.49[-2]
$2s4d^*5d^*$	3.32[-4]	1.97[-3]	6.58[-3]	1.12[-2]	1.89[-2]	2.17[-2]	2.53[-2]	2.88[-2]	3.09[-2]	3.12[-2]
$2s4d^*5d$	7.77[-3]	3.61[-2]	9.35[-2]	1.39[-1]	2.04[-1]	2.26[-1]	2.53[-1]	2.82[-1]	3.05[-1]	3.20[-1]
$2s4d5s$	5.57[-3]	2.50[-2]	6.56[-2]	9.94[-2]	1.50[-1]	1.67[-1]	1.88[-1]	2.09[-1]	2.22[-1]	2.27[-1]
$2s4d5p^*$	1.25[-3]	6.14[-3]	1.70[-2]	2.68[-2]	4.34[-2]	5.04[-2]	6.05[-2]	7.36[-2]	8.84[-2]	1.04[-1]
$2s4d5p$	9.44[-4]	4.44[-3]	1.15[-2]	1.69[-2]	2.31[-2]	2.43[-2]	2.45[-2]	2.24[-2]	1.80[-2]	1.33[-2]
$2s4d5d^*$	7.78[-3]	3.60[-2]	9.33[-2]	1.38[-1]	2.02[-1]	2.23[-1]	2.50[-1]	2.76[-1]	2.97[-1]	3.09[-1]
$2s4d5d$	4.39[-3]	2.09[-2]	5.61[-2]	8.50[-2]	1.27[-1]	1.42[-1]	1.59[-1]	1.76[-1]	1.88[-1]	1.92[-1]
$2s4d5f^*$	7.59[-6]	6.47[-4]	8.44[-3]	2.25[-2]	5.47[-2]	6.86[-2]	8.73[-2]	1.07[-1]	1.22[-1]	1.29[-1]
$2s4s6s$	2.18[-3]	8.02[-3]	1.91[-2]	2.84[-2]	4.36[-2]	4.99[-2]	5.91[-2]	7.14[-2]	8.64[-2]	1.04[-1]
$2s4s6p^*$	1.98[-3]	7.97[-3]	2.00[-2]	3.03[-2]	4.76[-2]	5.48[-2]	6.54[-2]	7.97[-2]	9.72[-2]	1.18[-1]
$2s4s6p$	3.93[-3]	1.57[-2]	3.92[-2]	5.90[-2]	9.10[-2]	1.04[-1]	1.22[-1]	1.44[-1]	1.67[-1]	1.90[-1]
$2s4s6d^*$	2.78[-3]	1.15[-2]	3.01[-2]	4.63[-2]	7.21[-2]	8.20[-2]	9.52[-2]	1.10[-1]	1.24[-1]	1.36[-1]
$2s4s6d$	4.13[-3]	1.69[-2]	4.39[-2]	6.69[-2]	1.02[-1]	1.15[-1]	1.31[-1]	1.48[-1]	1.60[-1]	1.67[-1]
$2s4s6f^*$	1.49[-6]	1.11[-4]	1.41[-3]	3.78[-3]	9.42[-3]	1.20[-2]	1.55[-2]	1.94[-2]	2.26[-2]	2.44[-2]
$2s4s6f$	1.96[-6]	1.46[-4]	1.82[-3]	4.84[-3]	1.18[-2]	1.48[-2]	1.87[-2]	2.27[-2]	2.54[-2]	2.61[-2]
$2s4p^*6s$	1.59[-3]	6.71[-3]	1.66[-2]	2.48[-2]	3.81[-2]	4.35[-2]	5.15[-2]	6.22[-2]	7.55[-2]	9.18[-2]
$2s4p^*6d$	7.66[-4]	3.38[-3]	8.78[-3]	1.33[-2]	2.11[-2]	2.44[-2]	2.93[-2]	3.59[-2]	4.37[-2]	5.25[-2]
$2s4p^*6f$	1.58[-6]	1.46[-4]	1.98[-3]	5.38[-3]	1.38[-2]	1.77[-2]	2.32[-2]	2.95[-2]	3.49[-2]	3.84[-2]
$2s4p6s$	3.13[-3]	1.32[-2]	3.24[-2]	4.78[-2]	7.18[-2]	8.11[-2]	9.38[-2]	1.09[-1]	1.25[-1]	1.40[-1]
$2s4p6f^*$	1.91[-6]	1.74[-4]	2.25[-3]	5.88[-3]	1.37[-2]	1.67[-2]	2.01[-2]	2.21[-2]	2.14[-2]	1.81[-2]
$2s4p6f$	1.52[-6]	1.44[-4]	1.86[-3]	4.94[-3]	1.17[-2]	1.44[-2]	1.75[-2]	1.96[-2]	1.94[-2]	1.72[-2]
$2s4d^*6s$	1.64[-3]	7.96[-3]	2.19[-2]	3.39[-2]	5.25[-2]	5.94[-2]	6.83[-2]	7.79[-2]	8.62[-2]	9.24[-2]
$2s4d^*6d^*$	1.73[-4]	1.05[-3]	3.55[-3]	6.07[-3]	1.03[-2]	1.19[-2]	1.39[-2]	1.58[-2]	1.71[-2]	1.73[-2]
$2s4d^*6d$	4.02[-3]	1.88[-2]	4.91[-2]	7.30[-2]	1.07[-1]	1.19[-1]	1.33[-1]	1.49[-1]	1.61[-1]	1.70[-1]
$2s4d^*6f^*$	1.68[-6]	1.47[-4]	1.93[-3]	5.13[-3]	1.23[-2]	1.54[-2]	1.94[-2]	2.33[-2]	2.59[-2]	2.66[-2]
$2s4d^*6f$	5.02[-6]	4.21[-4]	5.23[-3]	1.34[-2]	3.10[-2]	3.82[-2]	4.74[-2]	5.65[-2]	6.24[-2]	6.41[-2]
$2s4d6s$	2.43[-3]	1.17[-2]	3.19[-2]	4.89[-2]	7.43[-2]	8.32[-2]	9.39[-2]	1.04[-1]	1.11[-1]	1.13[-1]
$2s4d6p^*$	5.85[-4]	3.05[-3]	8.78[-3]	1.40[-2]	2.31[-2]	2.69[-2]	3.23[-2]	3.94[-2]	4.74[-2]	5.55[-2]
$2s4d6d^*$	4.02[-3]	1.88[-2]	4.89[-2]	7.25[-2]	1.06[-1]	1.17[-1]	1.30[-1]	1.44[-1]	1.55[-1]	1.62[-1]
$2s4d6d$	2.27[-3]	1.09[-2]	2.96[-2]	4.50[-2]	6.74[-2]	7.52[-2]	8.46[-2]	9.37[-2]	1.00[-1]	1.03[-1]
$2s4d6f^*$	5.57[-6]	4.68[-4]	5.87[-3]	1.52[-2]	3.58[-2]	4.45[-2]	5.60[-2]	6.82[-2]	7.74[-2]	8.19[-2]
$2s4d6f$	4.56[-6]	3.89[-4]	4.96[-3]	1.30[-2]	3.04[-2]	3.77[-2]	4.69[-2]	5.59[-2]	6.13[-2]	6.22[-2]
$2s4f^*6d$	1.83[-6]	1.55[-4]	2.07[-3]	5.66[-3]	1.41[-2]	1.78[-2]	2.29[-2]	2.84[-2]	3.28[-2]	3.53[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Zn-like ions										
$2s4s7s$	1.15[-3]	4.45[-3]	1.10[-2]	1.64[-2]	2.56[-2]	2.94[-2]	3.49[-2]	4.24[-2]	5.13[-2]	6.18[-2]
$2s4s7p^*$	1.09[-3]	4.55[-3]	1.17[-2]	1.80[-2]	2.85[-2]	3.30[-2]	3.95[-2]	4.82[-2]	5.90[-2]	7.17[-2]
$2s4s7p$	2.17[-3]	9.00[-3]	2.30[-2]	3.50[-2]	5.48[-2]	6.27[-2]	7.38[-2]	8.75[-2]	1.02[-1]	1.16[-1]
$2s4s7d^*$	1.63[-3]	6.84[-3]	1.82[-2]	2.81[-2]	4.41[-2]	5.03[-2]	5.85[-2]	6.79[-2]	7.69[-2]	8.45[-2]
$2s4s7d$	2.42[-3]	1.01[-2]	2.65[-2]	4.07[-2]	6.26[-2]	7.06[-2]	8.08[-2]	9.12[-2]	9.94[-2]	1.04[-1]
$2s4p^*7s$	8.39[-4]	3.69[-3]	9.42[-3]	1.42[-2]	2.19[-2]	2.50[-2]	2.97[-2]	3.59[-2]	4.37[-2]	5.31[-2]
$2s4p^*7d$	4.47[-4]	2.00[-3]	5.11[-3]	7.87[-3]	1.25[-2]	1.44[-2]	1.72[-2]	2.13[-2]	2.60[-2]	3.14[-2]
$2s4p7s$	1.65[-3]	7.24[-3]	1.83[-2]	2.73[-2]	4.13[-2]	4.67[-2]	5.41[-2]	6.30[-2]	7.23[-2]	8.09[-2]
$2s4d^*7s$	8.62[-4]	4.38[-3]	1.23[-2]	1.93[-2]	3.01[-2]	3.41[-2]	3.93[-2]	4.48[-2]	4.96[-2]	5.30[-2]
$2s4d^*7d^*$	1.02[-4]	6.26[-4]	2.14[-3]	3.68[-3]	6.27[-3]	7.24[-3]	8.47[-3]	9.67[-3]	1.05[-2]	1.06[-2]
$2s4d^*7d$	2.35[-3]	1.11[-2]	2.91[-2]	4.33[-2]	6.35[-2]	7.05[-2]	7.93[-2]	8.84[-2]	9.62[-2]	1.02[-1]
$2s4d7s$	1.28[-3]	6.45[-3]	1.80[-2]	2.78[-2]	4.26[-2]	4.78[-2]	5.40[-2]	5.99[-2]	6.37[-2]	6.47[-2]
$2s4d7p^*$	3.22[-4]	1.74[-3]	5.12[-3]	8.27[-3]	1.37[-2]	1.60[-2]	1.94[-2]	2.36[-2]	2.84[-2]	3.32[-2]
$2s4d7d^*$	2.35[-3]	1.11[-2]	2.90[-2]	4.29[-2]	6.25[-2]	6.91[-2]	7.72[-2]	8.53[-2]	9.17[-2]	9.57[-2]
$2s4d7d$	1.33[-3]	6.47[-3]	1.76[-2]	2.68[-2]	4.02[-2]	4.49[-2]	5.05[-2]	5.61[-2]	6.00[-2]	6.16[-2]
$2s5s5s$	7.58[-4]	3.03[-3]	7.50[-3]	1.12[-2]	1.75[-2]	2.00[-2]	2.38[-2]	2.88[-2]	3.50[-2]	4.22[-2]
$2s5s5p^*$	1.27[-3]	5.59[-3]	1.44[-2]	2.19[-2]	3.44[-2]	3.96[-2]	4.71[-2]	5.74[-2]	7.00[-2]	8.53[-2]
$2s5s5p$	2.51[-3]	1.10[-2]	2.81[-2]	4.24[-2]	6.54[-2]	7.44[-2]	8.70[-2]	1.02[-1]	1.18[-1]	1.34[-1]
$2s5s5d^*$	1.60[-3]	7.47[-3]	2.05[-2]	3.19[-2]	4.99[-2]	5.67[-2]	6.56[-2]	7.56[-2]	8.47[-2]	9.20[-2]
$2s5s5d$	2.37[-3]	1.10[-2]	2.99[-2]	4.60[-2]	7.06[-2]	7.94[-2]	9.03[-2]	1.01[-1]	1.09[-1]	1.12[-1]
$2s5p^*5d$	5.19[-4]	2.55[-3]	7.05[-3]	1.10[-2]	1.79[-2]	2.08[-2]	2.50[-2]	3.07[-2]	3.73[-2]	4.44[-2]
$2s5p^*5f$	8.62[-7]	7.44[-5]	1.10[-3]	3.15[-3]	8.39[-3]	1.09[-2]	1.44[-2]	1.84[-2]	2.17[-2]	2.36[-2]
$2s5p5f^*$	1.06[-6]	8.92[-5]	1.27[-3]	3.53[-3]	8.73[-3]	1.08[-2]	1.34[-2]	1.53[-2]	1.53[-2]	1.35[-2]
$2s5p5f$	8.59[-7]	7.23[-5]	1.05[-3]	2.93[-3]	7.32[-3]	9.14[-3]	1.13[-2]	1.31[-2]	1.34[-2]	1.23[-2]
$2s5d^*5d$	3.26[-3]	1.53[-2]	3.99[-2]	5.93[-2]	8.69[-2]	9.64[-2]	1.08[-1]	1.21[-1]	1.31[-1]	1.38[-1]
$2s5d^*5f^*$	9.52[-7]	8.51[-5]	1.16[-3]	3.19[-3]	7.94[-3]	1.00[-2]	1.27[-2]	1.55[-2]	1.73[-2]	1.79[-2]
$2s5d^*5f$	2.82[-6]	2.36[-4]	2.96[-3]	7.69[-3]	1.78[-2]	2.19[-2]	2.71[-2]	3.23[-2]	3.56[-2]	3.66[-2]
$2s5d5d$	9.22[-4]	4.44[-3]	1.21[-2]	1.84[-2]	2.77[-2]	3.10[-2]	3.49[-2]	3.88[-2]	4.17[-2]	4.29[-2]
$2s5d5f^*$	3.13[-6]	2.63[-4]	3.34[-3]	8.77[-3]	2.08[-2]	2.59[-2]	3.28[-2]	4.02[-2]	4.60[-2]	4.92[-2]
$2s5d5f$	2.57[-6]	2.22[-4]	2.91[-3]	7.79[-3]	1.87[-2]	2.33[-2]	2.93[-2]	3.51[-2]	3.87[-2]	3.94[-2]
$2s5s6s$	6.68[-4]	2.89[-3]	7.47[-3]	1.14[-2]	1.80[-2]	2.08[-2]	2.48[-2]	3.02[-2]	3.68[-2]	4.44[-2]
$2s5s6p^*$	5.97[-4]	2.79[-3]	7.47[-3]	1.16[-2]	1.85[-2]	2.14[-2]	2.56[-2]	3.13[-2]	3.84[-2]	4.68[-2]
$2s5s6p$	1.18[-3]	5.50[-3]	1.46[-2]	2.25[-2]	3.53[-2]	4.04[-2]	4.76[-2]	5.64[-2]	6.57[-2]	7.46[-2]
$2s5s6d^*$	8.33[-4]	3.98[-3]	1.11[-2]	1.75[-2]	2.76[-2]	3.15[-2]	3.66[-2]	4.24[-2]	4.77[-2]	5.21[-2]
$2s5s6d$	1.24[-3]	5.86[-3]	1.62[-2]	2.52[-2]	3.91[-2]	4.42[-2]	5.04[-2]	5.68[-2]	6.15[-2]	6.39[-2]
$2s5p^*6s$	5.56[-4]	2.63[-3]	7.02[-3]	1.08[-2]	1.72[-2]	1.98[-2]	2.37[-2]	2.89[-2]	3.53[-2]	4.30[-2]
$2s5p^*6d$	2.66[-4]	1.32[-3]	3.66[-3]	5.71[-3]	9.28[-3]	1.08[-2]	1.30[-2]	1.60[-2]	1.96[-2]	2.34[-2]
$2s5p6s$	1.10[-3]	5.18[-3]	1.37[-2]	2.10[-2]	3.26[-2]	3.72[-2]	4.36[-2]	5.14[-2]	5.96[-2]	6.73[-2]
$2s5d^*6s$	6.98[-4]	3.50[-3]	9.96[-3]	1.57[-2]	2.48[-2]	2.82[-2]	3.27[-2]	3.77[-2]	4.22[-2]	4.57[-2]
$2s5d^*6d$	1.68[-3]	7.98[-3]	2.10[-2]	3.13[-2]	4.59[-2]	5.10[-2]	5.73[-2]	6.40[-2]	6.97[-2]	7.38[-2]
$2s5d6s$	1.04[-3]	5.16[-3]	1.45[-2]	2.26[-2]	3.51[-2]	3.95[-2]	4.50[-2]	5.04[-2]	5.42[-2]	5.59[-2]
$2s5d6p^*$	2.44[-4]	1.27[-3]	3.64[-3]	5.79[-3]	9.52[-3]	1.11[-2]	1.34[-2]	1.65[-2]	2.00[-2]	2.37[-2]
$2s5d6d^*$	1.68[-3]	7.97[-3]	2.09[-2]	3.12[-2]	4.57[-2]	5.07[-2]	5.69[-2]	6.34[-2]	6.88[-2]	7.26[-2]
$2s5d6d$	9.54[-4]	4.66[-3]	1.28[-2]	1.95[-2]	2.95[-2]	3.30[-2]	3.72[-2]	4.15[-2]	4.46[-2]	4.62[-2]
$2s5s7s$	3.53[-4]	1.60[-3]	4.27[-3]	6.61[-3]	1.06[-2]	1.22[-2]	1.46[-2]	1.79[-2]	2.18[-2]	2.63[-2]
$2s5s7p^*$	3.28[-4]	1.59[-3]	4.37[-3]	6.85[-3]	1.11[-2]	1.29[-2]	1.55[-2]	1.90[-2]	2.33[-2]	2.84[-2]
$2s5s7p$	6.52[-4]	3.15[-3]	8.59[-3]	1.34[-2]	2.13[-2]	2.44[-2]	2.89[-2]	3.43[-2]	4.02[-2]	4.58[-2]
$2s5s7d^*$	4.89[-4]	2.37[-3]	6.72[-3]	1.06[-2]	1.69[-2]	1.93[-2]	2.25[-2]	2.61[-2]	2.95[-2]	3.23[-2]
$2s5s7d$	7.26[-4]	3.49[-3]	9.81[-3]	1.53[-2]	2.40[-2]	2.71[-2]	3.10[-2]	3.51[-2]	3.81[-2]	3.97[-2]
$2s5p^*7s$	2.93[-4]	1.45[-3]	3.97[-3]	6.16[-3]	9.86[-3]	1.14[-2]	1.37[-2]	1.67[-2]	2.04[-2]	2.49[-2]
$2s5p^*7d$	1.56[-4]	7.78[-4]	2.16[-3]	3.40[-3]	5.48[-3]	6.35[-3]	7.73[-3]	9.48[-3]	1.16[-2]	1.40[-2]
$2s5p7s$	5.80[-4]	2.85[-3]	7.76[-3]	1.19[-2]	1.87[-2]	2.14[-2]	2.52[-2]	2.97[-2]	3.44[-2]	3.88[-2]
$2s5d^*7s$	3.67[-4]	1.93[-3]	5.61[-3]	8.91[-3]	1.42[-2]	1.62[-2]	1.88[-2]	2.17[-2]	2.42[-2]	2.62[-2]
$2s5d^*7d$	9.85[-4]	4.71[-3]	1.24[-2]	1.86[-2]	2.73[-2]	3.04[-2]	3.42[-2]	3.82[-2]	4.17[-2]	4.43[-2]
$2s5d7s$	5.45[-4]	2.84[-3]	8.18[-3]	1.29[-2]	2.01[-2]	2.27[-2]	2.59[-2]	2.90[-2]	3.12[-2]	3.21[-2]
$2s5d7p^*$	1.34[-4]	7.23[-4]	2.12[-3]	3.42[-3]	5.67[-3]	6.62[-3]	8.02[-3]	9.86[-3]	1.20[-2]	1.42[-2]
$2s5d7d^*$	9.85[-4]	4.71[-3]	1.24[-2]	1.85[-2]	2.71[-2]	3.01[-2]	3.38[-2]	3.76[-2]	4.08[-2]	4.31[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Zn-like ions										
<i>2s5d7d</i>	5.58[-4]	2.75[-3]	7.60[-3]	1.16[-2]	1.76[-2]	1.97[-2]	2.23[-2]	2.49[-2]	2.68[-2]	2.78[-2]
<i>2s6s6s</i>	1.47[-4]	6.89[-4]	1.86[-3]	2.89[-3]	4.65[-3]	5.38[-3]	6.46[-3]	7.90[-3]	9.64[-3]	1.17[-2]
<i>2s6s6p*</i>	2.61[-4]	1.31[-3]	3.64[-3]	5.71[-3]	9.23[-3]	1.07[-2]	1.29[-2]	1.58[-2]	1.93[-2]	2.36[-2]
<i>2s6s6p</i>	5.18[-4]	2.59[-3]	7.13[-3]	1.11[-2]	1.76[-2]	2.02[-2]	2.39[-2]	2.83[-2]	3.30[-2]	3.75[-2]
<i>2s6s6d*</i>	3.64[-4]	1.87[-3]	5.41[-3]	8.58[-3]	1.37[-2]	1.57[-2]	1.82[-2]	2.11[-2]	2.38[-2]	2.59[-2]
<i>2s6s6d</i>	5.40[-4]	2.75[-3]	7.88[-3]	1.24[-2]	1.94[-2]	2.20[-2]	2.51[-2]	2.83[-2]	3.06[-2]	3.17[-2]
<i>2s6p*6d</i>	1.25[-4]	6.57[-4]	1.88[-3]	3.00[-3]	4.94[-3]	5.76[-3]	6.97[-3]	8.59[-3]	1.05[-2]	1.25[-2]
<i>2s6d*6d</i>	8.71[-4]	4.17[-3]	1.10[-2]	1.65[-2]	2.42[-2]	2.69[-2]	3.02[-2]	3.38[-2]	3.68[-2]	3.90[-2]
<i>2s6d*6f</i>	1.06[-6]	8.74[-5]	1.04[-3]	2.61[-3]	5.79[-3]	7.04[-3]	8.62[-3]	1.01[-2]	1.12[-2]	1.15[-2]
<i>2s6d6d</i>	2.47[-4]	1.22[-3]	3.38[-3]	5.18[-3]	7.85[-3]	8.78[-3]	9.94[-3]	1.11[-2]	1.20[-2]	1.25[-2]
<i>2s6d6f*</i>	1.18[-6]	9.74[-5]	1.18[-3]	2.99[-3]	6.81[-3]	8.39[-3]	1.05[-2]	1.28[-2]	1.46[-2]	1.57[-2]
<i>2s6d6f</i>	9.69[-7]	8.27[-5]	1.04[-3]	2.69[-3]	6.22[-3]	7.67[-3]	9.52[-3]	1.13[-2]	1.25[-2]	1.27[-2]
<i>2s6s7s</i>	1.55[-4]	7.65[-4]	2.13[-3]	3.35[-3]	5.44[-3]	6.32[-3]	7.61[-3]	9.34[-3]	1.14[-2]	1.38[-2]
<i>2s6s7p*</i>	1.44[-4]	7.49[-4]	2.13[-3]	3.39[-3]	5.54[-3]	6.44[-3]	7.77[-3]	9.55[-3]	1.17[-2]	1.43[-2]
<i>2s6s7p</i>	2.85[-4]	1.48[-3]	4.19[-3]	6.60[-3]	1.06[-2]	1.22[-2]	1.45[-2]	1.73[-2]	2.02[-2]	2.30[-2]
<i>2s6s7d*</i>	2.14[-4]	1.11[-3]	3.27[-3]	5.22[-3]	8.39[-3]	9.60[-3]	1.12[-2]	1.30[-2]	1.47[-2]	1.61[-2]
<i>2s6s7d</i>	3.17[-4]	1.64[-3]	4.76[-3]	7.54[-3]	1.19[-2]	1.35[-2]	1.55[-2]	1.75[-2]	1.90[-2]	1.97[-2]
<i>2s6p*7s</i>	1.38[-4]	7.22[-4]	2.06[-3]	3.25[-3]	5.30[-3]	6.17[-3]	7.42[-3]	9.11[-3]	1.12[-2]	1.37[-2]
<i>2s6p7s</i>	2.73[-4]	1.42[-3]	4.03[-3]	6.32[-3]	1.01[-2]	1.17[-2]	1.38[-2]	1.64[-2]	1.91[-2]	2.16[-2]
<i>2s6d*7s</i>	1.91[-4]	1.03[-3]	3.05[-3]	4.88[-3]	7.85[-3]	8.99[-3]	1.05[-2]	1.21[-2]	1.37[-2]	1.49[-2]
<i>2s6d*7d</i>	5.10[-4]	2.46[-3]	6.55[-3]	9.80[-3]	1.44[-2]	1.60[-2]	1.81[-2]	2.02[-2]	2.21[-2]	2.35[-2]
<i>2s6d7s</i>	2.84[-4]	1.51[-3]	4.44[-3]	7.06[-3]	1.11[-2]	1.26[-2]	1.44[-2]	1.63[-2]	1.76[-2]	1.82[-2]
<i>2s6d7d*</i>	5.10[-4]	2.46[-3]	6.55[-3]	9.79[-3]	1.44[-2]	1.60[-2]	1.80[-2]	2.01[-2]	2.19[-2]	2.32[-2]
<i>2s6d7d</i>	2.89[-4]	1.44[-3]	4.02[-3]	6.19[-3]	9.39[-3]	1.05[-2]	1.19[-2]	1.33[-2]	1.44[-2]	1.50[-2]
<i>2s7s7s</i>	4.11[-5]	2.12[-4]	6.08[-4]	9.68[-4]	1.59[-3]	1.86[-3]	2.24[-3]	2.76[-3]	3.38[-3]	4.09[-3]
<i>2s7s7p*</i>	7.56[-5]	4.12[-4]	1.21[-3]	1.93[-3]	3.18[-3]	3.71[-3]	4.48[-3]	5.52[-3]	6.78[-3]	8.29[-3]
<i>2s7s7p</i>	1.50[-4]	8.15[-4]	2.37[-3]	3.76[-3]	6.10[-3]	7.04[-3]	8.35[-3]	9.97[-3]	1.17[-2]	1.33[-2]
<i>2s7s7d*</i>	1.12[-4]	6.13[-4]	1.84[-3]	2.97[-3]	4.80[-3]	5.51[-3]	6.44[-3]	7.49[-3]	8.45[-3]	9.22[-3]
<i>2s7s7d</i>	1.67[-4]	9.02[-4]	2.69[-3]	4.29[-3]	6.81[-3]	7.73[-3]	8.89[-3]	1.00[-2]	1.09[-2]	1.13[-2]
<i>2s7p*7d</i>	4.02[-5]	2.20[-4]	6.54[-4]	1.05[-3]	1.73[-3]	2.03[-3]	2.47[-3]	3.06[-3]	3.74[-3]	4.46[-3]
<i>2s7p7f*</i>	1.21[-7]	1.27[-5]	1.80[-4]	4.74[-4]	1.16[-3]	1.44[-3]	1.75[-3]	2.00[-3]	2.02[-3]	1.81[-3]
<i>2s7d*7d</i>	2.98[-4]	1.45[-3]	3.89[-3]	5.83[-3]	8.59[-3]	9.54[-3]	1.07[-2]	1.20[-2]	1.32[-2]	1.40[-2]
<i>2s7d*7f*</i>	1.50[-7]	1.33[-5]	1.70[-4]	4.43[-4]	1.04[-3]	1.29[-3]	1.62[-3]	1.94[-3]	2.16[-3]	2.23[-3]
<i>2s7d*7f</i>	4.42[-7]	3.62[-5]	4.20[-4]	1.03[-3]	2.23[-3]	2.69[-3]	3.28[-3]	3.84[-3]	4.21[-3]	4.35[-3]
<i>2s7d7d</i>	8.45[-5]	4.27[-4]	1.20[-3]	1.85[-3]	2.81[-3]	3.15[-3]	3.57[-3]	4.00[-3]	4.34[-3]	4.53[-3]
<i>2s7d7f*</i>	4.91[-7]	4.04[-5]	4.75[-4]	1.18[-3]	2.63[-3]	3.22[-3]	4.00[-3]	4.85[-3]	5.54[-3]	5.98[-3]
<i>2s7d7f</i>	4.05[-7]	3.44[-5]	4.21[-4]	1.07[-3]	2.42[-3]	2.97[-3]	3.67[-3]	4.35[-3]	4.78[-3]	4.89[-3]

TABLE III. L_2 -shell Auger rates $A(n_0j_0l_0, n_1j_1l_1, n_2j_2l_2)$ (in mau) as function of Z for Ni-, Cu-, and Zn-like ions.

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
Ni-like ions										
$2p^*3s3s$	8.52[-2]	9.10[-2]	1.01[-1]	1.08[-1]	1.18[-1]	1.21[-1]	1.21[-1]	1.30[-1]	1.33[-1]	1.36[-1]
$2p^*3s3p^*$	1.56[0]	1.74[0]	2.07[0]	2.34[0]	2.81[0]	3.02[0]	3.02[0]	3.81[0]	4.45[0]	5.27[0]
$2p^*3s3p$	1.27[-1]	1.48[-1]	1.84[-1]	2.13[-1]	2.60[-1]	2.79[-1]	2.79[-1]	3.38[-1]	3.72[-1]	4.04[-1]
$2p^*3s3d^*$	7.06[-2]	7.83[-2]	8.97[-2]	1.02[-1]	1.32[-1]	1.49[-1]	1.49[-1]	2.31[-1]	3.11[-1]	4.24[-1]
$2p^*3s3d$	1.50[-1]	2.04[-1]	2.72[-1]	3.17[-1]	3.72[-1]	3.88[-1]	3.88[-1]	4.07[-1]	3.95[-1]	3.70[-1]
$2p^*3p^*3p^*$	1.33[0]	1.55[0]	1.91[0]	2.20[0]	2.69[0]	2.90[0]	2.90[0]	3.70[0]	4.33[0]	5.14[0]
$2p^*3p^*3p$	4.58[0]	5.26[0]	6.39[0]	7.26[0]	8.62[0]	9.16[0]	9.16[0]	1.09[1]	1.20[1]	1.31[1]
$2p^*3p^*3d^*$	1.54[0]	2.20[0]	3.07[0]	3.67[0]	4.50[0]	4.78[0]	4.78[0]	5.46[0]	5.71[0]	5.86[0]
$2p^*3p^*3d$	2.98[0]	4.17[0]	5.67[0]	6.64[0]	7.88[0]	8.25[0]	8.25[0]	8.94[0]	8.96[0]	8.71[0]
$2p^*3p3p$	1.25[-1]	1.41[-1]	1.68[-1]	1.87[-1]	2.13[-1]	2.22[-1]	2.22[-1]	2.42[-1]	2.44[-1]	2.35[-1]
$2p^*3p3d^*$	1.85[0]	2.72[0]	3.93[0]	4.80[0]	5.99[0]	6.39[0]	6.39[0]	7.19[0]	7.32[0]	7.19[0]
$2p^*3p3d$	2.70[-1]	3.80[-1]	5.20[-1]	6.11[-1]	7.25[-1]	7.57[-1]	7.57[-1]	8.01[-1]	7.85[-1]	7.41[-1]
$2p^*3d^*3d^*$	1.23[0]	2.11[0]	3.28[0]	4.07[0]	5.05[0]	5.32[0]	5.32[0]	5.69[0]	5.52[0]	5.09[0]
$2p^*3d^*3d$	5.58[0]	9.51[0]	1.46[1]	1.80[1]	2.20[1]	2.30[1]	2.30[1]	2.40[1]	2.29[1]	2.08[1]
$2p^*3d3d$	2.63[-1]	4.45[-1]	6.78[-1]	8.25[-1]	9.90[-1]	1.03[0]	1.03[0]	1.04[0]	9.62[-1]	8.43[-1]
Cu-like ions										
$2p^*3s4p^*$	1.08[-1]	2.14[-1]	3.38[-1]	4.20[-1]	5.46[-1]	5.98[-1]	6.75[-1]	7.87[-1]	9.35[-1]	1.13[0]
$2p^*3s4p$	1.02[-2]	2.18[-2]	3.77[-2]	4.95[-2]	6.82[-2]	7.57[-2]	8.63[-2]	9.97[-2]	1.14[-1]	1.28[-1]
$2p^*3p^*4s$	1.61[-1]	2.97[-1]	4.87[-1]	6.27[-1]	8.53[-1]	9.48[-1]	1.09[0]	1.28[0]	1.53[0]	1.84[0]
$2p^*3p^*4p^*$	2.06[-1]	4.38[-1]	7.49[-1]	9.75[-1]	1.33[0]	1.48[0]	1.70[0]	2.00[0]	2.39[0]	2.88[0]
$2p^*3p^*4p$	3.89[-1]	8.37[-1]	1.44[0]	1.88[0]	2.54[0]	2.80[0]	3.16[0]	3.62[0]	4.11[0]	4.62[0]
$2p^*3p^*4d^*$	1.40[-1]	3.51[-1]	6.83[-1]	9.38[-1]	1.32[0]	1.46[0]	1.64[0]	1.84[0]	2.02[0]	2.16[0]
$2p^*3p^*4d$	2.74[-1]	6.71[-1]	1.28[0]	1.72[0]	2.35[0]	2.57[0]	2.83[0]	3.08[0]	3.24[0]	3.29[0]
$2p^*3p4s$	1.16[-2]	2.19[-2]	3.70[-2]	4.83[-2]	6.58[-2]	7.25[-2]	8.16[-2]	9.22[-2]	1.03[-1]	1.12[-1]
$2p^*3p4p^*$	3.25[-1]	6.64[-1]	1.08[0]	1.35[0]	1.74[0]	1.89[0]	2.08[0]	2.32[0]	2.57[0]	2.82[0]
$2p^*3p4p$	1.91[-2]	3.94[-2]	6.46[-2]	8.12[-2]	1.04[-1]	1.12[-1]	1.23[-1]	1.33[-1]	1.40[-1]	1.41[-1]
$2p^*3p4d^*$	1.62[-1]	4.05[-1]	7.84[-1]	1.07[0]	1.48[0]	1.63[0]	1.80[0]	1.98[0]	2.10[0]	2.15[0]
$2p^*3p4d$	2.34[-2]	5.38[-2]	9.66[-2]	1.26[-1]	1.67[-1]	1.81[-1]	1.96[-1]	2.09[-1]	2.16[-1]	2.15[-1]
$2p^*3d^*4s$	7.36[-3]	1.39[-2]	2.22[-2]	2.86[-2]	4.08[-2]	4.70[-2]	5.79[-2]	7.64[-2]	1.05[-1]	1.45[-1]
$2p^*3d^*4p^*$	1.08[-1]	2.75[-1]	5.17[-1]	6.88[-1]	9.21[-1]	9.98[-1]	1.09[0]	1.17[0]	1.21[0]	1.22[0]
$2p^*3d^*4p$	1.53[-1]	4.17[-1]	8.50[-1]	1.18[0]	1.67[0]	1.84[0]	2.05[0]	2.23[0]	2.34[0]	2.35[0]
$2p^*3d^*4d^*$	2.14[-1]	6.22[-1]	1.30[0]	1.81[0]	2.51[0]	2.73[0]	2.98[0]	3.16[0]	3.18[0]	3.04[0]
$2p^*3d^*4d$	5.04[-1]	1.47[0]	3.10[0]	4.33[0]	6.01[0]	6.53[0]	7.10[0]	7.48[0]	7.48[0]	7.08[0]
$2p^*3d4s$	1.46[-2]	3.22[-2]	5.75[-2]	7.46[-2]	9.63[-2]	1.03[-1]	1.09[-1]	1.13[-1]	1.12[-1]	1.08[-1]
$2p^*3d4p^*$	1.99[-1]	4.89[-1]	8.72[-1]	1.12[0]	1.41[0]	1.49[0]	1.58[0]	1.64[0]	1.63[0]	1.57[0]
$2p^*3d4p$	2.11[-2]	5.43[-2]	1.03[-1]	1.37[-1]	1.82[-1]	1.97[-1]	2.12[-1]	2.24[-1]	2.26[-1]	2.19[-1]
$2p^*3d4d^*$	4.70[-1]	1.31[0]	2.57[0]	3.43[0]	4.50[0]	4.81[0]	5.11[0]	5.27[0]	5.19[0]	4.86[0]
$2p^*3d4d$	4.62[-2]	1.31[-1]	2.64[-1]	3.60[-1]	4.82[-1]	5.17[-1]	5.51[-1]	5.65[-1]	5.46[-1]	4.97[-1]
$2p^*3s5p^*$	3.68[-2]	7.90[-2]	1.30[-1]	1.64[-1]	2.14[-1]	2.35[-1]	2.66[-1]	3.11[-1]	3.71[-1]	4.47[-1]
$2p^*3p^*5s$	5.03[-2]	1.11[-1]	2.00[-1]	2.69[-1]	3.81[-1]	4.28[-1]	4.97[-1]	5.93[-1]	7.14[-1]	8.60[-1]
$2p^*3p^*5p^*$	7.12[-2]	1.68[-1]	3.05[-1]	4.08[-1]	5.73[-1]	6.42[-1]	7.43[-1]	8.83[-1]	1.06[0]	1.28[0]
$2p^*3p^*5p$	1.36[-1]	3.28[-1]	6.08[-1]	8.19[-1]	1.15[0]	1.28[0]	1.46[0]	1.69[0]	1.94[0]	2.20[0]
$2p^*3p^*5d^*$	5.95[-2]	1.54[-1]	3.11[-1]	4.34[-1]	6.22[-1]	6.93[-1]	7.86[-1]	8.91[-1]	9.89[-1]	1.07[0]
$2p^*3p^*5d$	1.16[-1]	2.95[-1]	5.80[-1]	7.97[-1]	1.11[0]	1.23[0]	1.36[0]	1.50[0]	1.60[0]	1.64[0]
$2p^*3p^*5f^*$	3.18[-5]	1.49[-3]	1.47[-2]	3.64[-2]	8.45[-2]	1.05[-1]	1.34[-1]	1.64[-1]	1.88[-1]	1.99[-1]
$2p^*3p^*5f$	3.02[-5]	1.47[-3]	1.52[-2]	3.83[-2]	8.95[-2]	1.11[-1]	1.39[-1]	1.66[-1]	1.81[-1]	1.80[-1]
$2p^*3p5p^*$	1.11[-1]	2.47[-1]	4.19[-1]	5.33[-1]	6.93[-1]	7.52[-1]	8.31[-1]	9.26[-1]	1.03[0]	1.12[0]
$2p^*3p5d^*$	6.84[-2]	1.74[-1]	3.43[-1]	4.71[-1]	6.56[-1]	7.21[-1]	8.02[-1]	8.83[-1]	9.44[-1]	9.76[-1]
$2p^*3d^*5p^*$	3.67[-2]	1.02[-1]	2.02[-1]	2.75[-1]	3.75[-1]	4.08[-1]	4.46[-1]	4.78[-1]	4.93[-1]	4.91[-1]
$2p^*3d^*5p$	5.33[-2]	1.62[-1]	3.54[-1]	5.08[-1]	7.40[-1]	8.23[-1]	9.23[-1]	1.02[0]	1.08[0]	1.09[0]
$2p^*3d^*5d^*$	9.02[-2]	2.68[-1]	5.71[-1]	8.03[-1]	1.13[0]	1.23[0]	1.35[0]	1.44[0]	1.46[0]	1.41[0]
$2p^*3d^*5d$	2.13[-1]	6.41[-1]	1.38[0]	1.96[0]	2.76[0]	3.01[0]	3.30[0]	3.51[0]	3.54[0]	3.38[0]
$2p^*3d^*5f^*$	1.06[-4]	5.31[-3]	5.79[-2]	1.48[-1]	3.44[-1]	4.26[-1]	5.28[-1]	6.21[-1]	6.62[-1]	6.43[-1]
$2p^*3d^*5f$	2.29[-4]	1.16[-2]	1.25[-1]	3.17[-1]	7.30[-1]	8.97[-1]	1.10[0]	1.28[0]	1.34[0]	1.27[0]
$2p^*3d5p^*$	6.73[-2]	1.79[-1]	3.29[-1]	4.25[-1]	5.38[-1]	5.70[-1]	6.02[-1]	6.20[-1]	6.14[-1]	5.85[-1]
$2p^*3d5p$	7.30[-3]	2.08[-2]	4.17[-2]	5.69[-2]	7.78[-2]	8.45[-2]	9.21[-2]	9.81[-2]	1.00[-1]	9.79[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Cu-like ions										
$2p^*3d5d^*$	1.97[-1]	5.48[-1]	1.08[0]	1.43[0]	1.86[0]	1.98[0]	2.10[0]	2.17[0]	2.13[0]	2.01[0]
$2p^*3d5d$	1.94[-2]	5.59[-2]	1.15[-1]	1.58[-1]	2.14[-1]	2.31[-1]	2.47[-1]	2.55[-1]	2.48[-1]	2.28[-1]
$2p^*3d5f^*$	4.76[-5]	2.46[-3]	2.48[-2]	6.04[-2]	1.34[-1]	1.63[-1]	1.99[-1]	2.30[-1]	2.43[-1]	2.35[-1]
$2p^*3s6s$	2.03[-3]	4.42[-3]	7.39[-3]	9.26[-3]	1.17[-2]	1.24[-2]	1.33[-2]	1.43[-2]	1.50[-2]	1.55[-2]
$2p^*3s6p^*$	1.71[-2]	3.84[-2]	6.45[-2]	8.19[-2]	1.08[-1]	1.19[-1]	1.35[-1]	1.57[-1]	1.88[-1]	2.27[-1]
$2p^*3s6p$	1.67[-3]	4.16[-3]	7.90[-3]	1.08[-2]	1.55[-2]	1.75[-2]	2.03[-2]	2.39[-2]	2.78[-2]	3.18[-2]
$2p^*3s6d^*$	1.18[-3]	1.94[-3]	2.82[-3]	3.78[-3]	6.15[-3]	7.34[-3]	9.24[-3]	1.20[-2]	1.58[-2]	2.11[-2]
$2p^*3s6d$	2.58[-3]	5.22[-3]	8.30[-3]	1.02[-2]	1.29[-2]	1.38[-2]	1.50[-2]	1.59[-2]	1.63[-2]	1.62[-2]
$2p^*3p^*6s$	2.23[-2]	5.36[-2]	1.02[-1]	1.40[-1]	2.03[-1]	2.30[-1]	2.69[-1]	3.22[-1]	3.89[-1]	4.70[-1]
$2p^*3p^*6p^*$	3.33[-2]	8.29[-2]	1.56[-1]	2.12[-1]	3.02[-1]	3.40[-1]	3.95[-1]	4.72[-1]	5.68[-1]	6.85[-1]
$2p^*3p^*6p$	6.42[-2]	1.64[-1]	3.16[-1]	4.33[-1]	6.18[-1]	6.91[-1]	7.95[-1]	9.26[-1]	1.07[0]	1.22[0]
$2p^*3p^*6d^*$	3.10[-2]	8.21[-2]	1.69[-1]	2.37[-1]	3.44[-1]	3.85[-1]	4.38[-1]	5.00[-1]	5.57[-1]	6.06[-1]
$2p^*3p^*6d$	6.07[-2]	1.57[-1]	3.15[-1]	4.37[-1]	6.18[-1]	6.83[-1]	7.64[-1]	8.45[-1]	9.05[-1]	9.34[-1]
$2p^*3p6s$	1.56[-3]	3.81[-3]	7.33[-3]	1.01[-2]	1.45[-2]	1.61[-2]	1.84[-2]	2.09[-2]	2.33[-2]	2.52[-2]
$2p^*3p6p^*$	5.14[-2]	1.20[-1]	2.09[-1]	2.69[-1]	3.51[-1]	3.82[-1]	4.22[-1]	4.70[-1]	5.20[-1]	5.68[-1]
$2p^*3p6p$	3.08[-3]	7.38[-3]	1.32[-2]	1.73[-2]	2.32[-2]	2.53[-2]	2.81[-2]	3.10[-2]	3.32[-2]	3.39[-2]
$2p^*3p6d^*$	3.55[-2]	9.19[-2]	1.83[-1]	2.52[-1]	3.52[-1]	3.87[-1]	4.31[-1]	4.75[-1]	5.10[-1]	5.29[-1]
$2p^*3p6d$	5.05[-3]	1.19[-2]	2.19[-2]	2.90[-2]	3.89[-2]	4.22[-2]	4.62[-2]	4.99[-2]	5.23[-2]	5.30[-2]
$2p^*3d^*6p^*$	1.70[-2]	4.99[-2]	1.02[-1]	1.40[-1]	1.93[-1]	2.11[-1]	2.31[-1]	2.47[-1]	2.54[-1]	2.52[-1]
$2p^*3d^*6p$	2.51[-2]	8.05[-2]	1.83[-1]	2.67[-1]	3.95[-1]	4.41[-1]	4.98[-1]	5.52[-1]	5.86[-1]	5.94[-1]
$2p^*3d^*6d^*$	4.67[-2]	1.41[-1]	3.05[-1]	4.31[-1]	6.10[-1]	6.69[-1]	7.36[-1]	7.88[-1]	8.03[-1]	7.75[-1]
$2p^*3d^*6d$	1.11[-1]	3.38[-1]	7.45[-1]	1.06[0]	1.50[0]	1.65[0]	1.81[0]	1.93[0]	1.96[0]	1.88[0]
$2p^*3d^*6f$	1.47[-4]	8.55[-3]	8.73[-2]	2.14[-1]	4.82[-1]	5.88[-1]	7.17[-1]	8.25[-1]	8.63[-1]	8.21[-1]
$2p^*3d6s$	2.00[-3]	5.67[-3]	1.15[-2]	1.57[-2]	2.12[-2]	2.29[-2]	2.46[-2]	2.58[-2]	2.59[-2]	2.50[-2]
$2p^*3d6p^*$	3.12[-2]	8.64[-2]	1.62[-1]	2.11[-1]	2.67[-1]	2.83[-1]	2.99[-1]	3.07[-1]	3.03[-1]	2.87[-1]
$2p^*3d6p$	3.42[-3]	1.02[-2]	2.13[-2]	2.94[-2]	4.08[-2]	4.45[-2]	4.88[-2]	5.22[-2]	5.36[-2]	5.25[-2]
$2p^*3d6d^*$	1.02[-1]	2.86[-1]	5.62[-1]	7.45[-1]	9.65[-1]	1.03[0]	1.09[0]	1.12[0]	1.10[0]	1.04[0]
$2p^*3d6d$	1.01[-2]	2.94[-2]	6.13[-2]	8.46[-2]	1.15[-1]	1.24[-1]	1.33[-1]	1.38[-1]	1.35[-1]	1.24[-1]
$2p^*3s7p^*$	9.34[-3]	2.16[-2]	3.68[-2]	4.72[-2]	6.25[-2]	6.88[-2]	7.79[-2]	9.13[-2]	1.09[-1]	1.32[-1]
$2p^*3s7p$	9.13[-4]	2.37[-3]	4.62[-3]	6.37[-3]	9.24[-3]	1.04[-2]	1.21[-2]	1.43[-2]	1.68[-2]	1.92[-2]
$2p^*3s7d^*$	6.84[-4]	1.13[-3]	1.66[-3]	2.29[-3]	3.72[-3]	4.44[-3]	5.58[-3]	7.24[-3]	9.47[-3]	1.26[-2]
$2p^*3p^*7s$	1.18[-2]	3.00[-2]	5.90[-2]	8.22[-2]	1.21[-1]	1.37[-1]	1.61[-1]	1.94[-1]	2.35[-1]	2.84[-1]
$2p^*3p^*7p^*$	1.83[-2]	4.71[-2]	9.08[-2]	1.25[-1]	1.79[-1]	2.02[-1]	2.36[-1]	2.82[-1]	3.40[-1]	4.11[-1]
$2p^*3p^*7p$	3.54[-2]	9.36[-2]	1.85[-1]	2.57[-1]	3.71[-1]	4.17[-1]	4.81[-1]	5.63[-1]	6.53[-1]	7.46[-1]
$2p^*3p^*7d^*$	1.82[-2]	4.90[-2]	1.02[-1]	1.44[-1]	2.11[-1]	2.36[-1]	2.70[-1]	3.08[-1]	3.45[-1]	3.76[-1]
$2p^*3p^*7d$	3.56[-2]	9.36[-2]	1.90[-1]	2.66[-1]	3.79[-1]	4.20[-1]	4.71[-1]	5.23[-1]	5.62[-1]	5.81[-1]
$2p^*3p7s$	8.26[-4]	2.11[-3]	4.20[-3]	5.86[-3]	8.49[-3]	9.50[-3]	1.08[-2]	1.24[-2]	1.38[-2]	1.49[-2]
$2p^*3p7p^*$	2.81[-2]	6.78[-2]	1.20[-1]	1.55[-1]	2.04[-1]	2.22[-1]	2.45[-1]	2.74[-1]	3.02[-1]	3.30[-1]
$2p^*3p7p$	1.69[-3]	4.19[-3]	7.67[-3]	1.01[-2]	1.37[-2]	1.50[-2]	1.67[-2]	1.85[-2]	1.99[-2]	2.04[-2]
$2p^*3p7d^*$	2.08[-2]	5.45[-2]	1.09[-1]	1.51[-1]	2.11[-1]	2.33[-1]	2.59[-1]	2.86[-1]	3.08[-1]	3.20[-1]
$2p^*3p7d$	2.95[-3]	7.04[-3]	1.30[-2]	1.73[-2]	2.33[-2]	2.53[-2]	2.78[-2]	3.01[-2]	3.16[-2]	3.21[-2]
$2p^*3d^*7s$	5.70[-4]	1.32[-3]	2.95[-3]	3.92[-3]	5.93[-3]	6.71[-3]	8.73[-3]	1.14[-2]	1.59[-2]	2.20[-2]
$2p^*3d^*7p^*$	9.34[-3]	2.81[-2]	5.87[-2]	8.14[-2]	1.13[-1]	1.24[-1]	1.36[-1]	1.45[-1]	1.49[-1]	1.47[-1]
$2p^*3d^*7p$	1.37[-2]	4.65[-2]	1.06[-1]	1.58[-1]	2.36[-1]	2.66[-1]	2.99[-1]	3.34[-1]	3.55[-1]	3.63[-1]
$2p^*3d^*7d^*$	2.74[-2]	8.36[-2]	1.83[-1]	2.61[-1]	3.69[-1]	4.05[-1]	4.46[-1]	4.79[-1]	4.88[-1]	4.74[-1]
$2p^*3d^*7d$	6.51[-2]	2.02[-1]	4.46[-1]	6.45[-1]	9.15[-1]	1.00[0]	1.10[0]	1.18[0]	1.20[0]	1.16[0]
$2p^*3d7s$	1.06[-3]	3.16[-3]	6.61[-3]	9.13[-3]	1.25[-2]	1.35[-2]	1.46[-2]	1.53[-2]	1.54[-2]	1.49[-2]
$2p^*3d7p^*$	1.70[-2]	4.85[-2]	9.26[-2]	1.21[-1]	1.54[-1]	1.63[-1]	1.71[-1]	1.76[-1]	1.73[-1]	1.64[-1]
$2p^*3d7p$	1.88[-3]	5.82[-3]	1.23[-2]	1.72[-2]	2.41[-2]	2.64[-2]	2.90[-2]	3.12[-2]	3.21[-2]	3.16[-2]
$2p^*3d7d^*$	5.94[-2]	1.68[-1]	3.32[-1]	4.40[-1]	5.69[-1]	6.04[-1]	6.39[-1]	6.57[-1]	6.47[-1]	6.12[-1]
$2p^*3d7d$	5.89[-3]	1.74[-2]	3.66[-2]	5.07[-2]	6.94[-2]	7.49[-2]	8.06[-2]	8.36[-2]	8.19[-2]	7.56[-2]
Zn-like ions										
$2p^*4s4p^*$	1.12[-2]	3.66[-2]	7.96[-2]	1.13[-1]	1.67[-1]	1.89[-1]	2.21[-1]	2.67[-1]	3.24[-1]	3.96[-1]
$2p^*4s4p$	9.33[-4]	3.26[-3]	7.64[-3]	1.13[-2]	1.74[-2]	1.98[-2]	2.32[-2]	2.74[-2]	3.17[-2]	3.57[-2]
$2p^*4s4d^*$	5.86[-4]	1.69[-3]	3.36[-3]	4.79[-3]	7.72[-3]	9.21[-3]	1.17[-2]	1.58[-2]	2.21[-2]	3.14[-2]
$2p^*4s4d$	1.20[-3]	4.07[-3]	8.89[-3]	1.24[-2]	1.71[-2]	1.87[-2]	2.05[-2]	2.19[-2]	2.26[-2]	2.26[-2]
$2p^*4s4f^*$	1.19[-6]	8.21[-5]	1.05[-3]	2.93[-3]	7.60[-3]	9.72[-3]	1.25[-2]	1.53[-2]	1.69[-2]	1.69[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Zn-like ions										
$2p^*4p^*4p^*$	7.89[-3]	3.05[-2]	7.13[-2]	1.04[-1]	1.57[-1]	1.78[-1]	2.11[-1]	2.54[-1]	3.10[-1]	3.78[-1]
$2p^*4p^*4p$	2.76[-2]	1.06[-1]	2.44[-1]	3.51[-1]	5.15[-1]	5.78[-1]	6.66[-1]	7.73[-1]	8.87[-1]	1.00[0]
$2p^*4p^*4d^*$	9.75[-3]	4.37[-2]	1.14[-1]	1.74[-1]	2.65[-1]	2.98[-1]	3.40[-1]	3.84[-1]	4.20[-1]	4.42[-1]
$2p^*4p^*4d$	1.84[-2]	7.91[-2]	1.98[-1]	2.92[-1]	4.26[-1]	4.71[-1]	5.25[-1]	5.74[-1]	6.02[-1]	6.04[-1]
$2p^*4p^*4f^*$	2.27[-6]	1.85[-4]	2.50[-3]	7.01[-3]	1.82[-2]	2.34[-2]	3.04[-2]	3.81[-2]	4.38[-2]	4.64[-2]
$2p^*4p^*4f$	1.96[-6]	1.63[-4]	2.23[-3]	6.26[-3]	1.60[-2]	2.02[-2]	2.56[-2]	3.04[-2]	3.24[-2]	3.11[-2]
$2p^*4p4p$	7.35[-4]	2.77[-3]	6.26[-3]	8.91[-3]	1.29[-2]	1.44[-2]	1.63[-2]	1.85[-2]	2.03[-2]	2.12[-2]
$2p^*4p4d^*$	1.34[-2]	6.26[-2]	1.71[-1]	2.66[-1]	4.18[-1]	4.75[-1]	5.47[-1]	6.22[-1]	6.79[-1]	7.11[-1]
$2p^*4p4d$	1.84[-3]	7.84[-3]	1.97[-2]	2.93[-2]	4.36[-2]	4.86[-2]	5.47[-2]	6.03[-2]	6.39[-2]	6.49[-2]
$2p^*4p4f^*$	2.98[-6]	2.17[-4]	2.59[-3]	6.72[-3]	1.55[-2]	1.89[-2]	2.28[-2]	2.55[-2]	2.55[-2]	2.29[-2]
$2p^*4p4f$	1.90[-6]	1.34[-4]	1.55[-3]	3.95[-3]	8.85[-3]	1.07[-2]	1.27[-2]	1.40[-2]	1.36[-2]	1.19[-2]
$2p^*4d^*4d^*$	9.30[-3]	4.58[-2]	1.28[-1]	1.98[-1]	3.05[-1]	3.42[-1]	3.86[-1]	4.25[-1]	4.45[-1]	4.42[-1]
$2p^*4d^*4d$	4.25[-2]	2.04[-1]	5.54[-1]	8.47[-1]	1.27[0]	1.42[0]	1.58[0]	1.72[0]	1.77[0]	1.74[0]
$2p^*4d^*4f^*$	8.52[-6]	7.55[-4]	1.06[-2]	3.02[-2]	7.83[-2]	9.98[-2]	1.28[-1]	1.57[-1]	1.74[-1]	1.75[-1]
$2p^*4d^*4f$	1.90[-5]	1.67[-3]	2.34[-2]	6.63[-2]	1.71[-1]	2.16[-1]	2.76[-1]	3.32[-1]	3.60[-1]	3.55[-1]
$2p^*4d4d$	2.03[-3]	9.61[-3]	2.59[-2]	3.95[-2]	5.89[-2]	6.53[-2]	7.22[-2]	7.73[-2]	7.79[-2]	7.39[-2]
$2p^*4d4f^*$	4.42[-6]	3.61[-4]	4.89[-3]	1.37[-2]	3.57[-2]	4.57[-2]	5.92[-2]	7.32[-2]	8.23[-2]	8.43[-2]
$2p^*4d4f$	2.05[-6]	1.61[-4]	2.07[-3]	5.64[-3]	1.40[-2]	1.76[-2]	2.23[-2]	2.68[-2]	2.92[-2]	2.89[-2]
$2p^*4f^*4f$	4.81[-9]	7.39[-6]	5.39[-4]	2.87[-3]	1.30[-2]	1.90[-2]	2.81[-2]	3.80[-2]	4.40[-2]	4.39[-2]
$2p^*4s5p^*$	3.80[-3]	1.35[-2]	3.06[-2]	4.41[-2]	6.56[-2]	7.44[-2]	8.75[-2]	1.06[-1]	1.29[-1]	1.58[-1]
$2p^*4s5p$	3.24[-4]	1.26[-3]	3.14[-3]	4.77[-3]	7.54[-3]	8.67[-3]	1.03[-2]	1.23[-2]	1.44[-2]	1.63[-2]
$2p^*4p^*5s$	3.49[-3]	1.37[-2]	3.28[-2]	4.86[-2]	7.46[-2]	8.54[-2]	1.01[-1]	1.24[-1]	1.51[-1]	1.85[-1]
$2p^*4p^*5p^*$	5.44[-3]	2.32[-2]	5.76[-2]	8.60[-2]	1.33[-1]	1.52[-1]	1.81[-1]	2.20[-1]	2.68[-1]	3.28[-1]
$2p^*4p^*5p$	9.68[-3]	4.15[-2]	1.03[-1]	1.53[-1]	2.32[-1]	2.64[-1]	3.07[-1]	3.61[-1]	4.19[-1]	4.77[-1]
$2p^*4p^*5d^*$	4.15[-3]	1.92[-2]	5.18[-2]	8.00[-2]	1.24[-1]	1.41[-1]	1.62[-1]	1.85[-1]	2.04[-1]	2.18[-1]
$2p^*4p^*5d$	7.82[-3]	3.48[-2]	9.02[-2]	1.36[-1]	2.03[-1]	2.26[-1]	2.54[-1]	2.81[-1]	2.99[-1]	3.03[-1]
$2p^*4p5s$	2.86[-4]	1.18[-3]	3.03[-3]	4.65[-3]	7.37[-3]	8.47[-3]	1.00[-2]	1.19[-2]	1.37[-2]	1.54[-2]
$2p^*4p5p^*$	9.40[-3]	3.93[-2]	9.46[-2]	1.38[-1]	2.05[-1]	2.31[-1]	2.66[-1]	3.09[-1]	3.55[-1]	3.99[-1]
$2p^*4p5p$	5.08[-4]	2.11[-3]	5.05[-3]	7.38[-3]	1.10[-2]	1.23[-2]	1.42[-2]	1.62[-2]	1.80[-2]	1.89[-2]
$2p^*4p5d^*$	5.67[-3]	2.70[-2]	7.50[-2]	1.18[-1]	1.86[-1]	2.11[-1]	2.44[-1]	2.79[-1]	3.07[-1]	3.24[-1]
$2p^*4p5d$	7.71[-4]	3.34[-3]	8.51[-3]	1.28[-2]	1.91[-2]	2.14[-2]	2.42[-2]	2.68[-2]	2.87[-2]	2.94[-2]
$2p^*4d^*5s$	1.84[-4]	6.39[-4]	1.40[-3]	2.07[-3]	3.41[-3]	4.08[-3]	5.22[-3]	7.12[-3]	1.01[-2]	1.44[-2]
$2p^*4d^*5p^*$	3.31[-3]	1.62[-2]	4.46[-2]	6.90[-2]	1.07[-1]	1.21[-1]	1.38[-1]	1.56[-1]	1.69[-1]	1.76[-1]
$2p^*4d^*5p$	4.68[-3]	2.44[-2]	7.13[-2]	1.15[-1]	1.86[-1]	2.13[-1]	2.48[-1]	2.85[-1]	3.14[-1]	3.30[-1]
$2p^*4d^*5d^*$	7.85[-3]	3.94[-2]	1.12[-1]	1.75[-1]	2.71[-1]	3.05[-1]	3.46[-1]	3.83[-1]	4.04[-1]	4.04[-1]
$2p^*4d^*5d$	1.80[-2]	8.88[-2]	2.48[-1]	3.86[-1]	5.91[-1]	6.62[-1]	7.45[-1]	8.17[-1]	8.52[-1]	8.43[-1]
$2p^*4d^*5f^*$	8.64[-6]	6.55[-4]	8.80[-3]	2.39[-2]	5.87[-2]	7.36[-2]	9.31[-2]	1.12[-1]	1.24[-1]	1.25[-1]
$2p^*4d^*5f$	1.88[-5]	1.45[-3]	1.94[-2]	5.24[-2]	1.28[-1]	1.59[-1]	2.00[-1]	2.37[-1]	2.57[-1]	2.53[-1]
$2p^*4d5p^*$	6.20[-3]	2.89[-2]	7.48[-2]	1.11[-1]	1.63[-1]	1.80[-1]	2.01[-1]	2.18[-1]	2.28[-1]	2.27[-1]
$2p^*4d5p$	6.37[-4]	3.01[-3]	8.05[-3]	1.23[-2]	1.89[-2]	2.12[-2]	2.40[-2]	2.68[-2]	2.86[-2]	2.92[-2]
$2p^*4d5d^*$	1.78[-2]	8.59[-2]	2.34[-1]	3.56[-1]	5.33[-1]	5.92[-1]	6.59[-1]	7.16[-1]	7.41[-1]	7.30[-1]
$2p^*4d5d$	1.71[-3]	8.23[-3]	2.26[-2]	3.47[-2]	5.23[-2]	5.81[-2]	6.46[-2]	6.96[-2]	7.08[-2]	6.77[-2]
$2p^*4f5d^*$	7.85[-6]	6.82[-4]	9.40[-3]	2.62[-2]	6.63[-2]	8.36[-2]	1.06[-1]	1.27[-1]	1.38[-1]	1.36[-1]
$2p^*4s6p^*$	1.76[-3]	6.57[-3]	1.52[-2]	2.21[-2]	3.31[-2]	3.76[-2]	4.42[-2]	5.35[-2]	6.52[-2]	7.99[-2]
$2p^*4p^*6s$	1.55[-3]	6.61[-3]	1.67[-2]	2.53[-2]	3.98[-2]	4.59[-2]	5.49[-2]	6.72[-2]	8.27[-2]	1.01[-1]
$2p^*4p^*6p^*$	2.54[-3]	1.15[-2]	2.93[-2]	4.44[-2]	6.95[-2]	7.99[-2]	9.52[-2]	1.16[-1]	1.42[-1]	1.74[-1]
$2p^*4p^*6p$	4.56[-3]	2.07[-2]	5.34[-2]	8.08[-2]	1.25[-1]	1.43[-1]	1.67[-1]	1.98[-1]	2.32[-1]	2.65[-1]
$2p^*4p^*6d^*$	2.16[-3]	1.02[-2]	2.81[-2]	4.37[-2]	6.86[-2]	7.79[-2]	9.00[-2]	1.03[-1]	1.15[-1]	1.23[-1]
$2p^*4p^*6d$	4.07[-3]	1.85[-2]	4.90[-2]	7.44[-2]	1.13[-1]	1.26[-1]	1.43[-1]	1.59[-1]	1.69[-1]	1.73[-1]
$2p^*4p6p^*$	4.37[-3]	1.92[-2]	4.73[-2]	6.96[-2]	1.04[-1]	1.17[-1]	1.35[-1]	1.57[-1]	1.80[-1]	2.02[-1]
$2p^*4p6d^*$	2.94[-3]	1.42[-2]	4.00[-2]	6.30[-2]	9.97[-2]	1.14[-1]	1.31[-1]	1.50[-1]	1.66[-1]	1.76[-1]
$2p^*4p6d$	3.99[-4]	1.75[-3]	4.50[-3]	6.78[-3]	1.02[-2]	1.14[-2]	1.30[-2]	1.45[-2]	1.55[-2]	1.60[-2]
$2p^*4d^*6p^*$	1.54[-3]	7.92[-3]	2.24[-2]	3.50[-2]	5.48[-2]	6.19[-2]	7.09[-2]	7.99[-2]	8.65[-2]	8.99[-2]
$2p^*4d^*6p$	2.20[-3]	1.21[-2]	3.68[-2]	6.03[-2]	9.94[-2]	1.14[-1]	1.34[-1]	1.55[-1]	1.71[-1]	1.81[-1]
$2p^*4d^*6d^*$	4.06[-3]	2.08[-2]	5.96[-2]	9.39[-2]	1.46[-1]	1.65[-1]	1.87[-1]	2.08[-1]	2.20[-1]	2.21[-1]
$2p^*4d^*6d$	9.33[-3]	4.72[-2]	1.34[-1]	2.10[-1]	3.25[-1]	3.64[-1]	4.12[-1]	4.54[-1]	4.76[-1]	4.73[-1]
$2p^*4d^*6f^*$	5.30[-6]	4.92[-4]	6.23[-3]	1.64[-2]	3.91[-2]	4.87[-2]	6.13[-2]	7.34[-2]	8.08[-2]	8.15[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Zn-like ions										
$2p^*4d^*6f$	1.19[-5]	1.08[-3]	1.37[-2]	3.60[-2]	8.51[-2]	1.05[-1]	1.31[-1]	1.55[-1]	1.68[-1]	1.65[-1]
$2p^*4d6p^*$	2.87[-3]	1.40[-2]	3.69[-2]	5.53[-2]	8.12[-2]	8.98[-2]	9.98[-2]	1.08[-1]	1.13[-1]	1.12[-1]
$2p^*4d6p$	2.98[-4]	1.49[-3]	4.12[-3]	6.40[-3]	9.95[-3]	1.12[-2]	1.28[-2]	1.43[-2]	1.54[-2]	1.57[-2]
$2p^*4d6d^*$	9.20[-3]	4.48[-2]	1.22[-1]	1.86[-1]	2.78[-1]	3.08[-1]	3.43[-1]	3.72[-1]	3.85[-1]	3.80[-1]
$2p^*4d6d$	8.86[-4]	4.33[-3]	1.20[-2]	1.86[-2]	2.81[-2]	3.13[-2]	3.49[-2]	3.77[-2]	3.85[-2]	3.70[-2]
$2p^*4d6f^*$	2.84[-6]	2.26[-4]	2.77[-3]	7.20[-3]	1.71[-2]	2.13[-2]	2.69[-2]	3.24[-2]	3.59[-2]	3.66[-2]
$2p^*4f^*6d^*$	1.82[-6]	1.58[-4]	2.16[-3]	6.00[-3]	1.51[-2]	1.91[-2]	2.43[-2]	2.94[-2]	3.26[-2]	3.32[-2]
$2p^*4f6d^*$	4.04[-6]	3.51[-4]	4.80[-3]	1.33[-2]	3.33[-2]	4.19[-2]	5.29[-2]	6.31[-2]	6.85[-2]	6.78[-2]
$2p^*4s7p^*$	9.65[-4]	3.70[-3]	8.71[-3]	1.27[-2]	1.91[-2]	2.18[-2]	2.56[-2]	3.10[-2]	3.79[-2]	4.64[-2]
$2p^*4p^*7s$	8.21[-4]	3.69[-3]	9.67[-3]	1.49[-2]	2.37[-2]	2.75[-2]	3.30[-2]	4.06[-2]	5.00[-2]	6.14[-2]
$2p^*4p^*7p^*$	1.40[-3]	6.50[-3]	1.70[-2]	2.60[-2]	4.11[-2]	4.73[-2]	5.66[-2]	6.92[-2]	8.48[-2]	1.04[-1]
$2p^*4p^*7p$	2.51[-3]	1.18[-2]	3.13[-2]	4.79[-2]	7.52[-2]	8.61[-2]	1.01[-1]	1.21[-1]	1.41[-1]	1.62[-1]
$2p^*4p^*7d^*$	1.27[-3]	6.09[-3]	1.70[-2]	2.65[-2]	4.19[-2]	4.77[-2]	5.53[-2]	6.36[-2]	7.09[-2]	7.63[-2]
$2p^*4p^*7d$	2.39[-3]	1.11[-2]	2.96[-2]	4.53[-2]	6.91[-2]	7.76[-2]	8.80[-2]	9.83[-2]	1.05[-1]	1.08[-1]
$2p^*4p7s$	6.67[-5]	3.15[-4]	8.71[-4]	1.38[-3]	2.26[-3]	2.61[-3]	3.11[-3]	3.70[-3]	4.28[-3]	4.79[-3]
$2p^*4p7p^*$	2.39[-3]	1.08[-2]	2.71[-2]	4.02[-2]	6.04[-2]	6.81[-2]	7.86[-2]	9.14[-2]	1.05[-1]	1.18[-1]
$2p^*4p7d^*$	1.73[-3]	8.44[-3]	2.39[-2]	3.78[-2]	5.99[-2]	6.83[-2]	7.90[-2]	9.05[-2]	1.00[-1]	1.06[-1]
$2p^*4d^*7p^*$	8.43[-4]	4.47[-3]	1.28[-2]	2.03[-2]	3.20[-2]	3.63[-2]	4.15[-2]	4.68[-2]	5.06[-2]	5.25[-2]
$2p^*4d^*7p$	1.21[-3]	6.87[-3]	2.17[-2]	3.54[-2]	5.94[-2]	6.88[-2]	8.08[-2]	9.38[-2]	1.04[-1]	1.10[-1]
$2p^*4d^*7d^*$	2.38[-3]	1.23[-2]	3.56[-2]	5.62[-2]	8.81[-2]	9.95[-2]	1.13[-1]	1.26[-1]	1.33[-1]	1.34[-1]
$2p^*4d^*7d$	5.49[-3]	2.79[-2]	8.07[-2]	1.26[-1]	1.97[-1]	2.23[-1]	2.51[-1]	2.79[-1]	2.93[-1]	2.93[-1]
$2p^*4d7p^*$	1.57[-3]	7.86[-3]	2.11[-2]	3.17[-2]	4.67[-2]	5.16[-2]	5.73[-2]	6.22[-2]	6.45[-2]	6.38[-2]
$2p^*4d7d^*$	5.38[-3]	2.64[-2]	7.23[-2]	1.10[-1]	1.64[-1]	1.82[-1]	2.02[-1]	2.20[-1]	2.27[-1]	2.25[-1]
$2p^*4d7d$	5.19[-4]	2.56[-3]	7.19[-3]	1.11[-2]	1.69[-2]	1.89[-2]	2.11[-2]	2.28[-2]	2.33[-2]	2.25[-2]
$2p^*5s5p^*$	1.19[-3]	5.05[-3]	1.26[-2]	1.89[-2]	2.94[-2]	3.37[-2]	4.01[-2]	4.90[-2]	6.02[-2]	7.39[-2]
$2p^*5p^*5p^*$	9.38[-4]	4.42[-3]	1.16[-2]	1.77[-2]	2.79[-2]	3.22[-2]	3.85[-2]	4.70[-2]	5.77[-2]	7.07[-2]
$2p^*5p^*5p$	3.30[-3]	1.54[-2]	3.99[-2]	6.02[-2]	9.25[-2]	1.05[-1]	1.23[-1]	1.44[-1]	1.68[-1]	1.90[-1]
$2p^*5p^*5d^*$	1.41[-3]	7.13[-3]	2.02[-2]	3.17[-2]	5.00[-2]	5.68[-2]	6.54[-2]	7.45[-2]	8.18[-2]	8.65[-2]
$2p^*5p^*5d$	2.64[-3]	1.27[-2]	3.41[-2]	5.18[-2]	7.77[-2]	8.66[-2]	9.73[-2]	1.07[-1]	1.13[-1]	1.14[-1]
$2p^*5p^*5f^*$	6.71[-7]	5.83[-5]	7.67[-4]	2.07[-3]	5.08[-3]	6.41[-3]	8.19[-3]	1.01[-2]	1.15[-2]	1.22[-2]
$2p^*5p5d^*$	1.98[-3]	1.05[-2]	3.13[-2]	5.07[-2]	8.26[-2]	9.49[-2]	1.11[-1]	1.28[-1]	1.42[-1]	1.51[-1]
$2p^*5p5d$	2.67[-4]	1.28[-3]	3.49[-3]	5.37[-3]	8.29[-3]	9.34[-3]	1.07[-2]	1.19[-2]	1.29[-2]	1.33[-2]
$2p^*5d^*5d^*$	1.66[-3]	8.45[-3]	2.44[-2]	3.85[-2]	6.02[-2]	6.78[-2]	7.71[-2]	8.57[-2]	9.10[-2]	9.18[-2]
$2p^*5d^*5d$	7.55[-3]	3.74[-2]	1.05[-1]	1.63[-1]	2.48[-1]	2.77[-1]	3.12[-1]	3.42[-1]	3.58[-1]	3.56[-1]
$2p^*5d^*5f^*$	3.45[-6]	2.69[-4]	3.52[-3]	9.43[-3]	2.27[-2]	2.84[-2]	3.57[-2]	4.28[-2]	4.72[-2]	4.80[-2]
$2p^*5d^*5f$	7.56[-6]	5.96[-4]	7.79[-3]	2.08[-2]	4.99[-2]	6.20[-2]	7.73[-2]	9.15[-2]	9.89[-2]	9.80[-2]
$2p^*5d5d$	3.60[-4]	1.76[-3]	4.93[-3]	7.63[-3]	1.16[-2]	1.29[-2]	1.45[-2]	1.57[-2]	1.61[-2]	1.55[-2]
$2p^*5d5f^*$	1.60[-6]	1.28[-4]	1.62[-3]	4.31[-3]	1.05[-2]	1.33[-2]	1.69[-2]	2.07[-2]	2.32[-2]	2.40[-2]
$2p^*5s6p^*$	5.51[-4]	2.45[-3]	6.28[-3]	9.48[-3]	1.48[-2]	1.70[-2]	2.03[-2]	2.48[-2]	3.05[-2]	3.75[-2]
$2p^*5p^*6s$	5.26[-4]	2.44[-3]	6.43[-3]	9.87[-3]	1.57[-2]	1.81[-2]	2.17[-2]	2.67[-2]	3.29[-2]	4.04[-2]
$2p^*5p^*6p^*$	8.76[-4]	4.36[-3]	1.18[-2]	1.83[-2]	2.92[-2]	3.37[-2]	4.04[-2]	4.95[-2]	6.09[-2]	7.46[-2]
$2p^*5p^*6p$	1.55[-3]	7.69[-3]	2.07[-2]	3.18[-2]	4.98[-2]	5.70[-2]	6.70[-2]	7.93[-2]	9.26[-2]	1.06[-1]
$2p^*5p^*6d^*$	7.36[-4]	3.80[-3]	1.09[-2]	1.73[-2]	2.76[-2]	3.14[-2]	3.63[-2]	4.15[-2]	4.59[-2]	4.89[-2]
$2p^*5p^*6d$	1.37[-3]	6.78[-3]	1.86[-2]	2.85[-2]	4.32[-2]	4.84[-2]	5.46[-2]	6.05[-2]	6.43[-2]	6.52[-2]
$2p^*5p6p^*$	1.53[-3]	7.51[-3]	1.99[-2]	3.03[-2]	4.69[-2]	5.34[-2]	6.24[-2]	7.34[-2]	8.52[-2]	9.66[-2]
$2p^*5p6d^*$	1.03[-3]	5.54[-3]	1.67[-2]	2.71[-2]	4.44[-2]	5.10[-2]	5.96[-2]	6.89[-2]	7.67[-2]	8.19[-2]
$2p^*5d^*6p^*$	6.57[-4]	3.48[-3]	1.01[-2]	1.61[-2]	2.56[-2]	2.91[-2]	3.35[-2]	3.82[-2]	4.18[-2]	4.40[-2]
$2p^*5d^*6p$	9.28[-4]	5.24[-3]	1.62[-2]	2.67[-2]	4.42[-2]	5.10[-2]	5.99[-2]	6.95[-2]	7.75[-2]	8.26[-2]
$2p^*5d^*6d^*$	1.72[-3]	8.91[-3]	2.61[-2]	4.13[-2]	6.47[-2]	7.30[-2]	8.32[-2]	9.28[-2]	9.87[-2]	1.00[-1]
$2p^*5d^*6d$	3.90[-3]	1.99[-2]	5.66[-2]	8.85[-2]	1.36[-1]	1.53[-1]	1.73[-1]	1.91[-1]	2.00[-1]	2.00[-1]
$2p^*5d6p^*$	1.22[-3]	6.15[-3]	1.69[-2]	2.57[-2]	3.87[-2]	4.31[-2]	4.84[-2]	5.32[-2]	5.60[-2]	5.62[-2]
$2p^*5d6p$	1.25[-4]	6.34[-4]	1.78[-3]	2.80[-3]	4.38[-3]	4.96[-3]	5.68[-3]	6.40[-3]	6.92[-3]	7.16[-3]
$2p^*5d6d^*$	3.90[-3]	1.95[-2]	5.49[-2]	8.51[-2]	1.30[-1]	1.45[-1]	1.62[-1]	1.78[-1]	1.87[-1]	1.86[-1]
$2p^*5d6d$	3.73[-4]	1.85[-3]	5.25[-3]	8.17[-3]	1.25[-2]	1.39[-2]	1.56[-2]	1.70[-2]	1.75[-2]	1.69[-2]
$2p^*5s7p^*$	3.01[-4]	1.38[-3]	3.59[-3]	5.47[-3]	8.57[-3]	9.86[-3]	1.18[-2]	1.44[-2]	1.77[-2]	2.18[-2]
$2p^*5p^*7s$	2.79[-4]	1.36[-3]	3.72[-3]	5.79[-3]	9.34[-3]	1.08[-2]	1.31[-2]	1.61[-2]	1.99[-2]	2.45[-2]
$2p^*5p^*7p^*$	4.81[-4]	2.47[-3]	6.85[-3]	1.07[-2]	1.72[-2]	2.00[-2]	2.40[-2]	2.94[-2]	3.62[-2]	4.44[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Zn-like ions										
$2p^*5p^*7p$	8.54[-4]	4.40[-3]	1.21[-2]	1.89[-2]	2.99[-2]	3.44[-2]	4.06[-2]	4.83[-2]	5.65[-2]	6.47[-2]
$2p^*5p^*7d^*$	4.32[-4]	2.26[-3]	6.60[-3]	1.05[-2]	1.68[-2]	1.92[-2]	2.22[-2]	2.55[-2]	2.83[-2]	3.02[-2]
$2p^*5p^*7d$	8.08[-4]	4.04[-3]	1.12[-2]	1.73[-2]	2.65[-2]	2.98[-2]	3.37[-2]	3.75[-2]	4.00[-2]	4.07[-2]
$2p^*5p7p^*$	8.39[-4]	4.24[-3]	1.14[-2]	1.75[-2]	2.72[-2]	3.10[-2]	3.63[-2]	4.27[-2]	4.95[-2]	5.61[-2]
$2p^*5p7d^*$	6.03[-4]	3.29[-3]	9.99[-3]	1.63[-2]	2.67[-2]	3.07[-2]	3.59[-2]	4.15[-2]	4.63[-2]	4.96[-2]
$2p^*5d^*7p^*$	3.59[-4]	1.97[-3]	5.81[-3]	9.33[-3]	1.49[-2]	1.70[-2]	1.96[-2]	2.23[-2]	2.44[-2]	2.56[-2]
$2p^*5d^*7p$	5.13[-4]	2.96[-3]	9.46[-3]	1.57[-2]	2.65[-2]	3.07[-2]	3.60[-2]	4.20[-2]	4.69[-2]	5.04[-2]
$2p^*5d^*7d^*$	1.01[-3]	5.28[-3]	1.55[-2]	2.48[-2]	3.90[-2]	4.40[-2]	5.02[-2]	5.60[-2]	5.98[-2]	6.07[-2]
$2p^*5d^*7d$	2.30[-3]	1.18[-2]	3.39[-2]	5.36[-2]	8.33[-2]	9.34[-2]	1.06[-1]	1.17[-1]	1.23[-1]	1.24[-1]
$2p^*5d^*7f$	3.53[-6]	3.11[-4]	3.73[-3]	9.97[-3]	2.26[-2]	2.75[-2]	3.44[-2]	4.02[-2]	4.36[-2]	4.30[-2]
$2p^*5d7p^*$	6.68[-4]	3.46[-3]	9.61[-3]	1.47[-2]	2.22[-2]	2.48[-2]	2.78[-2]	3.06[-2]	3.21[-2]	3.21[-2]
$2p^*5d7d^*$	2.28[-3]	1.15[-2]	3.25[-2]	5.03[-2]	7.66[-2]	8.55[-2]	9.60[-2]	1.05[-1]	1.10[-1]	1.10[-1]
$2p^*5d7d$	2.18[-4]	1.10[-3]	3.13[-3]	4.90[-3]	7.52[-3]	8.40[-3]	9.42[-3]	1.03[-2]	1.06[-2]	1.03[-2]
$2p^*6s6p^*$	2.44[-4]	1.19[-3]	3.20[-3]	4.95[-3]	7.90[-3]	9.15[-3]	1.10[-2]	1.35[-2]	1.67[-2]	2.05[-2]
$2p^*6p^*6p^*$	2.05[-4]	1.07[-3]	3.00[-3]	4.71[-3]	7.60[-3]	8.82[-3]	1.06[-2]	1.30[-2]	1.60[-2]	1.97[-2]
$2p^*6p^*6p$	7.22[-4]	3.75[-3]	1.03[-2]	1.60[-2]	2.53[-2]	2.89[-2]	3.40[-2]	4.03[-2]	4.70[-2]	5.36[-2]
$2p^*6p^*6d^*$	3.42[-4]	1.85[-3]	5.48[-3]	8.77[-3]	1.41[-2]	1.61[-2]	1.86[-2]	2.13[-2]	2.34[-2]	2.48[-2]
$2p^*6p^*6d$	6.37[-4]	3.28[-3]	9.16[-3]	1.41[-2]	2.15[-2]	2.41[-2]	2.72[-2]	3.01[-2]	3.18[-2]	3.21[-2]
$2p^*6p6d^*$	4.81[-4]	2.77[-3]	8.64[-3]	1.43[-2]	2.37[-2]	2.74[-2]	3.23[-2]	3.75[-2]	4.19[-2]	4.49[-2]
$2p^*6d^*6d^*$	4.44[-4]	2.35[-3]	6.95[-3]	1.10[-2]	1.74[-2]	1.96[-2]	2.24[-2]	2.51[-2]	2.67[-2]	2.72[-2]
$2p^*6d^*6d$	2.02[-3]	1.04[-2]	2.97[-2]	4.63[-2]	7.13[-2]	7.99[-2]	9.01[-2]	9.94[-2]	1.05[-1]	1.05[-1]
$2p^*6d^*6f^*$	1.17[-6]	9.76[-5]	1.28[-3]	3.25[-3]	7.63[-3]	9.44[-3]	1.17[-2]	1.40[-2]	1.54[-2]	1.58[-2]
$2p^*6d^*6f$	2.60[-6]	2.18[-4]	2.83[-3]	7.22[-3]	1.68[-2]	2.07[-2]	2.56[-2]	3.01[-2]	3.25[-2]	3.23[-2]
$2p^*6s7p^*$	1.33[-4]	6.69[-4]	1.83[-3]	2.85[-3]	4.58[-3]	5.30[-3]	6.38[-3]	7.84[-3]	9.68[-3]	1.19[-2]
$2p^*6p^*7s$	1.30[-4]	6.63[-4]	1.85[-3]	2.90[-3]	4.71[-3]	5.48[-3]	6.61[-3]	8.16[-3]	1.01[-2]	1.24[-2]
$2p^*6p^*7p^*$	2.25[-4]	1.22[-3]	3.48[-3]	5.51[-3]	8.97[-3]	1.04[-2]	1.26[-2]	1.55[-2]	1.91[-2]	2.34[-2]
$2p^*6p^*7p$	3.97[-4]	2.14[-3]	6.07[-3]	9.51[-3]	1.52[-2]	1.75[-2]	2.06[-2]	2.45[-2]	2.87[-2]	3.28[-2]
$2p^*6p^*7d^*$	2.01[-4]	1.10[-3]	3.31[-3]	5.32[-3]	8.58[-3]	9.81[-3]	1.14[-2]	1.31[-2]	1.44[-2]	1.54[-2]
$2p^*6p^*7d$	3.74[-4]	1.96[-3]	5.54[-3]	8.61[-3]	1.32[-2]	1.48[-2]	1.68[-2]	1.86[-2]	1.98[-2]	2.01[-2]
$2p^*6p7p^*$	3.95[-4]	2.12[-3]	5.94[-3]	9.26[-3]	1.47[-2]	1.68[-2]	1.98[-2]	2.35[-2]	2.74[-2]	3.12[-2]
$2p^*6p7d^*$	2.82[-4]	1.64[-3]	5.17[-3]	8.56[-3]	1.43[-2]	1.65[-2]	1.94[-2]	2.26[-2]	2.53[-2]	2.72[-2]
$2p^*6d^*7p^*$	1.87[-4]	1.05[-3]	3.15[-3]	5.09[-3]	8.21[-3]	9.37[-3]	1.09[-2]	1.24[-2]	1.37[-2]	1.44[-2]
$2p^*6d^*7p$	2.67[-4]	1.56[-3]	5.03[-3]	8.42[-3]	1.42[-2]	1.65[-2]	1.94[-2]	2.27[-2]	2.54[-2]	2.73[-2]
$2p^*6d^*7d^*$	5.21[-4]	2.78[-3]	8.28[-3]	1.33[-2]	2.09[-2]	2.36[-2]	2.71[-2]	3.03[-2]	3.24[-2]	3.29[-2]
$2p^*6d^*7d$	1.19[-3]	6.14[-3]	1.77[-2]	2.82[-2]	4.35[-2]	4.87[-2]	5.54[-2]	6.10[-2]	6.46[-2]	6.48[-2]
$2p^*6d7p^*$	3.48[-4]	1.84[-3]	5.23[-3]	8.10[-3]	1.24[-2]	1.39[-2]	1.56[-2]	1.73[-2]	1.82[-2]	1.84[-2]
$2p^*6d7d^*$	1.18[-3]	6.10[-3]	1.76[-2]	2.74[-2]	4.22[-2]	4.73[-2]	5.33[-2]	5.88[-2]	6.19[-2]	6.21[-2]
$2p^*7p^*7p$	2.17[-4]	1.21[-3]	3.48[-3]	5.50[-3]	8.82[-3]	1.01[-2]	1.20[-2]	1.43[-2]	1.67[-2]	1.91[-2]
$2p^*7p^*7d$	2.04[-4]	1.10[-3]	3.16[-3]	4.93[-3]	7.60[-3]	8.53[-3]	9.65[-3]	1.07[-2]	1.13[-2]	1.15[-2]
$2p^*7p7d^*$	1.56[-4]	9.27[-4]	3.00[-3]	5.06[-3]	8.56[-3]	9.89[-3]	1.17[-2]	1.37[-2]	1.54[-2]	1.65[-2]
$2p^*7d^*7d$	6.94[-4]	3.63[-3]	1.05[-2]	1.67[-2]	2.58[-2]	2.88[-2]	3.28[-2]	3.61[-2]	3.82[-2]	3.83[-2]
$2p^*7d^*7f$	1.09[-6]	9.37[-5]	1.13[-3]	2.95[-3]	6.58[-3]	8.07[-3]	1.00[-2]	1.17[-2]	1.26[-2]	1.25[-2]

TABLE IV. L_3 -shell Auger rates $A(n_0j_0l_0, n_1j_1l_1, n_2j_2l_2)$ (in mau) as function of Z for Ni-, Cu-, and Zn-like ions.

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
Ni-like ions										
$2p3s3s$	8.70[-2]	9.46[-2]	1.08[-1]	1.19[-1]	1.37[-1]	1.43[-1]	1.43[-1]	1.59[-1]	1.57[-1]	1.36[-1]
$2p3s3p^*$	5.98[-2]	6.80[-2]	8.12[-2]	9.07[-2]	1.03[-1]	1.06[-1]	1.06[-1]	1.09[-1]	1.04[-1]	9.20[-2]
$2p3s3p$	1.63[0]	1.83[0]	2.18[0]	2.48[0]	2.98[0]	3.20[0]	3.20[0]	4.01[0]	4.62[0]	5.34[0]
$2p3s3d^*$	1.03[-1]	1.37[-1]	1.78[-1]	2.06[-1]	2.45[-1]	2.60[-1]	2.60[-1]	3.28[-1]	4.20[-1]	6.13[-1]
$2p3s3d$	1.36[-1]	1.66[-1]	2.02[-1]	2.29[-1]	2.81[-1]	3.12[-1]	3.12[-1]	5.15[-1]	8.14[-1]	1.39[0]
$2p3p^*3p$	2.48[0]	2.87[0]	3.55[0]	4.09[0]	5.01[0]	5.40[0]	5.40[0]	6.83[0]	7.89[0]	9.13[0]
$2p3p^*3d^*$	1.01[-1]	1.53[-1]	2.26[-1]	2.80[-1]	3.54[-1]	3.79[-1]	3.79[-1]	4.30[-1]	4.42[-1]	4.50[-1]
$2p3p^*3d$	9.80[-1]	1.43[0]	2.06[0]	2.50[0]	3.11[0]	3.31[0]	3.31[0]	3.69[0]	3.70[0]	3.56[0]
$2p3p3p$	3.59[0]	4.14[0]	5.05[0]	5.76[0]	6.85[0]	7.29[0]	7.29[0]	8.67[0]	9.52[0]	1.04[1]
$2p3p3d^*$	2.33[0]	3.32[0]	4.67[0]	5.64[0]	7.11[0]	7.69[0]	7.69[0]	9.48[0]	1.06[1]	1.17[1]
$2p3p3d$	3.45[0]	4.97[0]	7.05[0]	8.53[0]	1.07[1]	1.14[1]	1.14[1]	1.34[1]	1.44[1]	1.51[1]
$2p3d^*3d^*$	2.18[-1]	3.83[-1]	6.20[-1]	7.95[-1]	1.05[0]	1.15[0]	1.15[0]	1.41[0]	1.54[0]	1.64[0]
$2p3d^*3d$	4.44[0]	7.70[0]	1.23[1]	1.56[1]	2.04[1]	2.22[1]	2.22[1]	2.71[1]	2.96[1]	3.17[1]
$2p3d3d$	2.97[0]	5.18[0]	8.26[0]	1.05[1]	1.36[1]	1.47[1]	1.47[1]	1.77[1]	1.89[1]	1.99[1]
Cu-like ions										
$2p3s4p$	1.16[-1]	2.31[-1]	3.67[-1]	4.58[-1]	5.96[-1]	6.52[-1]	7.34[-1]	8.48[-1]	9.90[-1]	1.16[0]
$2p3s4d$	1.08[-2]	1.95[-2]	2.67[-2]	3.01[-2]	3.45[-2]	3.69[-2]	4.28[-2]	6.03[-2]	1.09[-1]	2.19[-1]
$2p3p^*4p$	1.80[-1]	3.72[-1]	6.15[-1]	7.83[-1]	1.04[0]	1.15[0]	1.30[0]	1.52[0]	1.78[0]	2.08[0]
$2p3p^*4d^*$	9.05[-3]	2.37[-2]	4.80[-2]	6.71[-2]	9.53[-2]	1.05[-1]	1.17[-1]	1.27[-1]	1.34[-1]	1.35[-1]
$2p3p^*4d$	8.66[-2]	2.12[-1]	4.01[-1]	5.39[-1]	7.33[-1]	7.98[-1]	8.72[-1]	9.34[-1]	9.53[-1]	9.19[-1]
$2p3p4s$	1.67[-1]	3.10[-1]	5.09[-1]	6.58[-1]	8.96[-1]	9.93[-1]	1.14[0]	1.33[0]	1.56[0]	1.83[0]
$2p3p4p^*$	2.05[-1]	4.43[-1]	7.72[-1]	1.02[0]	1.40[0]	1.56[0]	1.79[0]	2.10[0]	2.47[0]	2.87[0]
$2p3p4p$	5.66[-1]	1.19[0]	2.01[0]	2.59[0]	3.44[0]	3.76[0]	4.21[0]	4.77[0]	5.36[0]	5.96[0]
$2p3p4d^*$	2.09[-1]	5.20[-1]	1.01[0]	1.40[0]	2.00[0]	2.25[0]	2.59[0]	3.01[0]	3.48[0]	3.96[0]
$2p3p4d$	3.15[-1]	7.89[-1]	1.54[0]	2.12[0]	2.99[0]	3.32[0]	3.75[0]	4.24[0]	4.70[0]	5.09[0]
$2p3d^*4s$	1.01[-2]	2.20[-2]	3.90[-2]	5.11[-2]	6.88[-2]	7.56[-2]	8.57[-2]	1.01[-1]	1.26[-1]	1.69[-1]
$2p3d^*4p^*$	8.40[-3]	2.35[-2]	4.92[-2]	6.93[-2]	9.91[-2]	1.09[-1]	1.22[-1]	1.33[-1]	1.41[-1]	1.48[-1]
$2p3d^*4p$	1.63[-1]	4.11[-1]	7.65[-1]	1.02[0]	1.39[0]	1.52[0]	1.71[0]	1.94[0]	2.18[0]	2.42[0]
$2p3d^*4d^*$	3.81[-2]	1.14[-1]	2.48[-1]	3.56[-1]	5.25[-1]	5.89[-1]	6.73[-1]	7.69[-1]	8.57[-1]	9.27[-1]
$2p3d^*4d$	3.83[-1]	1.08[0]	2.21[0]	3.06[0]	4.31[0]	4.78[0]	5.39[0]	6.08[0]	6.75[0]	7.35[0]
$2p3d4s$	1.35[-2]	2.73[-2]	4.59[-2]	5.93[-2]	8.24[-2]	9.41[-2]	1.16[-1]	1.58[-1]	2.41[-1]	3.86[-1]
$2p3d4p^*$	7.80[-2]	2.11[-1]	4.23[-1]	5.83[-1]	8.10[-1]	8.84[-1]	9.67[-1]	1.03[0]	1.03[0]	9.73[-1]
$2p3d4p$	2.53[-1]	6.56[-1]	1.26[0]	1.71[0]	2.35[0]	2.59[0]	2.88[0]	3.19[0]	3.44[0]	3.62[0]
$2p3d4d^*$	3.89[-1]	1.15[0]	2.47[0]	3.52[0]	5.14[0]	5.75[0]	6.56[0]	7.48[0]	8.34[0]	9.07[0]
$2p3d4d$	5.24[-1]	1.53[0]	3.23[0]	4.55[0]	6.53[0]	7.26[0]	8.20[0]	9.24[0]	1.02[1]	1.09[1]
$2p3s5p$	3.97[-2]	8.58[-2]	1.42[-1]	1.79[-1]	2.35[-1]	2.58[-1]	2.91[-1]	3.37[-1]	3.94[-1]	4.62[-1]
$2p3s5f^*$	1.11[-5]	4.15[-4]	3.68[-3]	8.76[-3]	2.09[-2]	2.71[-2]	3.79[-2]	5.60[-2]	8.55[-2]	1.33[-1]
$2p3s5f$	1.91[-5]	7.66[-4]	6.84[-3]	1.64[-2]	3.89[-2]	5.04[-2]	6.95[-2]	1.00[-1]	1.48[-1]	2.20[-1]
$2p3p^*5p$	6.16[-2]	1.39[-1]	2.40[-1]	3.10[-1]	4.18[-1]	4.62[-1]	5.26[-1]	6.13[-1]	7.21[-1]	8.47[-1]
$2p3p^*5d$	3.64[-2]	9.06[-2]	1.74[-1]	2.35[-1]	3.20[-1]	3.48[-1]	3.81[-1]	4.08[-1]	4.17[-1]	4.03[-1]
$2p3p^*5f$	3.00[-5]	1.25[-3]	1.10[-2]	2.58[-2]	5.87[-2]	7.43[-2]	9.84[-2]	1.33[-1]	1.76[-1]	2.29[-1]
$2p3p5s$	5.22[-2]	1.16[-1]	2.09[-1]	2.81[-1]	3.99[-1]	4.47[-1]	5.18[-1]	6.12[-1]	7.24[-1]	8.49[-1]
$2p3p5p^*$	7.13[-2]	1.72[-1]	3.23[-1]	4.38[-1]	6.23[-1]	7.00[-1]	8.10[-1]	9.56[-1]	1.13[0]	1.31[0]
$2p3p5p$	1.96[-1]	4.58[-1]	8.22[-1]	1.09[0]	1.48[0]	1.63[0]	1.85[0]	2.11[0]	2.39[0]	2.67[0]
$2p3p5d^*$	8.88[-2]	2.27[-1]	4.56[-1]	6.39[-1]	9.35[-1]	1.05[0]	1.22[0]	1.44[0]	1.67[0]	1.91[0]
$2p3p5d$	1.34[-1]	3.45[-1]	6.93[-1]	9.67[-1]	1.39[0]	1.55[0]	1.76[0]	2.00[0]	2.24[0]	2.44[0]
$2p3p5f^*$	4.20[-5]	1.95[-3]	1.94[-2]	4.88[-2]	1.19[-1]	1.52[-1]	2.01[-1]	2.66[-1]	3.34[-1]	4.01[-1]
$2p3p5f$	6.28[-5]	2.84[-3]	2.75[-2]	6.76[-2]	1.59[-1]	2.01[-1]	2.61[-1]	3.35[-1]	4.10[-1]	4.77[-1]
$2p3d^*5p$	5.56[-2]	1.52[-1]	2.94[-1]	3.96[-1]	5.45[-1]	6.01[-1]	6.76[-1]	7.67[-1]	8.61[-1]	9.54[-1]
$2p3d^*5d^*$	1.61[-2]	4.92[-2]	1.09[-1]	1.58[-1]	2.36[-1]	2.65[-1]	3.05[-1]	3.49[-1]	3.90[-1]	4.23[-1]
$2p3d^*5d$	1.60[-1]	4.57[-1]	9.35[-1]	1.29[0]	1.81[0]	2.00[0]	2.24[0]	2.53[0]	2.80[0]	3.05[0]
$2p3d^*5f^*$	1.75[-5]	9.64[-4]	1.01[-2]	2.59[-2]	6.30[-2]	8.03[-2]	1.06[-1]	1.37[-1]	1.68[-1]	1.96[-1]
$2p3d^*5f$	6.26[-5]	3.45[-3]	3.69[-2]	9.44[-2]	2.29[-1]	2.92[-1]	3.81[-1]	4.90[-1]	5.96[-1]	6.86[-1]
$2p3d5s$	4.19[-3]	1.02[-2]	1.88[-2]	2.53[-2]	3.66[-2]	4.22[-2]	5.25[-2]	7.22[-2]	1.09[-1]	1.73[-1]
$2p3d5p^*$	2.70[-2]	8.13[-2]	1.74[-1]	2.47[-1]	3.51[-1]	3.86[-1]	4.25[-1]	4.53[-1]	4.54[-1]	4.26[-1]
$2p3d5p$	8.66[-2]	2.47[-1]	5.00[-1]	6.92[-1]	9.77[-1]	1.08[0]	1.21[0]	1.35[0]	1.46[0]	1.53[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Cu-like ions										
$2p3d5d^*$	1.64[-1]	4.97[-1]	1.09[0]	1.56[0]	2.30[0]	2.58[0]	2.95[0]	3.37[0]	3.77[0]	4.10[0]
$2p3d5d$	2.21[-1]	6.55[-1]	1.40[0]	1.99[0]	2.88[0]	3.21[0]	3.64[0]	4.11[0]	4.54[0]	4.88[0]
$2p3d5f^*$	1.65[-4]	9.82[-3]	1.09[-1]	2.87[-1]	7.18[-1]	9.23[-1]	1.22[0]	1.60[0]	1.98[0]	2.31[0]
$2p3d5f$	1.58[-4]	9.42[-3]	1.04[-1]	2.72[-1]	6.77[-1]	8.66[-1]	1.14[0]	1.47[0]	1.79[0]	2.05[0]
$2p3s6s$	2.08[-3]	4.58[-3]	7.89[-3]	1.01[-2]	1.33[-2]	1.45[-2]	1.59[-2]	1.72[-2]	1.75[-2]	1.57[-2]
$2p3s6p$	1.85[-2]	4.18[-2]	7.06[-2]	9.01[-2]	1.19[-1]	1.31[-1]	1.48[-1]	1.71[-1]	2.00[-1]	2.35[-1]
$2p3s6d^*$	1.70[-3]	3.29[-3]	4.64[-3]	5.17[-3]	5.33[-3]	5.23[-3]	5.02[-3]	5.14[-3]	7.17[-3]	1.42[-2]
$2p3s6d$	2.29[-3]	3.91[-3]	5.00[-3]	5.29[-3]	5.41[-3]	5.46[-3]	5.87[-3]	8.10[-3]	1.61[-2]	3.69[-2]
$2p3p^*6p$	2.87[-2]	6.78[-2]	1.20[-1]	1.57[-1]	2.13[-1]	2.36[-1]	2.69[-1]	3.14[-1]	3.70[-1]	4.35[-1]
$2p3p^*6d^*$	2.00[-3]	5.48[-3]	1.16[-2]	1.65[-2]	2.39[-2]	2.65[-2]	2.96[-2]	3.27[-2]	3.49[-2]	3.61[-2]
$2p3p^*6d$	1.89[-2]	4.76[-2]	9.22[-2]	1.25[-1]	1.70[-1]	1.85[-1]	2.03[-1]	2.18[-1]	2.23[-1]	2.16[-1]
$2p3p6s$	2.31[-2]	5.58[-2]	1.06[-1]	1.46[-1]	2.12[-1]	2.39[-1]	2.79[-1]	3.32[-1]	3.94[-1]	4.62[-1]
$2p3p6p^*$	3.35[-2]	8.58[-2]	1.67[-1]	2.30[-1]	3.33[-1]	3.76[-1]	4.37[-1]	5.18[-1]	6.12[-1]	7.13[-1]
$2p3p6p$	9.20[-2]	2.27[-1]	4.21[-1]	5.64[-1]	7.82[-1]	8.66[-1]	9.83[-1]	1.13[0]	1.28[0]	1.44[0]
$2p3p6d^*$	4.62[-2]	1.21[-1]	2.47[-1]	3.49[-1]	5.15[-1]	5.83[-1]	6.78[-1]	7.99[-1]	9.33[-1]	1.07[0]
$2p3p6d$	6.97[-2]	1.83[-1]	3.74[-1]	5.27[-1]	7.63[-1]	8.53[-1]	9.73[-1]	1.11[0]	1.25[0]	1.36[0]
$2p3d^*6s$	1.38[-3]	3.89[-3]	7.95[-3]	1.10[-2]	1.57[-2]	1.76[-2]	2.04[-2]	2.45[-2]	3.07[-2]	4.04[-2]
$2p3d^*6p^*$	1.38[-3]	4.56[-3]	1.06[-2]	1.57[-2]	2.34[-2]	2.62[-2]	2.95[-2]	3.26[-2]	3.48[-2]	3.65[-2]
$2p3d^*6p$	2.59[-2]	7.39[-2]	1.46[-1]	1.99[-1]	2.75[-1]	3.04[-1]	3.42[-1]	3.88[-1]	4.36[-1]	4.83[-1]
$2p3d^*6d^*$	8.37[-3]	2.59[-2]	5.84[-2]	8.52[-2]	1.28[-1]	1.44[-1]	1.66[-1]	1.90[-1]	2.13[-1]	2.31[-1]
$2p3d^*6d$	8.29[-2]	2.38[-1]	4.90[-1]	6.76[-1]	9.45[-1]	1.04[0]	1.17[0]	1.31[0]	1.46[0]	1.58[0]
$2p3d6s$	1.84[-3]	4.89[-3]	9.58[-3]	1.31[-2]	1.95[-2]	2.26[-2]	2.83[-2]	3.91[-2]	5.90[-2]	9.29[-2]
$2p3d6p^*$	1.27[-2]	4.02[-2]	8.93[-2]	1.29[-1]	1.86[-1]	2.05[-1]	2.26[-1]	2.41[-1]	2.42[-1]	2.26[-1]
$2p3d6p$	4.04[-2]	1.21[-1]	2.53[-1]	3.54[-1]	5.07[-1]	5.62[-1]	6.33[-1]	7.08[-1]	7.68[-1]	8.07[-1]
$2p3d6d^*$	8.56[-2]	2.61[-1]	5.82[-1]	8.41[-1]	1.24[0]	1.40[0]	1.60[0]	1.83[0]	2.04[0]	2.22[0]
$2p3d6d$	1.15[-1]	3.44[-1]	7.48[-1]	1.07[0]	1.55[0]	1.73[0]	1.96[0]	2.22[0]	2.45[0]	2.64[0]
$2p3d6f^*$	1.29[-4]	6.85[-3]	7.68[-2]	1.94[-1]	4.71[-1]	5.99[-1]	7.86[-1]	1.02[0]	1.25[0]	1.45[0]
$2p3d6f$	1.24[-4]	6.53[-3]	7.34[-2]	1.84[-1]	4.44[-1]	5.62[-1]	7.33[-1]	9.38[-1]	1.13[0]	1.30[0]
$2p3s7p$	1.01[-2]	2.35[-2]	4.06[-2]	5.19[-2]	6.91[-2]	7.58[-2]	8.60[-2]	9.95[-2]	1.17[-1]	1.37[-1]
$2p3s7d$	1.33[-3]	2.29[-3]	2.82[-3]	3.01[-3]	2.98[-3]	3.02[-3]	3.15[-3]	4.35[-3]	8.86[-3]	2.05[-2]
$2p3p^*7p$	1.57[-2]	3.83[-2]	6.90[-2]	9.07[-2]	1.24[-1]	1.37[-1]	1.57[-1]	1.84[-1]	2.16[-1]	2.55[-1]
$2p3p^*7d^*$	1.17[-3]	3.26[-3]	6.97[-3]	9.97[-3]	1.45[-2]	1.61[-2]	1.80[-2]	2.00[-2]	2.14[-2]	2.22[-2]
$2p3p^*7d$	1.11[-2]	2.82[-2]	5.50[-2]	7.47[-2]	1.02[-1]	1.11[-1]	1.22[-1]	1.30[-1]	1.34[-1]	1.30[-1]
$2p3p7s$	1.23[-2]	3.12[-2]	6.15[-2]	8.59[-2]	1.26[-1]	1.43[-1]	1.68[-1]	2.00[-1]	2.38[-1]	2.79[-1]
$2p3p7p^*$	1.84[-2]	4.89[-2]	9.74[-2]	1.36[-1]	1.99[-1]	2.25[-1]	2.63[-1]	3.12[-1]	3.69[-1]	4.30[-1]
$2p3p7p$	5.05[-2]	1.29[-1]	2.45[-1]	3.31[-1]	4.64[-1]	5.16[-1]	5.88[-1]	6.77[-1]	7.73[-1]	8.69[-1]
$2p3p7d^*$	2.71[-2]	7.19[-2]	1.49[-1]	2.11[-1]	3.14[-1]	3.56[-1]	4.16[-1]	4.91[-1]	5.74[-1]	6.60[-1]
$2p3p7d$	4.09[-2]	1.09[-1]	2.26[-1]	3.19[-1]	4.65[-1]	5.20[-1]	5.95[-1]	6.81[-1]	7.66[-1]	8.40[-1]
$2p3d^*7s$	7.33[-4]	2.17[-3]	4.57[-3]	6.46[-3]	9.29[-3]	1.05[-2]	1.21[-2]	1.47[-2]	1.84[-2]	2.41[-2]
$2p3d^*7p^*$	7.54[-4]	2.61[-3]	6.18[-3]	9.24[-3]	1.40[-2]	1.57[-2]	1.77[-2]	1.96[-2]	2.10[-2]	2.20[-2]
$2p3d^*7p$	1.41[-2]	4.17[-2]	8.38[-2]	1.14[-1]	1.59[-1]	1.76[-1]	1.99[-1]	2.26[-1]	2.54[-1]	2.81[-1]
$2p3d^*7d^*$	4.90[-3]	1.54[-2]	3.49[-2]	5.13[-2]	7.71[-2]	8.72[-2]	1.00[-1]	1.15[-1]	1.29[-1]	1.41[-1]
$2p3d^*7d$	4.85[-2]	1.41[-1]	2.90[-1]	4.00[-1]	5.59[-1]	6.16[-1]	6.92[-1]	7.77[-1]	8.60[-1]	9.37[-1]
$2p3d7s$	1.00[-3]	2.73[-3]	5.52[-3]	7.97[-3]	1.15[-2]	1.37[-2]	1.67[-2]	2.36[-2]	3.55[-2]	5.51[-2]
$2p3d7p^*$	6.92[-3]	2.30[-2]	5.17[-2]	7.49[-2]	1.10[-1]	1.22[-1]	1.35[-1]	1.44[-1]	1.44[-1]	1.35[-1]
$2p3d7p$	2.21[-2]	6.85[-2]	1.46[-1]	2.06[-1]	2.98[-1]	3.32[-1]	3.76[-1]	4.20[-1]	4.56[-1]	4.82[-1]
$2p3d7d^*$	5.01[-2]	1.56[-1]	3.46[-1]	5.04[-1]	7.48[-1]	8.43[-1]	9.68[-1]	1.10[0]	1.23[0]	1.35[0]
$2p3d7d$	6.71[-2]	2.04[-1]	4.44[-1]	6.37[-1]	9.29[-1]	1.04[0]	1.18[0]	1.34[0]	1.48[0]	1.60[0]
Zn-like ions										
$2p4s4p$	1.19[-2]	3.92[-2]	8.56[-2]	1.22[-1]	1.79[-1]	2.03[-1]	2.37[-1]	2.82[-1]	3.36[-1]	3.97[-1]
$2p4s4d^*$	8.01[-4]	2.65[-3]	5.55[-3]	7.49[-3]	9.89[-3]	1.06[-2]	1.17[-2]	1.33[-2]	1.67[-2]	2.44[-2]
$2p4s4d$	1.09[-3]	3.29[-3]	6.36[-3]	8.33[-3]	1.11[-2]	1.24[-2]	1.49[-2]	2.05[-2]	3.37[-2]	6.11[-2]
$2p4s4f^*$	8.27[-7]	5.61[-5]	7.19[-4]	2.05[-3]	5.76[-3]	7.77[-3]	1.11[-2]	1.62[-2]	2.34[-2]	3.32[-2]
$2p4s4f$	1.60[-6]	1.11[-4]	1.47[-3]	4.26[-3]	1.22[-2]	1.65[-2]	2.34[-2]	3.37[-2]	4.68[-2]	6.27[-2]
$2p4p^*4p$	1.49[-2]	5.74[-2]	1.34[-1]	1.95[-1]	2.92[-1]	3.32[-1]	3.89[-1]	4.65[-1]	5.54[-1]	6.52[-1]
$2p4p^*4d^*$	7.49[-4]	3.64[-3]	1.04[-2]	1.65[-2]	2.62[-2]	2.98[-2]	3.41[-2]	3.83[-2]	4.11[-2]	4.24[-2]
$2p4p^*4d$	6.92[-3]	3.15[-2]	8.41[-2]	1.29[-1]	1.98[-1]	2.22[-1]	2.51[-1]	2.76[-1]	2.87[-1]	2.79[-1]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Zn-like ions										
$2p4p^*4f^*$	8.31[-7]	6.18[-5]	7.81[-4]	2.17[-3]	5.94[-3]	7.94[-3]	1.12[-2]	1.61[-2]	2.25[-2]	3.00[-2]
$2p4p^*4f$	2.20[-6]	1.67[-4]	2.17[-3]	6.06[-3]	1.65[-2]	2.19[-2]	3.05[-2]	4.25[-2]	5.70[-2]	7.27[-2]
$2p4p4p$	2.21[-2]	8.50[-2]	1.96[-1]	2.83[-1]	4.15[-1]	4.66[-1]	5.35[-1]	6.21[-1]	7.11[-1]	8.02[-1]
$2p4p4d^*$	1.47[-2]	6.46[-2]	1.67[-1]	2.53[-1]	3.92[-1]	4.47[-1]	5.24[-1]	6.20[-1]	7.23[-1]	8.27[-1]
$2p4p4d$	2.31[-2]	1.04[-1]	2.74[-1]	4.20[-1]	6.52[-1]	7.40[-1]	8.55[-1]	9.84[-1]	1.10[0]	1.20[0]
$2p4p4f^*$	2.95[-6]	2.39[-4]	3.26[-3]	9.33[-3]	2.56[-2]	3.38[-2]	4.62[-2]	6.25[-2]	7.99[-2]	9.64[-2]
$2p4p4f$	4.60[-6]	3.68[-4]	4.92[-3]	1.39[-2]	3.70[-2]	4.82[-2]	6.48[-2]	8.55[-2]	1.06[-1]	1.25[-1]
$2p4d^*4d^*$	1.66[-3]	8.43[-3]	2.44[-2]	3.89[-2]	6.29[-2]	7.22[-2]	8.46[-2]	9.86[-2]	1.12[-1]	1.22[-1]
$2p4d^*4d$	3.36[-2]	1.63[-1]	4.53[-1]	7.08[-1]	1.12[0]	1.28[0]	1.49[0]	1.74[0]	1.99[0]	2.20[0]
$2p4d^*4f^*$	1.64[-6]	1.40[-4]	1.95[-3]	5.61[-3]	1.53[-2]	2.00[-2]	2.71[-2]	3.58[-2]	4.47[-2]	5.23[-2]
$2p4d^*4f$	5.76[-6]	4.90[-4]	6.86[-3]	1.97[-2]	5.37[-2]	7.03[-2]	9.46[-2]	1.24[-1]	1.53[-1]	1.77[-1]
$2p4d4d$	2.32[-2]	1.13[-1]	3.16[-1]	4.95[-1]	7.82[-1]	8.91[-1]	1.04[0]	1.20[0]	1.35[0]	1.47[0]
$2p4d4f^*$	1.59[-5]	1.41[-3]	2.04[-2]	5.97[-2]	1.67[-1]	2.20[-1]	3.01[-1]	4.06[-1]	5.14[-1]	6.13[-1]
$2p4d4f$	1.52[-5]	1.34[-3]	1.93[-2]	5.62[-2]	1.54[-1]	2.03[-1]	2.74[-1]	3.62[-1]	4.48[-1]	5.21[-1]
$2p4f^*4f$	4.97[-9]	7.80[-6]	5.94[-4]	3.31[-3]	1.66[-2]	2.57[-2]	4.16[-2]	6.50[-2]	9.19[-2]	1.18[-1]
$2p4f4f$	1.71[-9]	2.74[-6]	2.12[-4]	1.19[-3]	5.99[-3]	9.24[-3]	1.49[-2]	2.32[-2]	3.25[-2]	4.11[-2]
$2p4s5p$	4.07[-3]	1.46[-2]	3.31[-2]	4.77[-2]	7.10[-2]	8.04[-2]	9.41[-2]	1.12[-1]	1.34[-1]	1.58[-1]
$2p4s5d$	4.46[-4]	1.32[-3]	2.44[-3]	3.10[-3]	3.91[-3]	4.24[-3]	4.90[-3]	6.59[-3]	1.11[-2]	2.13[-2]
$2p4p^*5p$	5.09[-3]	2.14[-2]	5.22[-2]	7.71[-2]	1.17[-1]	1.33[-1]	1.57[-1]	1.88[-1]	2.24[-1]	2.64[-1]
$2p4p^*5d^*$	3.18[-4]	1.59[-3]	4.63[-3]	7.43[-3]	1.19[-2]	1.36[-2]	1.56[-2]	1.75[-2]	1.89[-2]	1.95[-2]
$2p4p^*5d$	2.92[-3]	1.35[-2]	3.67[-2]	5.66[-2]	8.70[-2]	9.78[-2]	1.11[-1]	1.22[-1]	1.27[-1]	1.25[-1]
$2p4p5s$	3.72[-3]	1.46[-2]	3.52[-2]	5.22[-2]	8.00[-2]	9.15[-2]	1.08[-1]	1.30[-1]	1.56[-1]	1.85[-1]
$2p4p5p^*$	5.19[-3]	2.24[-2]	5.59[-2]	8.39[-2]	1.30[-1]	1.49[-1]	1.76[-1]	2.12[-1]	2.53[-1]	2.98[-1]
$2p4p5p$	1.53[-2]	6.50[-2]	1.59[-1]	2.35[-1]	3.53[-1]	3.98[-1]	4.61[-1]	5.39[-1]	6.21[-1]	7.02[-1]
$2p4p5d^*$	6.23[-3]	2.82[-2]	7.52[-2]	1.16[-1]	1.83[-1]	2.10[-1]	2.48[-1]	2.95[-1]	3.47[-1]	4.00[-1]
$2p4p5d$	9.81[-3]	4.54[-2]	1.23[-1]	1.91[-1]	3.01[-1]	3.43[-1]	3.98[-1]	4.61[-1]	5.19[-1]	5.68[-1]
$2p4d^*5p^*$	2.61[-4]	1.42[-3]	4.33[-3]	7.07[-3]	1.16[-2]	1.32[-2]	1.53[-2]	1.73[-2]	1.86[-2]	1.93[-2]
$2p4d^*5p$	4.99[-3]	2.39[-2]	6.40[-2]	9.85[-2]	1.54[-1]	1.76[-1]	2.07[-1]	2.45[-1]	2.85[-1]	3.26[-1]
$2p4d^*5d^*$	1.41[-3]	7.26[-3]	2.14[-2]	3.44[-2]	5.59[-2]	6.42[-2]	7.53[-2]	8.79[-2]	9.95[-2]	1.09[-1]
$2p4d^*5d$	1.41[-2]	6.89[-2]	1.92[-1]	3.00[-1]	4.74[-1]	5.40[-1]	6.29[-1]	7.33[-1]	8.35[-1]	9.26[-1]
$2p4d^*5f$	5.26[-6]	4.23[-4]	5.61[-3]	1.54[-2]	3.94[-2]	5.07[-2]	6.69[-2]	8.66[-2]	1.05[-1]	1.21[-1]
$2p4d5s$	3.39[-4]	1.23[-3]	2.63[-3]	3.60[-3]	5.06[-3]	5.72[-3]	6.95[-3]	9.63[-3]	1.56[-2]	2.76[-2]
$2p4d5p^*$	2.40[-3]	1.22[-2]	3.47[-2]	5.49[-2]	8.66[-2]	9.80[-2]	1.12[-1]	1.23[-1]	1.28[-1]	1.25[-1]
$2p4d5p$	7.92[-3]	3.90[-2]	1.08[-1]	1.70[-1]	2.69[-1]	3.07[-1]	3.56[-1]	4.12[-1]	4.62[-1]	5.01[-1]
$2p4d5d^*$	1.42[-2]	7.05[-2]	2.00[-1]	3.17[-1]	5.07[-1]	5.81[-1]	6.81[-1]	7.97[-1]	9.10[-1]	1.01[0]
$2p4d5d$	1.95[-2]	9.67[-2]	2.75[-1]	4.34[-1]	6.89[-1]	7.86[-1]	9.15[-1]	1.06[0]	1.19[0]	1.31[0]
$2p4d5f^*$	1.54[-5]	1.22[-3]	1.68[-2]	4.69[-2]	1.23[-1]	1.60[-1]	2.15[-1]	2.83[-1]	3.54[-1]	4.19[-1]
$2p4d5f$	1.50[-5]	1.16[-3]	1.59[-2]	4.41[-2]	1.14[-1]	1.47[-1]	1.95[-1]	2.54[-1]	3.10[-1]	3.58[-1]
$2p4f^*5d$	6.54[-6]	5.73[-4]	8.14[-3]	2.35[-2]	6.41[-2]	8.41[-2]	1.14[-1]	1.52[-1]	1.91[-1]	2.27[-1]
$2p4f5d$	6.25[-6]	5.47[-4]	7.70[-3]	2.20[-2]	5.91[-2]	7.69[-2]	1.03[-1]	1.34[-1]	1.65[-1]	1.90[-1]
$2p4s6p$	1.89[-3]	7.09[-3]	1.65[-2]	2.40[-2]	3.59[-2]	4.08[-2]	4.77[-2]	5.70[-2]	6.80[-2]	8.05[-2]
$2p4p^*6p$	2.37[-3]	1.05[-2]	2.61[-2]	3.89[-2]	5.96[-2]	6.80[-2]	8.02[-2]	9.61[-2]	1.15[-1]	1.35[-1]
$2p4p^*6d^*$	1.66[-4]	8.42[-4]	2.49[-3]	4.02[-3]	6.48[-3]	7.38[-3]	8.49[-3]	9.57[-3]	1.03[-2]	1.07[-2]
$2p4p^*6d$	1.51[-3]	7.11[-3]	1.95[-2]	3.02[-2]	4.65[-2]	5.23[-2]	5.92[-2]	6.54[-2]	6.84[-2]	6.71[-2]
$2p4p6s$	1.65[-3]	7.06[-3]	1.79[-2]	2.72[-2]	4.26[-2]	4.90[-2]	5.83[-2]	7.06[-2]	8.50[-2]	1.01[-1]
$2p4p6p^*$	2.44[-3]	1.11[-2]	2.89[-2]	4.41[-2]	6.93[-2]	7.98[-2]	9.49[-2]	1.15[-1]	1.37[-1]	1.62[-1]
$2p4p6p$	7.18[-3]	3.21[-2]	8.12[-2]	1.21[-1]	1.85[-1]	2.10[-1]	2.44[-1]	2.86[-1]	3.31[-1]	3.75[-1]
$2p4p6d^*$	3.24[-3]	1.50[-2]	4.07[-2]	6.32[-2]	1.01[-1]	1.16[-1]	1.38[-1]	1.64[-1]	1.94[-1]	2.24[-1]
$2p4p6d$	5.10[-3]	2.41[-2]	6.65[-2]	1.04[-1]	1.65[-1]	1.88[-1]	2.19[-1]	2.55[-1]	2.88[-1]	3.16[-1]
$2p4p6f^*$	1.91[-6]	1.51[-4]	1.88[-3]	5.01[-3]	1.26[-2]	1.62[-2]	2.16[-2]	2.85[-2]	3.59[-2]	4.31[-2]
$2p4p6f$	2.97[-6]	2.31[-4]	2.79[-3]	7.26[-3]	1.76[-2]	2.22[-2]	2.89[-2]	3.71[-2]	4.52[-2]	5.23[-2]
$2p4d^*6p^*$	1.23[-4]	7.06[-4]	2.23[-3]	3.71[-3]	6.16[-3]	7.07[-3]	8.20[-3]	9.30[-3]	1.00[-2]	1.04[-2]
$2p4d^*6p$	2.32[-3]	1.16[-2]	3.19[-2]	4.94[-2]	7.79[-2]	8.91[-2]	1.05[-1]	1.24[-1]	1.44[-1]	1.65[-1]
$2p4d^*6d^*$	7.28[-4]	3.83[-3]	1.14[-2]	1.84[-2]	3.01[-2]	3.46[-2]	4.06[-2]	4.74[-2]	5.38[-2]	5.89[-2]
$2p4d^*6d$	7.28[-3]	3.60[-2]	1.01[-1]	1.58[-1]	2.48[-1]	2.83[-1]	3.29[-1]	3.83[-1]	4.36[-1]	4.84[-1]
$2p4d^*6f$	3.64[-6]	3.13[-4]	3.90[-3]	1.05[-2]	2.60[-2]	3.31[-2]	4.34[-2]	5.57[-2]	6.76[-2]	7.74[-2]
$2p4d6p^*$	1.13[-3]	6.02[-3]	1.78[-2]	2.86[-2]	4.60[-2]	5.22[-2]	5.97[-2]	6.62[-2]	6.89[-2]	6.68[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Zn-like ions										
$2p4d6p$	3.70[-3]	1.91[-2]	5.47[-2]	8.67[-2]	1.39[-1]	1.59[-1]	1.86[-1]	2.15[-1]	2.42[-1]	2.62[-1]
$2p4d6d^*$	7.39[-3]	3.73[-2]	1.07[-1]	1.71[-1]	2.75[-1]	3.15[-1]	3.70[-1]	4.34[-1]	4.97[-1]	5.52[-1]
$2p4d6d$	1.01[-2]	5.09[-2]	1.46[-1]	2.32[-1]	3.69[-1]	4.22[-1]	4.91[-1]	5.70[-1]	6.43[-1]	7.05[-1]
$2p4d6f^*$	9.81[-6]	9.26[-4]	1.17[-2]	3.21[-2]	8.16[-2]	1.05[-1]	1.40[-1]	1.83[-1]	2.28[-1]	2.68[-1]
$2p4d6f$	9.33[-6]	8.89[-4]	1.11[-2]	3.03[-2]	7.57[-2]	9.69[-2]	1.27[-1]	1.64[-1]	2.00[-1]	2.30[-1]
$2p4f^*6d$	3.35[-6]	2.94[-4]	4.15[-3]	1.19[-2]	3.20[-2]	4.19[-2]	5.65[-2]	7.49[-2]	9.39[-2]	1.11[-1]
$2p4f6d$	3.21[-6]	2.81[-4]	3.92[-3]	1.11[-2]	2.95[-2]	3.82[-2]	5.08[-2]	6.60[-2]	8.05[-2]	9.25[-2]
$2p4s7p$	1.04[-3]	3.99[-3]	9.49[-3]	1.38[-2]	2.08[-2]	2.37[-2]	2.78[-2]	3.32[-2]	3.96[-2]	4.69[-2]
$2p4p^*7p$	1.30[-3]	5.91[-3]	1.50[-2]	2.25[-2]	3.47[-2]	3.97[-2]	4.68[-2]	5.62[-2]	6.72[-2]	7.93[-2]
$2p4p^*7d$	8.87[-4]	4.22[-3]	1.16[-2]	1.81[-2]	2.79[-2]	3.14[-2]	3.55[-2]	3.93[-2]	4.12[-2]	4.05[-2]
$2p4p7s$	8.75[-4]	3.95[-3]	1.04[-2]	1.59[-2]	2.54[-2]	2.93[-2]	3.50[-2]	4.26[-2]	5.13[-2]	6.09[-2]
$2p4p7p^*$	1.34[-3]	6.34[-3]	1.69[-2]	2.60[-2]	4.15[-2]	4.78[-2]	5.70[-2]	6.91[-2]	8.29[-2]	9.76[-2]
$2p4p7p$	3.94[-3]	1.83[-2]	4.72[-2]	7.12[-2]	1.10[-1]	1.25[-1]	1.45[-1]	1.71[-1]	1.98[-1]	2.25[-1]
$2p4p7d^*$	1.90[-3]	8.94[-3]	2.45[-2]	3.84[-2]	6.15[-2]	7.10[-2]	8.43[-2]	1.01[-1]	1.19[-1]	1.38[-1]
$2p4p7d$	3.00[-3]	1.44[-2]	4.01[-2]	6.30[-2]	1.00[-1]	1.15[-1]	1.34[-1]	1.56[-1]	1.76[-1]	1.94[-1]
$2p4d^*7p$	1.27[-3]	6.54[-3]	1.83[-2]	2.85[-2]	4.51[-2]	5.17[-2]	6.09[-2]	7.20[-2]	8.39[-2]	9.58[-2]
$2p4d^*7d^*$	4.27[-4]	2.26[-3]	6.84[-3]	1.10[-2]	1.81[-2]	2.08[-2]	2.45[-2]	2.86[-2]	3.25[-2]	3.56[-2]
$2p4d^*7d$	4.26[-3]	2.12[-2]	5.99[-2]	9.36[-2]	1.47[-1]	1.68[-1]	1.95[-1]	2.27[-1]	2.58[-1]	2.87[-1]
$2p4d7p^*$	6.16[-4]	3.44[-3]	1.05[-2]	1.70[-2]	2.74[-2]	3.11[-2]	3.58[-2]	3.96[-2]	4.13[-2]	4.01[-2]
$2p4d7p$	2.02[-3]	1.08[-2]	3.17[-2]	5.06[-2]	8.17[-2]	9.36[-2]	1.10[-1]	1.27[-1]	1.43[-1]	1.56[-1]
$2p4d7d^*$	4.33[-3]	2.20[-2]	6.47[-2]	1.03[-1]	1.66[-1]	1.90[-1]	2.25[-1]	2.63[-1]	3.01[-1]	3.37[-1]
$2p4d7d$	5.92[-3]	3.01[-2]	8.76[-2]	1.38[-1]	2.22[-1]	2.53[-1]	2.96[-1]	3.43[-1]	3.87[-1]	4.27[-1]
$2p5s5p$	1.27[-3]	5.43[-3]	1.36[-2]	2.04[-2]	3.17[-2]	3.63[-2]	4.30[-2]	5.18[-2]	6.22[-2]	7.37[-2]
$2p5s5f$	4.42[-7]	3.36[-5]	4.57[-4]	1.30[-3]	3.58[-3]	4.76[-3]	6.63[-3]	9.25[-3]	1.24[-2]	1.60[-2]
$2p5p^*5p$	1.77[-3]	8.35[-3]	2.18[-2]	3.32[-2]	5.20[-2]	5.98[-2]	7.09[-2]	8.55[-2]	1.02[-1]	1.21[-1]
$2p5p^*5d$	1.01[-3]	5.22[-3]	1.52[-2]	2.41[-2]	3.82[-2]	4.32[-2]	4.93[-2]	5.48[-2]	5.73[-2]	5.60[-2]
$2p5p^*5f$	6.42[-7]	5.20[-5]	6.48[-4]	1.73[-3]	4.39[-3]	5.69[-3]	7.70[-3]	1.05[-2]	1.37[-2]	1.73[-2]
$2p5p5p$	2.65[-3]	1.24[-2]	3.22[-2]	4.86[-2]	7.46[-2]	8.48[-2]	9.88[-2]	1.16[-1]	1.34[-1]	1.52[-1]
$2p5p5d^*$	2.12[-3]	1.04[-2]	2.89[-2]	4.52[-2]	7.20[-2]	8.28[-2]	9.78[-2]	1.17[-1]	1.37[-1]	1.57[-1]
$2p5p5d$	3.36[-3]	1.71[-2]	4.87[-2]	7.72[-2]	1.24[-1]	1.42[-1]	1.65[-1]	1.92[-1]	2.17[-1]	2.37[-1]
$2p5p5f^*$	8.68[-7]	7.44[-5]	9.84[-4]	2.70[-3]	6.99[-3]	9.05[-3]	1.21[-2]	1.61[-2]	2.02[-2]	2.42[-2]
$2p5p5f$	1.36[-6]	1.15[-4]	1.50[-3]	4.04[-3]	1.01[-2]	1.29[-2]	1.69[-2]	2.18[-2]	2.66[-2]	3.09[-2]
$2p5d^*5d^*$	2.97[-4]	1.56[-3]	4.68[-3]	7.57[-3]	1.23[-2]	1.42[-2]	1.66[-2]	1.94[-2]	2.20[-2]	2.41[-2]
$2p5d^*5d$	5.96[-3]	2.98[-2]	8.52[-2]	1.35[-1]	2.15[-1]	2.46[-1]	2.87[-1]	3.36[-1]	3.84[-1]	4.27[-1]
$2p5d^*5f^*$	6.52[-7]	4.91[-5]	6.35[-4]	1.71[-3]	4.25[-3]	5.42[-3]	7.08[-3]	9.09[-3]	1.10[-2]	1.27[-2]
$2p5d^*5f$	2.19[-6]	1.72[-4]	2.25[-3]	6.08[-3]	1.53[-2]	1.96[-2]	2.56[-2]	3.28[-2]	3.96[-2]	4.51[-2]
$2p5d5d$	4.11[-3]	2.07[-2]	5.99[-2]	9.50[-2]	1.52[-1]	1.73[-1]	2.02[-1]	2.34[-1]	2.64[-1]	2.90[-1]
$2p5d5f^*$	6.45[-6]	4.96[-4]	6.73[-3]	1.85[-2]	4.77[-2]	6.15[-2]	8.19[-2]	1.07[-1]	1.33[-1]	1.57[-1]
$2p5d5f$	6.28[-6]	4.73[-4]	6.36[-3]	1.74[-2]	4.40[-2]	5.63[-2]	7.39[-2]	9.50[-2]	1.15[-1]	1.32[-1]
$2p5s6p$	5.91[-4]	2.65[-3]	6.79[-3]	1.03[-2]	1.60[-2]	1.84[-2]	2.18[-2]	2.63[-2]	3.16[-2]	3.75[-2]
$2p5p^*6p$	8.27[-4]	4.08[-3]	1.09[-2]	1.68[-2]	2.65[-2]	3.05[-2]	3.62[-2]	4.37[-2]	5.24[-2]	6.19[-2]
$2p5p^*6d$	5.25[-4]	2.75[-3]	8.07[-3]	1.29[-2]	2.04[-2]	2.32[-2]	2.64[-2]	2.94[-2]	3.08[-2]	3.03[-2]
$2p5p6s$	5.63[-4]	2.62[-3]	6.93[-3]	1.06[-2]	1.69[-2]	1.95[-2]	2.32[-2]	2.81[-2]	3.39[-2]	4.02[-2]
$2p5p6p^*$	8.33[-4]	4.15[-3]	1.13[-2]	1.74[-2]	2.78[-2]	3.21[-2]	3.82[-2]	4.63[-2]	5.55[-2]	6.55[-2]
$2p5p6p$	2.49[-3]	1.23[-2]	3.28[-2]	5.02[-2]	7.81[-2]	8.91[-2]	1.04[-1]	1.23[-1]	1.43[-1]	1.62[-1]
$2p5p6d^*$	1.10[-3]	5.55[-3]	1.56[-2]	2.47[-2]	3.97[-2]	4.57[-2]	5.42[-2]	6.49[-2]	7.64[-2]	8.82[-2]
$2p5p6d$	1.75[-3]	9.06[-3]	2.63[-2]	4.20[-2]	6.77[-2]	7.77[-2]	9.09[-2]	1.06[-1]	1.20[-1]	1.31[-1]
$2p5d^*6p$	9.86[-4]	5.08[-3]	1.44[-2]	2.27[-2]	3.64[-2]	4.18[-2]	4.95[-2]	5.90[-2]	6.92[-2]	7.95[-2]
$2p5d^*6d^*$	3.08[-4]	1.65[-3]	4.99[-3]	8.11[-3]	1.33[-2]	1.52[-2]	1.79[-2]	2.09[-2]	2.37[-2]	2.59[-2]
$2p5d^*6d$	3.08[-3]	1.56[-2]	4.47[-2]	7.07[-2]	1.13[-1]	1.29[-1]	1.51[-1]	1.76[-1]	2.01[-1]	2.23[-1]
$2p5d6p^*$	4.75[-4]	2.59[-3]	7.79[-3]	1.26[-2]	2.03[-2]	2.31[-2]	2.64[-2]	2.94[-2]	3.08[-2]	3.01[-2]
$2p5d6p$	1.57[-3]	8.36[-3]	2.46[-2]	3.94[-2]	6.39[-2]	7.34[-2]	8.60[-2]	1.00[-1]	1.13[-1]	1.24[-1]
$2p5d6d^*$	3.09[-3]	1.58[-2]	4.56[-2]	7.27[-2]	1.17[-1]	1.34[-1]	1.57[-1]	1.84[-1]	2.10[-1]	2.34[-1]
$2p5d6d$	4.25[-3]	2.18[-2]	6.36[-2]	1.01[-1]	1.62[-1]	1.85[-1]	2.16[-1]	2.51[-1]	2.84[-1]	3.11[-1]
$2p5s7p$	3.24[-4]	1.49[-3]	3.89[-3]	5.93[-3]	9.30[-3]	1.07[-2]	1.27[-2]	1.53[-2]	1.84[-2]	2.18[-2]
$2p5p^*7p$	4.53[-4]	2.30[-3]	6.28[-3]	9.72[-3]	1.54[-2]	1.78[-2]	2.11[-2]	2.56[-2]	3.07[-2]	3.62[-2]
$2p5p^*7d$	3.07[-4]	1.63[-3]	4.82[-3]	7.71[-3]	1.23[-2]	1.39[-2]	1.59[-2]	1.77[-2]	1.86[-2]	1.83[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
Zn-like ions										
$2p5p7s$	2.99[-4]	1.47[-3]	4.01[-3]	6.25[-3]	1.01[-2]	1.16[-2]	1.39[-2]	1.70[-2]	2.05[-2]	2.43[-2]
$2p5p7p^*$	4.58[-4]	2.37[-3]	6.59[-3]	1.03[-2]	1.66[-2]	1.92[-2]	2.30[-2]	2.79[-2]	3.35[-2]	3.95[-2]
$2p5p7p$	1.37[-3]	6.97[-3]	1.91[-2]	2.94[-2]	4.62[-2]	5.28[-2]	6.20[-2]	7.32[-2]	8.51[-2]	9.69[-2]
$2p5p7d^*$	6.48[-4]	3.30[-3]	9.43[-3]	1.49[-2]	2.42[-2]	2.80[-2]	3.32[-2]	3.99[-2]	4.71[-2]	5.44[-2]
$2p5p7d$	1.03[-3]	5.39[-3]	1.58[-2]	2.54[-2]	4.12[-2]	4.73[-2]	5.54[-2]	6.47[-2]	7.33[-2]	8.05[-2]
$2p5d^*7p$	5.39[-4]	2.86[-3]	8.25[-3]	1.31[-2]	2.11[-2]	2.43[-2]	2.88[-2]	3.43[-2]	4.02[-2]	4.62[-2]
$2p5d^*7d^*$	1.80[-4]	9.74[-4]	2.98[-3]	4.85[-3]	7.97[-3]	9.19[-3]	1.08[-2]	1.26[-2]	1.43[-2]	1.56[-2]
$2p5d^*7d$	1.80[-3]	9.18[-3]	2.65[-2]	4.19[-2]	6.69[-2]	7.65[-2]	8.93[-2]	1.04[-1]	1.19[-1]	1.32[-1]
$2p5d7p^*$	2.60[-4]	1.47[-3]	4.58[-3]	7.39[-3]	1.21[-2]	1.38[-2]	1.59[-2]	1.77[-2]	1.85[-2]	1.81[-2]
$2p5d7p$	8.60[-4]	4.72[-3]	1.42[-2]	2.29[-2]	3.75[-2]	4.32[-2]	5.08[-2]	5.92[-2]	6.70[-2]	7.32[-2]
$2p5d7d^*$	1.81[-3]	9.31[-3]	2.74[-2]	4.35[-2]	7.04[-2]	8.11[-2]	9.50[-2]	1.12[-1]	1.28[-1]	1.42[-1]
$2p5d7d$	2.49[-3]	1.29[-2]	3.80[-2]	6.05[-2]	9.73[-2]	1.12[-1]	1.30[-1]	1.51[-1]	1.71[-1]	1.87[-1]
$2p6s6p$	2.62[-4]	1.28[-3]	3.46[-3]	5.35[-3]	8.54[-3]	9.86[-3]	1.18[-2]	1.43[-2]	1.72[-2]	2.04[-2]
$2p6p^*6p$	3.88[-4]	2.03[-3]	5.64[-3]	8.82[-3]	1.42[-2]	1.64[-2]	1.95[-2]	2.37[-2]	2.84[-2]	3.36[-2]
$2p6p^*6d$	2.46[-4]	1.37[-3]	4.15[-3]	6.73[-3]	1.09[-2]	1.24[-2]	1.42[-2]	1.58[-2]	1.66[-2]	1.63[-2]
$2p6p6p$	5.82[-4]	3.03[-3]	8.36[-3]	1.30[-2]	2.04[-2]	2.34[-2]	2.74[-2]	3.24[-2]	3.77[-2]	4.30[-2]
$2p6p6d^*$	5.13[-4]	2.70[-3]	7.78[-3]	1.24[-2]	2.00[-2]	2.31[-2]	2.74[-2]	3.28[-2]	3.87[-2]	4.46[-2]
$2p6p6d$	8.16[-4]	4.44[-3]	1.33[-2]	2.14[-2]	3.50[-2]	4.02[-2]	4.72[-2]	5.51[-2]	6.24[-2]	6.84[-2]
$2p6d^*6d$	1.60[-3]	8.25[-3]	2.40[-2]	3.82[-2]	6.12[-2]	7.01[-2]	8.22[-2]	9.62[-2]	1.10[-1]	1.22[-1]
$2p6d^*6f$	7.68[-7]	6.49[-5]	8.04[-4]	2.11[-3]	5.11[-3]	6.47[-3]	8.38[-3]	1.06[-2]	1.27[-2]	1.44[-2]
$2p6d6d$	1.10[-3]	5.75[-3]	1.69[-2]	2.71[-2]	4.34[-2]	4.96[-2]	5.79[-2]	6.72[-2]	7.61[-2]	8.37[-2]
$2p6d6f^*$	2.07[-6]	1.91[-4]	2.43[-3]	6.43[-3]	1.59[-2]	2.03[-2]	2.67[-2]	3.46[-2]	4.27[-2]	5.01[-2]
$2p6d6f$	1.96[-6]	1.82[-4]	2.30[-3]	6.02[-3]	1.47[-2]	1.85[-2]	2.41[-2]	3.06[-2]	3.68[-2]	4.20[-2]
$2p6s7p$	1.44[-4]	7.21[-4]	1.98[-3]	3.09[-3]	4.96[-3]	5.73[-3]	6.84[-3]	8.31[-3]	1.00[-2]	1.19[-2]
$2p6p^*7p$	2.13[-4]	1.15[-3]	3.24[-3]	5.10[-3]	8.24[-3]	9.54[-3]	1.14[-2]	1.38[-2]	1.66[-2]	1.96[-2]
$2p6p7s$	1.39[-4]	7.14[-4]	2.00[-3]	3.14[-3]	5.09[-3]	5.90[-3]	7.07[-3]	8.61[-3]	1.04[-2]	1.24[-2]
$2p6p7p^*$	2.13[-4]	1.16[-3]	3.30[-3]	5.21[-3]	8.46[-3]	9.81[-3]	1.17[-2]	1.43[-2]	1.72[-2]	2.02[-2]
$2p6p7p$	6.40[-4]	3.44[-3]	9.71[-3]	1.52[-2]	2.41[-2]	2.77[-2]	3.26[-2]	3.86[-2]	4.50[-2]	5.14[-2]
$2p6p7d^*$	3.01[-4]	1.61[-3]	4.69[-3]	7.50[-3]	1.22[-2]	1.41[-2]	1.68[-2]	2.02[-2]	2.38[-2]	2.75[-2]
$2p6p7d$	4.79[-4]	2.64[-3]	7.99[-3]	1.30[-2]	2.12[-2]	2.45[-2]	2.88[-2]	3.37[-2]	3.82[-2]	4.19[-2]
$2p6d^*7p$	2.81[-4]	1.52[-3]	4.46[-3]	7.13[-3]	1.16[-2]	1.34[-2]	1.59[-2]	1.91[-2]	2.25[-2]	2.59[-2]
$2p6d^*7d$	9.33[-4]	4.87[-3]	1.42[-2]	2.27[-2]	3.63[-2]	4.16[-2]	4.87[-2]	5.70[-2]	6.52[-2]	7.26[-2]
$2p6d7p$	4.47[-4]	2.51[-3]	7.67[-3]	1.25[-2]	2.05[-2]	2.37[-2]	2.78[-2]	3.26[-2]	3.69[-2]	4.04[-2]
$2p6d7d^*$	9.36[-4]	4.87[-3]	1.44[-2]	2.29[-2]	3.70[-2]	4.26[-2]	4.97[-2]	5.85[-2]	6.69[-2]	7.43[-2]
$2p6d7d$	1.29[-3]	6.79[-3]	2.02[-2]	3.23[-2]	5.21[-2]	5.97[-2]	6.95[-2]	8.10[-2]	9.16[-2]	1.01[-1]
$2p7p^*7p$	1.17[-4]	6.54[-4]	1.90[-3]	3.02[-3]	4.93[-3]	5.72[-3]	6.86[-3]	8.34[-3]	1.00[-2]	1.18[-2]
$2p7p7p$	1.76[-4]	9.78[-4]	2.82[-3]	4.45[-3]	7.13[-3]	8.20[-3]	9.68[-3]	1.15[-2]	1.34[-2]	1.53[-2]
$2p7p7d^*$	1.65[-4]	9.06[-4]	2.69[-3]	4.32[-3]	7.08[-3]	8.20[-3]	9.76[-3]	1.17[-2]	1.38[-2]	1.60[-2]
$2p7p7d$	2.63[-4]	1.49[-3]	4.61[-3]	7.53[-3]	1.25[-2]	1.44[-2]	1.69[-2]	1.99[-2]	2.26[-2]	2.47[-2]
$2p7d^*7d$	5.48[-4]	2.87[-3]	8.50[-3]	1.36[-2]	2.20[-2]	2.53[-2]	2.95[-2]	3.47[-2]	3.97[-2]	4.41[-2]
$2p7d7d$	3.78[-4]	2.00[-3]	6.00[-3]	9.68[-3]	1.57[-2]	1.79[-2]	2.09[-2]	2.43[-2]	2.76[-2]	3.03[-2]
$2p7d7f^*$	8.37[-7]	7.78[-5]	9.55[-4]	2.59[-3]	6.25[-3]	7.88[-3]	1.03[-2]	1.33[-2]	1.63[-2]	1.91[-2]
$2p7d7f$	7.93[-7]	7.42[-5]	8.99[-4]	2.43[-3]	5.75[-3]	7.18[-3]	9.25[-3]	1.17[-2]	1.40[-2]	1.60[-2]

TABLE V. M_1 -shell Auger rates $A(n_0j_0l_0, n_1j_1l_1, n_2j_2l_2)$ (in mau) as function of Z for Zn-like ions.

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
$3s4s4s$	4.04[-1]	8.32[-1]	1.23[0]	1.57[0]	1.64[0]	1.74[0]	1.84[0]	1.97[0]	0.00[0]	0.00[0]
$3s4s4p^*$	5.05[-1]	1.25[0]	2.01[0]	2.41[0]	2.37[0]	3.09[0]	3.27[0]	3.55[0]	3.84[0]	4.16[0]
$3s4s4p$	9.94[-1]	2.44[0]	3.90[0]	4.65[0]	5.70[0]	5.05[0]	6.11[0]	6.19[0]	6.59[0]	6.96[0]
$3s4s4d^*$	9.28[-1]	2.59[0]	4.50[0]	5.53[0]	6.69[0]	7.05[0]	5.02[0]	9.73[0]	5.17[0]	8.79[0]
$3s4s4d$	1.40[0]	3.88[0]	6.71[0]	8.23[0]	9.90[0]	1.04[1]	9.01[0]	7.28[0]	9.65[0]	1.25[1]
$3s4s4f^*$	1.64[-2]	3.86[-1]	1.93[0]	3.39[0]	5.44[0]	6.09[0]	6.84[0]	7.52[0]	1.48[1]	8.82[0]
$3s4s4f$	2.19[-2]	5.13[-1]	2.55[0]	4.47[0]	7.13[0]	7.97[0]	8.90[0]	9.71[0]	1.07[0]	1.10[1]
$3s4p^*4p^*$	3.34[-2]	8.94[-2]	1.36[-1]	1.52[-1]	1.61[-1]	1.30[-1]	1.59[-1]	1.55[-1]	1.52[-1]	1.47[-1]
$3s4p^*4p$	1.20[-1]	2.49[-1]	3.31[-1]	3.63[-1]	3.96[-1]	6.94[-1]	3.96[-1]	3.73[-1]	4.53[-1]	4.97[-1]
$3s4p^*4d^*$	6.31[-2]	1.67[-1]	2.55[-1]	2.82[-1]	2.92[-1]	2.89[-1]	2.82[-1]	1.34[-1]	6.99[-1]	2.49[-1]
$3s4p^*4d$	3.85[-2]	7.93[-2]	8.38[-2]	9.74[-2]	1.52[-1]	1.77[-1]	2.05[-1]	3.42[-2]	3.77[-2]	1.72[-1]
$3s4p4p$	1.28[-1]	3.09[-1]	4.53[-1]	5.12[-1]	5.64[-1]	5.77[-1]	7.05[-1]	1.42[0]	3.48[-1]	5.39[-1]
$3s4p4d^*$	7.00[-2]	1.57[-1]	2.04[-1]	2.50[-1]	3.72[-1]	4.30[-1]	5.12[-1]	6.15[-1]	7.36[-1]	8.07[-1]
$3s4p4d$	1.55[-1]	3.96[-1]	6.12[-1]	7.36[-1]	9.44[-1]	1.04[0]	1.18[0]	1.37[0]	1.63[0]	1.95[0]
$3s4d^*4d^*$	1.16[-2]	5.42[-2]	9.42[-2]	9.97[-2]	9.06[-2]	8.63[-2]	8.22[-2]	8.19[-2]	8.91[-2]	1.05[-1]
$3s4d4d$	1.96[-2]	9.13[-2]	1.80[-1]	2.17[-1]	2.42[-1]	2.46[-1]	2.47[-1]	2.46[-1]	2.48[-1]	2.59[-1]
$3s4s5s$	2.17[-1]	5.03[-1]	7.91[-1]	9.43[-1]	1.13[0]	1.19[0]	1.27[0]	1.37[0]	1.48[0]	1.60[0]
$3s4s5p^*$	1.76[-1]	4.85[-1]	8.37[-1]	1.04[0]	1.29[0]	1.37[0]	1.49[0]	1.63[0]	1.78[0]	1.94[0]
$3s4s5p$	3.48[-1]	9.55[-1]	1.64[0]	2.02[0]	2.47[0]	2.62[0]	2.81[0]	3.00[0]	3.19[0]	3.34[0]
$3s4s5d^*$	3.98[-1]	1.14[0]	2.01[0]	2.48[0]	3.04[0]	3.21[0]	3.43[0]	3.67[0]	3.90[0]	4.11[0]
$3s4s5d$	6.00[-1]	1.70[0]	3.00[0]	3.70[0]	4.50[0]	4.75[0]	5.05[0]	5.36[0]	5.64[0]	5.86[0]
$3s4p5s$	2.28[-1]	5.70[-1]	8.91[-1]	1.05[0]	1.23[0]	1.29[0]	1.36[0]	1.44[0]	1.52[0]	1.58[0]
$3s4d^*5s$	2.13[-1]	5.96[-1]	1.01[0]	1.22[0]	1.45[0]	1.52[0]	1.60[0]	1.70[0]	1.79[0]	1.88[0]
$3s4d5s$	3.21[-1]	8.92[-1]	1.50[0]	1.81[0]	2.14[0]	2.23[0]	2.35[0]	2.47[0]	2.57[0]	2.65[0]
$3s4s6p$	1.64[-1]	4.75[-1]	8.46[-1]	1.06[0]	1.33[0]	1.41[0]	1.52[0]	1.64[0]	1.76[0]	1.85[0]
$3s4s6d^*$	2.08[-1]	6.03[-1]	1.07[0]	1.34[0]	1.64[0]	1.74[0]	1.87[0]	2.00[0]	2.14[0]	2.26[0]
$3s4s6d$	3.13[-1]	9.04[-1]	1.60[0]	1.99[0]	2.44[0]	2.58[0]	2.75[0]	2.93[0]	3.09[0]	3.23[0]
$3s4s6f^*$	9.48[-3]	1.97[-1]	8.23[-1]	1.29[0]	1.84[0]	2.00[0]	2.18[0]	2.35[0]	2.47[0]	2.53[0]
$3s4s6f$	1.26[-2]	2.61[-1]	1.09[0]	1.71[0]	2.42[0]	2.62[0]	2.85[0]	3.04[0]	3.16[0]	3.21[0]
$3s4d6s$	1.28[-1]	3.60[-1]	6.00[-1]	7.20[-1]	8.45[-1]	8.82[-1]	9.25[-1]	9.70[-1]	1.01[0]	1.04[0]
$3s4f^*6d$	3.49[-4]	2.27[-2]	1.85[-1]	3.82[-1]	6.98[-1]	8.04[-1]	9.23[-1]	1.02[0]	1.05[0]	1.01[0]
$3s4s7s$	4.81[-2]	1.25[-1]	2.12[-1]	2.61[-1]	3.24[-1]	3.45[-1]	3.73[-1]	4.07[-1]	4.43[-1]	4.80[-1]
$3s4s7p^*$	4.55[-2]	1.37[-1]	2.51[-1]	3.20[-1]	4.09[-1]	4.40[-1]	4.81[-1]	5.29[-1]	5.81[-1]	6.35[-1]
$3s4s7p$	9.03[-2]	2.71[-1]	4.94[-1]	6.27[-1]	7.93[-1]	8.49[-1]	9.20[-1]	9.97[-1]	1.07[0]	1.13[0]
$3s4s7d^*$	1.22[-1]	3.59[-1]	6.43[-1]	8.02[-1]	9.92[-1]	1.05[0]	1.13[0]	1.22[0]	1.30[0]	1.38[0]
$3s4s7d$	1.84[-1]	5.37[-1]	9.60[-1]	1.20[0]	1.47[0]	1.56[0]	1.67[0]	1.78[0]	1.88[0]	1.97[0]
$3s4p7s$	4.62[-2]	1.19[-1]	1.87[-1]	2.20[-1]	2.59[-1]	2.72[-1]	2.87[-1]	3.05[-1]	3.22[-1]	3.36[-1]
$3s4d7s$	6.45[-2]	1.84[-1]	3.07[-1]	3.67[-1]	4.30[-1]	4.49[-1]	4.71[-1]	4.93[-1]	5.12[-1]	5.28[-1]
$3s5s5s$	2.82[-2]	7.00[-2]	1.11[-1]	1.33[-1]	1.60[-1]	1.69[-1]	1.82[-1]	1.97[-1]	2.15[-1]	2.34[-1]
$3s5s5p^*$	4.03[-2]	1.12[-1]	1.90[-1]	2.33[-1]	2.87[-1]	3.06[-1]	3.32[-1]	3.63[-1]	3.99[-1]	4.38[-1]
$3s5s5p$	7.97[-2]	2.22[-1]	3.72[-1]	4.54[-1]	5.52[-1]	5.85[-1]	6.26[-1]	6.71[-1]	7.14[-1]	7.51[-1]
$3s5s5d^*$	9.10[-2]	2.63[-1]	4.51[-1]	5.49[-1]	6.61[-1]	6.97[-1]	7.41[-1]	7.91[-1]	8.41[-1]	8.88[-1]
$3s5s5d$	1.37[-1]	3.93[-1]	6.73[-1]	8.18[-1]	9.78[-1]	1.03[0]	1.09[0]	1.15[0]	1.21[0]	1.26[0]
$3s5p^*5p$	1.03[-2]	2.17[-2]	2.90[-2]	3.20[-2]	3.56[-2]	3.67[-2]	3.83[-2]	4.01[-2]	4.24[-2]	4.57[-2]
$3s5p5p$	1.20[-2]	3.00[-2]	4.38[-2]	4.93[-2]	5.47[-2]	5.64[-2]	5.88[-2]	6.15[-2]	6.36[-2]	6.36[-2]
$3s5p5d$	1.91[-2]	4.66[-2]	6.89[-2]	8.41[-2]	1.10[-1]	1.22[-1]	1.38[-1]	1.61[-1]	1.92[-1]	2.32[-1]
$3s5s6s$	2.37[-2]	6.19[-2]	1.01[-1]	1.23[-1]	1.49[-1]	1.58[-1]	1.71[-1]	1.86[-1]	2.04[-1]	2.22[-1]
$3s5s6p^*$	1.89[-2]	5.58[-2]	9.78[-2]	1.22[-1]	1.53[-1]	1.64[-1]	1.79[-1]	1.97[-1]	2.18[-1]	2.40[-1]
$3s5s6p$	3.75[-2]	1.10[-1]	1.92[-1]	2.39[-1]	2.96[-1]	3.16[-1]	3.41[-1]	3.68[-1]	3.94[-1]	4.17[-1]
$3s5s6d^*$	4.75[-2]	1.39[-1]	2.42[-1]	2.96[-1]	3.59[-1]	3.79[-1]	4.05[-1]	4.34[-1]	4.63[-1]	4.90[-1]
$3s5s6d$	7.15[-2]	2.09[-1]	3.61[-1]	4.41[-1]	5.32[-1]	5.60[-1]	5.95[-1]	6.33[-1]	6.67[-1]	6.96[-1]
$3s5p^*6s$	1.61[-2]	4.55[-2]	7.67[-2]	9.39[-2]	1.16[-1]	1.23[-1]	1.34[-1]	1.47[-1]	1.61[-1]	1.78[-1]
$3s5p6s$	3.19[-2]	8.99[-2]	1.50[-1]	1.83[-1]	2.23[-1]	2.36[-1]	2.53[-1]	2.71[-1]	2.89[-1]	3.04[-1]
$3s5d^*6s$	3.63[-2]	1.06[-1]	1.81[-1]	2.19[-1]	2.62[-1]	2.76[-1]	2.93[-1]	3.12[-1]	3.32[-1]	3.51[-1]
$3s5d6s$	5.47[-2]	1.59[-1]	2.70[-1]	3.26[-1]	3.88[-1]	4.07[-1]	4.30[-1]	4.54[-1]	4.76[-1]	4.95[-1]
$3s5s7s$	1.23[-2]	3.33[-2]	5.56[-2]	6.81[-2]	8.38[-2]	8.93[-2]	9.67[-2]	1.06[-1]	1.16[-1]	1.27[-1]
$3s5s7p^*$	1.04[-2]	3.18[-2]	5.71[-2]	7.21[-2]	9.16[-2]	9.85[-2]	1.08[-1]	1.19[-1]	1.32[-1]	1.45[-1]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3s5s7p$	2.06[-2]	6.30[-2]	1.12[-1]	1.41[-1]	1.78[-1]	1.90[-1]	2.06[-1]	2.24[-1]	2.41[-1]	2.55[-1]
$3s5s7d^*$	2.79[-2]	8.30[-2]	1.45[-1]	1.78[-1]	2.17[-1]	2.30[-1]	2.46[-1]	2.64[-1]	2.83[-1]	3.00[-1]
$3s5s7d$	4.21[-2]	1.24[-1]	2.16[-1]	2.66[-1]	3.22[-1]	3.40[-1]	3.62[-1]	3.86[-1]	4.08[-1]	4.26[-1]
$3s5p7s$	1.61[-2]	4.62[-2]	7.77[-2]	9.48[-2]	1.15[-1]	1.22[-1]	1.30[-1]	1.40[-1]	1.50[-1]	1.58[-1]
$3s5d^*7s$	1.83[-2]	5.42[-2]	9.26[-2]	1.12[-1]	1.34[-1]	1.41[-1]	1.49[-1]	1.59[-1]	1.69[-1]	1.78[-1]
$3s5d7s$	2.76[-2]	8.11[-2]	1.38[-1]	1.67[-1]	1.98[-1]	2.07[-1]	2.19[-1]	2.31[-1]	2.42[-1]	2.52[-1]
$3s6s6s$	4.96[-3]	1.35[-2]	2.26[-2]	2.75[-2]	3.38[-2]	3.60[-2]	3.90[-2]	4.27[-2]	4.68[-2]	5.13[-2]
$3s6s6p^*$	7.55[-3]	2.26[-2]	3.95[-2]	4.93[-2]	6.18[-2]	6.63[-2]	7.23[-2]	7.97[-2]	8.81[-2]	9.73[-2]
$3s6s6p$	1.50[-2]	4.47[-2]	7.78[-2]	9.64[-2]	1.20[-1]	1.27[-1]	1.38[-1]	1.49[-1]	1.60[-1]	1.69[-1]
$3s6s6d^*$	1.89[-2]	5.63[-2]	9.71[-2]	1.18[-1]	1.43[-1]	1.50[-1]	1.60[-1]	1.72[-1]	1.83[-1]	1.94[-1]
$3s6s6d$	2.85[-2]	8.43[-2]	1.45[-1]	1.76[-1]	2.11[-1]	2.22[-1]	2.36[-1]	2.50[-1]	2.63[-1]	2.75[-1]
$3s6p6p$	2.34[-3]	6.21[-3]	9.17[-3]	1.04[-2]	1.15[-2]	1.19[-2]	1.25[-2]	1.33[-2]	1.41[-2]	1.45[-2]
$3s6p6d$	4.35[-3]	1.04[-2]	1.55[-2]	1.93[-2]	2.54[-2]	2.79[-2]	3.15[-2]	3.66[-2]	4.35[-2]	5.30[-2]
$3s6s7s$	5.12[-3]	1.45[-2]	2.46[-2]	3.03[-2]	3.75[-2]	4.00[-2]	4.34[-2]	4.77[-2]	5.24[-2]	5.75[-2]
$3s6s7p^*$	4.15[-3]	1.29[-2]	2.31[-2]	2.91[-2]	3.69[-2]	3.97[-2]	4.35[-2]	4.82[-2]	5.34[-2]	5.90[-2]
$3s6s7p$	8.24[-3]	2.55[-2]	4.55[-2]	5.71[-2]	7.18[-2]	7.68[-2]	8.32[-2]	9.05[-2]	9.75[-2]	1.04[-1]
$3s6s7d^*$	1.11[-2]	3.35[-2]	5.82[-2]	7.13[-2]	8.64[-2]	9.13[-2]	9.76[-2]	1.05[-1]	1.12[-1]	1.19[-1]
$3s6s7d$	1.68[-2]	5.02[-2]	8.69[-2]	1.06[-1]	1.28[-1]	1.35[-1]	1.43[-1]	1.53[-1]	1.61[-1]	1.68[-1]
$3s6p7s$	7.55[-3]	2.29[-2]	4.00[-2]	4.97[-2]	6.18[-2]	6.59[-2]	7.10[-2]	7.70[-2]	8.26[-2]	8.74[-2]
$3s6d^*7s$	9.55[-3]	2.88[-2]	4.97[-2]	6.05[-2]	7.28[-2]	7.68[-2]	8.18[-2]	8.76[-2]	9.34[-2]	9.89[-2]
$3s6d7s$	1.44[-2]	4.31[-2]	7.42[-2]	9.01[-2]	1.08[-1]	1.13[-1]	1.20[-1]	1.27[-1]	1.34[-1]	1.40[-1]
$3s7s7s$	1.32[-3]	3.86[-3]	6.66[-3]	8.26[-3]	1.03[-2]	1.10[-2]	1.20[-2]	1.32[-2]	1.45[-2]	1.60[-2]
$3s7s7p^*$	2.09[-3]	6.58[-3]	1.18[-2]	1.49[-2]	1.90[-2]	2.05[-2]	2.25[-2]	2.49[-2]	2.76[-2]	3.06[-2]
$3s7s7p$	4.16[-3]	1.31[-2]	2.34[-2]	2.94[-2]	3.70[-2]	3.97[-2]	4.30[-2]	4.68[-2]	5.04[-2]	5.36[-2]
$3s7s7d^*$	5.61[-3]	1.71[-2]	2.98[-2]	3.64[-2]	4.41[-2]	4.66[-2]	4.98[-2]	5.34[-2]	5.71[-2]	6.06[-2]
$3s7s7d$	8.45[-3]	2.56[-2]	4.45[-2]	5.43[-2]	6.54[-2]	6.89[-2]	7.32[-2]	7.78[-2]	8.21[-2]	8.58[-2]
$3s7p7d$	1.35[-3]	3.30[-3]	4.95[-3]	6.17[-3]	8.13[-3]	8.88[-3]	1.01[-2]	1.16[-2]	1.38[-2]	1.69[-2]

TABLE VI. M_2 -shell Auger rates $A(n_0j_0l_0, n_1j_1l_1, n_2j_2l_2)$ (in mau) as function of Z for Zn-like ions.

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
$3p^*4s4p^*$	7.64[-1]	1.54[0]	2.17[0]	2.50[0]	2.83[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*4s4p$	5.93[-2]	1.75[-1]	3.31[-1]	4.10[-1]	4.71[-1]	4.83[-1]	4.92[-1]	0.00[0]	0.00[0]	4.79[-1]
$3p^*4s4d^*$	2.22[-1]	1.96[-1]	1.39[-1]	1.19[-1]	1.35[-1]	1.06[-1]	1.07[-1]	1.13[-1]	1.29[-1]	1.55[-1]
$3p^*4s4d$	1.00[-1]	2.17[-1]	2.93[-1]	3.27[-1]	5.79[-1]	4.21[-1]	4.61[-1]	5.04[-1]	5.25[-1]	5.40[-1]
$3p^*4s4f^*$	3.89[-2]	2.49[-1]	2.93[-1]	1.75[-1]	3.55[-2]	1.48[-1]	1.19[-2]	2.96[-2]	4.84[-2]	5.83[-2]
$3p^*4s4f$	2.43[-2]	1.39[-1]	2.04[-1]	2.17[-1]	2.69[-1]	3.13[-1]	3.69[-1]	3.93[-1]	4.20[-1]	4.17[-1]
$3p^*4p^*4p^*$	4.17[-1]	1.02[0]	1.56[0]	1.83[0]	2.16[0]	2.28[0]	2.43[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*4p^*4p$	1.47[0]	3.46[0]	5.19[0]	6.19[0]	6.90[0]	7.28[0]	7.65[0]	8.08[0]	8.46[0]	8.90[0]
$3p^*4p^*4d^*$	1.05[0]	3.06[0]	5.17[0]	6.23[0]	1.59[0]	7.42[0]	8.14[0]	8.98[0]	9.01[0]	9.52[0]
$3p^*4p^*4d$	1.99[0]	5.40[0]	8.82[0]	1.06[1]	2.22[1]	1.07[1]	1.33[1]	1.52[1]	1.57[1]	1.51[1]
$3p^*4p^*4f^*$	3.21[-2]	5.26[-1]	2.06[0]	3.33[0]	5.01[0]	5.54[0]	1.07[1]	4.16[1]	3.52[0]	7.08[0]
$3p^*4p^*4f$	4.08[-2]	8.37[-1]	3.63[0]	5.97[0]	8.96[0]	9.85[0]	1.29[1]	7.59[0]	1.04[1]	1.18[1]
$3p^*4p4p$	4.36[-2]	8.77[-2]	1.30[-1]	1.56[-1]	1.94[-1]	2.03[-1]	2.17[-1]	2.30[-1]	2.35[-1]	2.31[-1]
$3p^*4p4d^*$	4.13[-1]	5.48[-1]	6.18[-1]	6.37[-1]	6.44[-1]	4.13[-1]	6.29[-1]	5.67[-1]	5.26[-1]	5.55[-1]
$3p^*4p4d$	1.01[-1]	2.54[-1]	3.94[-1]	4.52[-1]	4.99[-1]	1.03[0]	5.26[-1]	4.59[-1]	5.66[-1]	5.23[-1]
$3p^*4p4f^*$	2.15[-2]	2.32[-1]	1.09[0]	2.09[0]	3.65[0]	4.16[0]	4.71[0]	4.68[0]	4.96[0]	4.74[0]
$3p^*4p4f$	1.30[-2]	1.29[-1]	4.28[-1]	6.90[-1]	1.06[0]	1.17[0]	1.29[0]	1.38[0]	1.18[0]	1.88[0]
$3p^*4d^*4d^*$	6.89[-2]	2.05[-1]	2.76[-1]	2.78[-1]	2.73[-1]	2.75[-1]	2.81[-1]	2.50[-1]	1.38[-1]	3.48[-1]
$3p^*4d^*4d$	1.89[-1]	3.52[-1]	4.92[-1]	6.29[-1]	8.88[-1]	9.76[-1]	1.06[0]	2.30[-1]	2.03[-1]	8.94[-1]
$3p^*4d^*4f^*$	1.66[-2]	1.20[-1]	2.41[-1]	3.12[-1]	4.54[-1]	5.09[-1]	5.64[-1]	5.76[-1]	5.16[-1]	4.23[-1]
$3p^*4d^*4f$	1.54[-2]	7.40[-2]	2.37[-1]	4.94[-1]	1.01[0]	1.18[0]	1.34[0]	1.34[0]	1.14[0]	8.18[-1]
$3p^*4d4d$	1.47[-2]	5.91[-2]	1.18[-1]	1.55[-1]	2.01[-1]	2.14[-1]	2.27[-1]	2.33[-1]	2.28[-1]	2.44[-1]
$3p^*4p^*5s$	2.38[-1]	5.76[-1]	8.93[-1]	1.05[0]	1.24[0]	1.31[0]	1.40[0]	1.51[0]	1.63[0]	1.77[0]
$3p^*4p^*5p^*$	2.53[-1]	6.48[-1]	1.03[0]	1.24[0]	1.49[0]	1.58[0]	1.70[0]	1.85[0]	2.03[0]	2.22[0]
$3p^*4p^*5p$	5.04[-1]	1.33[0]	2.14[0]	2.57[0]	3.09[0]	3.26[0]	3.47[0]	3.72[0]	3.96[0]	4.19[0]
$3p^*4p^*5d^*$	4.55[-1]	1.35[0]	2.31[0]	2.80[0]	3.35[0]	3.53[0]	3.75[0]	4.01[0]	4.26[0]	4.49[0]
$3p^*4p^*5d$	8.48[-1]	2.33[0]	3.85[0]	4.65[0]	5.54[0]	5.81[0]	6.14[0]	6.48[0]	6.78[0]	7.02[0]
$3p^*4p^*5f^*$	2.52[-2]	3.80[-1]	1.36[0]	2.07[0]	2.92[0]	3.17[0]	3.45[0]	3.71[0]	3.89[0]	3.98[0]
$3p^*4p^*5f$	3.29[-2]	6.15[-1]	2.36[0]	3.61[0]	5.03[0]	5.42[0]	5.84[0]	6.18[0]	6.36[0]	6.38[0]
$3p^*4p5p^*$	3.79[-1]	8.50[-1]	1.22[0]	1.40[0]	1.60[0]	1.67[0]	1.75[0]	1.85[0]	1.96[0]	2.06[0]
$3p^*4d^*5p^*$	2.76[-1]	7.48[-1]	1.20[0]	1.40[0]	1.62[0]	1.69[0]	1.77[0]	1.87[0]	1.97[0]	2.07[0]
$3p^*4d5p^*$	5.20[-1]	1.33[0]	2.08[0]	2.44[0]	2.82[0]	2.93[0]	3.05[0]	3.18[0]	3.28[0]	3.35[0]
$3p^*4p^*6p^*$	1.14[-1]	3.04[-1]	5.00[-1]	6.09[-1]	7.46[-1]	7.95[-1]	8.61[-1]	9.42[-1]	1.03[0]	1.13[0]
$3p^*4p^*6p$	2.35[-1]	6.54[-1]	1.10[0]	1.34[0]	1.64[0]	1.74[0]	1.87[0]	2.02[0]	2.16[0]	2.30[0]
$3p^*4p^*6d^*$	2.38[-1]	7.19[-1]	1.24[0]	1.50[0]	1.81[0]	1.91[0]	2.04[0]	2.19[0]	2.33[0]	2.47[0]
$3p^*4p^*6d$	4.41[-1]	1.22[0]	2.05[0]	2.48[0]	2.98[0]	3.13[0]	3.32[0]	3.53[0]	3.70[0]	3.85[0]
$3p^*4p^*6f^*$	1.75[-2]	2.51[-1]	8.53[-1]	1.27[0]	1.74[0]	1.88[0]	2.03[0]	2.18[0]	2.28[0]	2.33[0]
$3p^*4p^*6f$	2.30[-2]	4.09[-1]	1.47[0]	2.18[0]	2.94[0]	3.15[0]	3.38[0]	3.57[0]	3.67[0]	3.69[0]
$3p^*4d6p^*$	2.20[-1]	5.54[-1]	8.53[-1]	9.94[-1]	1.14[0]	1.18[0]	1.23[0]	1.28[0]	1.31[0]	1.34[0]
$3p^*4f^*6p$	2.16[-3]	2.80[-2]	1.84[-1]	3.86[-1]	7.26[-1]	8.43[-1]	9.76[-1]	1.09[0]	1.14[0]	1.13[0]
$3p^*4f^*6f$	1.60[-3]	1.02[-1]	6.45[-1]	1.11[0]	1.62[0]	1.75[0]	1.87[0]	1.97[0]	2.03[0]	2.06[0]
$3p^*4f6f^*$	1.54[-3]	9.62[-2]	6.04[-1]	1.04[0]	1.52[0]	1.63[0]	1.74[0]	1.81[0]	1.83[0]	1.82[0]
$3p^*4s7p^*$	4.08[-2]	7.74[-2]	1.04[-1]	1.16[-1]	1.30[-1]	1.34[-1]	1.41[-1]	1.51[-1]	1.65[-1]	1.81[-1]
$3p^*4p^*7s$	5.58[-2]	1.54[-1]	2.58[-1]	3.16[-1]	3.87[-1]	4.12[-1]	4.45[-1]	4.85[-1]	5.30[-1]	5.76[-1]
$3p^*4p^*7p^*$	6.15[-2]	1.69[-1]	2.84[-1]	3.50[-1]	4.34[-1]	4.64[-1]	5.04[-1]	5.54[-1]	6.08[-1]	6.67[-1]
$3p^*4p^*7p$	1.29[-1]	3.72[-1]	6.38[-1]	7.89[-1]	9.78[-1]	1.04[0]	1.12[0]	1.22[0]	1.31[0]	1.40[0]
$3p^*4p^*7d^*$	1.41[-1]	4.28[-1]	7.39[-1]	9.03[-1]	1.09[0]	1.16[0]	1.24[0]	1.33[0]	1.42[0]	1.51[0]
$3p^*4p^*7d$	2.59[-1]	7.25[-1]	1.22[0]	1.48[0]	1.79[0]	1.89[0]	2.01[0]	2.14[0]	2.25[0]	2.34[0]
$3p^*4p7p^*$	8.31[-2]	1.85[-1]	2.62[-1]	2.99[-1]	3.41[-1]	3.55[-1]	3.72[-1]	3.94[-1]	4.16[-1]	4.38[-1]
$3p^*4d^*7p^*$	6.13[-2]	1.62[-1]	2.51[-1]	2.90[-1]	3.32[-1]	3.45[-1]	3.59[-1]	3.78[-1]	3.97[-1]	4.15[-1]
$3p^*4d7p^*$	1.15[-1]	2.89[-1]	4.43[-1]	5.15[-1]	5.89[-1]	6.10[-1]	6.33[-1]	6.57[-1]	6.75[-1]	6.87[-1]
$3p^*5s5p^*$	6.00[-2]	1.37[-1]	2.03[-1]	2.36[-1]	2.74[-1]	2.88[-1]	3.07[-1]	3.32[-1]	3.62[-1]	3.98[-1]
$3p^*5s5d^*$	2.10[-2]	1.64[-2]	1.05[-2]	9.06[-3]	9.06[-3]	9.45[-3]	1.02[-2]	1.15[-2]	1.33[-2]	1.57[-2]
$3p^*5p^*5p^*$	3.71[-2]	9.54[-2]	1.51[-1]	1.81[-1]	2.19[-1]	2.32[-1]	2.51[-1]	2.75[-1]	3.03[-1]	3.35[-1]
$3p^*5p^*5p$	1.31[-1]	3.26[-1]	5.06[-1]	6.00[-1]	7.14[-1]	7.52[-1]	8.02[-1]	8.60[-1]	9.19[-1]	9.77[-1]
$3p^*5p^*5d^*$	1.19[-1]	3.30[-1]	5.34[-1]	6.32[-1]	7.40[-1]	7.74[-1]	8.19[-1]	8.71[-1]	9.26[-1]	9.80[-1]
$3p^*5p^*5d$	2.21[-1]	5.76[-1]	9.11[-1]	1.08[0]	1.26[0]	1.32[0]	1.38[0]	1.45[0]	1.51[0]	1.56[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3p^*5p5d^*$	4.33[-2]	5.38[-2]	5.81[-2]	6.03[-2]	6.57[-2]	6.84[-2]	7.21[-2]	7.56[-2]	7.68[-2]	7.47[-2]
$3p^*5p5d$	1.13[-2]	2.69[-2]	3.93[-2]	4.34[-2]	4.67[-2]	4.79[-2]	4.97[-2]	5.26[-2]	5.61[-2]	5.95[-2]
$3p^*5d^*5d^*$	1.14[-2]	2.80[-2]	2.87[-2]	2.59[-2]	2.57[-2]	2.67[-2]	2.84[-2]	3.00[-2]	3.11[-2]	3.29[-2]
$3p^*5d^*5d$	2.75[-2]	4.49[-2]	6.08[-2]	8.58[-2]	1.36[-1]	1.53[-1]	1.70[-1]	1.75[-1]	1.59[-1]	1.27[-1]
$3p^*5s6p^*$	2.51[-2]	5.64[-2]	8.26[-2]	9.52[-2]	1.10[-1]	1.15[-1]	1.23[-1]	1.33[-1]	1.46[-1]	1.61[-1]
$3p^*5p^*6s$	2.66[-2]	6.59[-2]	1.03[-1]	1.22[-1]	1.45[-1]	1.53[-1]	1.64[-1]	1.79[-1]	1.96[-1]	2.16[-1]
$3p^*5p^*6p^*$	3.30[-2]	8.71[-2]	1.40[-1]	1.69[-1]	2.07[-1]	2.20[-1]	2.39[-1]	2.63[-1]	2.90[-1]	3.22[-1]
$3p^*5p^*6p$	6.10[-2]	1.61[-1]	2.60[-1]	3.14[-1]	3.81[-1]	4.04[-1]	4.34[-1]	4.69[-1]	5.04[-1]	5.39[-1]
$3p^*5p^*6d^*$	6.20[-2]	1.75[-1]	2.86[-1]	3.40[-1]	4.02[-1]	4.21[-1]	4.47[-1]	4.78[-1]	5.10[-1]	5.42[-1]
$3p^*5p^*6d$	1.15[-1]	3.03[-1]	4.85[-1]	5.76[-1]	6.79[-1]	7.11[-1]	7.51[-1]	7.92[-1]	8.30[-1]	8.60[-1]
$3p^*5p6p^*$	5.50[-2]	1.36[-1]	2.09[-1]	2.47[-1]	2.92[-1]	3.08[-1]	3.28[-1]	3.52[-1]	3.77[-1]	4.01[-1]
$3p^*5d^*6p^*$	5.01[-2]	1.37[-1]	2.18[-1]	2.55[-1]	2.95[-1]	3.08[-1]	3.25[-1]	3.46[-1]	3.67[-1]	3.89[-1]
$3p^*5d6p^*$	9.34[-2]	2.40[-1]	3.75[-1]	4.40[-1]	5.11[-1]	5.32[-1]	5.58[-1]	5.85[-1]	6.08[-1]	6.27[-1]
$3p^*5p^*7s$	1.41[-2]	3.68[-2]	5.91[-2]	7.10[-2]	8.58[-2]	9.11[-2]	9.83[-2]	1.08[-1]	1.18[-1]	1.30[-1]
$3p^*5p^*7p^*$	1.77[-2]	4.78[-2]	7.81[-2]	9.50[-2]	1.17[-1]	1.25[-1]	1.36[-1]	1.50[-1]	1.66[-1]	1.84[-1]
$3p^*5p^*7p$	3.35[-2]	9.16[-2]	1.52[-1]	1.85[-1]	2.27[-1]	2.42[-1]	2.61[-1]	2.84[-1]	3.06[-1]	3.28[-1]
$3p^*5p^*7d^*$	3.65[-2]	1.04[-1]	1.71[-1]	2.05[-1]	2.43[-1]	2.55[-1]	2.72[-1]	2.91[-1]	3.11[-1]	3.31[-1]
$3p^*5p^*7d$	6.75[-2]	1.80[-1]	2.89[-1]	3.45[-1]	4.09[-1]	4.30[-1]	4.55[-1]	4.81[-1]	5.05[-1]	5.25[-1]
$3p^*5p^*7f$	3.56[-3]	5.79[-2]	1.94[-1]	2.79[-1]	3.66[-1]	3.89[-1]	4.13[-1]	4.33[-1]	4.43[-1]	4.42[-1]
$3p^*5p7p^*$	2.87[-2]	7.09[-2]	1.09[-1]	1.28[-1]	1.52[-1]	1.60[-1]	1.71[-1]	1.84[-1]	1.97[-1]	2.09[-1]
$3p^*5d^*7p^*$	2.62[-2]	7.11[-2]	1.13[-1]	1.32[-1]	1.51[-1]	1.57[-1]	1.66[-1]	1.77[-1]	1.88[-1]	1.99[-1]
$3p^*5d7p^*$	4.87[-2]	1.25[-1]	1.95[-1]	2.28[-1]	2.64[-1]	2.75[-1]	2.88[-1]	3.01[-1]	3.13[-1]	3.22[-1]
$3p^*6s6p^*$	1.10[-2]	2.71[-2]	4.17[-2]	4.91[-2]	5.82[-2]	6.14[-2]	6.60[-2]	7.19[-2]	7.92[-2]	8.75[-2]
$3p^*6p^*6p^*$	7.30[-3]	1.96[-2]	3.19[-2]	3.87[-2]	4.76[-2]	5.08[-2]	5.53[-2]	6.09[-2]	6.76[-2]	7.51[-2]
$3p^*6p^*6p$	2.57[-2]	6.72[-2]	1.07[-1]	1.29[-1]	1.56[-1]	1.66[-1]	1.78[-1]	1.92[-1]	2.07[-1]	2.22[-1]
$3p^*6p^*6d^*$	2.62[-2]	7.28[-2]	1.17[-1]	1.37[-1]	1.61[-1]	1.68[-1]	1.78[-1]	1.90[-1]	2.03[-1]	2.15[-1]
$3p^*6p^*6d$	4.86[-2]	1.26[-1]	2.00[-1]	2.36[-1]	2.76[-1]	2.88[-1]	3.03[-1]	3.19[-1]	3.34[-1]	3.45[-1]
$3p^*6p^*6f$	2.02[-3]	3.33[-2]	1.14[-1]	1.66[-1]	2.19[-1]	2.33[-1]	2.47[-1]	2.58[-1]	2.63[-1]	2.61[-1]
$3p^*6p6d^*$	9.14[-3]	1.13[-2]	1.24[-2]	1.31[-2]	1.50[-2]	1.60[-2]	1.73[-2]	1.87[-2]	1.94[-2]	1.91[-2]
$3p^*6p6d$	2.49[-3]	5.91[-3]	8.44[-3]	9.17[-3]	9.82[-3]	1.01[-2]	1.07[-2]	1.15[-2]	1.26[-2]	1.38[-2]
$3p^*6d^*6d$	6.81[-3]	1.06[-2]	1.52[-2]	2.30[-2]	3.76[-2]	4.26[-2]	4.77[-2]	4.98[-2]	4.61[-2]	3.72[-2]
$3p^*6s7p^*$	5.81[-3]	1.42[-2]	2.17[-2]	2.55[-2]	3.00[-2]	3.16[-2]	3.39[-2]	3.71[-2]	4.09[-2]	4.52[-2]
$3p^*6p^*7s$	5.84[-3]	1.51[-2]	2.40[-2]	2.87[-2]	3.45[-2]	3.66[-2]	3.95[-2]	4.33[-2]	4.77[-2]	5.28[-2]
$3p^*6p^*7p^*$	7.81[-3]	2.14[-2]	3.52[-2]	4.30[-2]	5.32[-2]	5.69[-2]	6.20[-2]	6.86[-2]	7.62[-2]	8.48[-2]
$3p^*6p^*7p$	1.41[-2]	3.82[-2]	6.26[-2]	7.62[-2]	9.34[-2]	9.94[-2]	1.07[-1]	1.17[-1]	1.26[-1]	1.35[-1]
$3p^*6p^*7d^*$	1.54[-2]	4.33[-2]	6.98[-2]	8.26[-2]	9.72[-2]	1.02[-1]	1.08[-1]	1.16[-1]	1.24[-1]	1.32[-1]
$3p^*6p^*7d$	2.85[-2]	7.50[-2]	1.19[-1]	1.41[-1]	1.66[-1]	1.74[-1]	1.84[-1]	1.94[-1]	2.03[-1]	2.11[-1]
$3p^*6p7p^*$	1.34[-2]	3.51[-2]	5.60[-2]	6.73[-2]	8.14[-2]	8.63[-2]	9.27[-2]	1.00[-1]	1.08[-1]	1.16[-1]
$3p^*6p7d^*$	5.04[-3]	6.28[-3]	6.89[-3]	7.39[-3]	8.62[-3]	9.23[-3]	1.01[-2]	1.09[-2]	1.13[-2]	1.11[-2]
$3p^*6d^*7p^*$	1.37[-2]	3.80[-2]	6.08[-2]	7.14[-2]	8.26[-2]	8.62[-2]	9.09[-2]	9.72[-2]	1.04[-1]	1.10[-1]
$3p^*6d^*7p$	4.94[-3]	5.90[-3]	6.23[-3]	6.65[-3]	8.26[-3]	9.03[-3]	1.03[-2]	1.07[-2]	1.14[-2]	1.18[-2]
$3p^*6d7p^*$	2.53[-2]	6.60[-2]	1.04[-1]	1.22[-1]	1.43[-1]	1.49[-1]	1.56[-1]	1.65[-1]	1.72[-1]	1.78[-1]
$3p^*7s7p^*$	3.07[-3]	7.92[-3]	1.24[-2]	1.48[-2]	1.78[-2]	1.89[-2]	2.03[-2]	2.23[-2]	2.46[-2]	2.73[-2]
$3p^*7s7d^*$	1.17[-3]	8.39[-4]	5.46[-4]	5.17[-4]	6.13[-4]	6.81[-4]	7.72[-4]	8.80[-4]	1.02[-3]	1.20[-3]
$3p^*7p^*7p^*$	2.09[-3]	5.82[-3]	9.67[-3]	1.19[-2]	1.48[-2]	1.58[-2]	1.73[-2]	1.91[-2]	2.13[-2]	2.37[-2]
$3p^*7p^*7p$	7.35[-3]	2.00[-2]	3.27[-2]	3.97[-2]	4.87[-2]	5.18[-2]	5.59[-2]	6.08[-2]	6.58[-2]	7.07[-2]
$3p^*7p^*7d^*$	8.04[-3]	2.27[-2]	3.63[-2]	4.28[-2]	4.99[-2]	5.24[-2]	5.54[-2]	5.92[-2]	6.33[-2]	6.74[-2]
$3p^*7p^*7d$	1.49[-2]	3.91[-2]	6.20[-2]	7.33[-2]	8.60[-2]	9.00[-2]	9.48[-2]	1.00[-1]	1.05[-1]	1.09[-1]
$3p^*7p7d^*$	2.71[-3]	3.21[-3]	3.59[-3]	3.92[-3]	4.81[-3]	5.13[-3]	5.79[-3]	6.36[-3]	6.71[-3]	6.67[-3]
$3p^*7d^*7d^*$	9.99[-4]	2.05[-3]	1.78[-3]	1.63[-3]	1.97[-3]	2.12[-3]	2.42[-3]	2.69[-3]	2.68[-3]	2.53[-3]
$3p^*7d^*7d$	2.23[-3]	3.32[-3]	4.92[-3]	7.88[-3]	1.34[-2]	1.50[-2]	1.69[-2]	1.82[-2]	1.70[-2]	1.37[-2]

TABLE VII. M_3 -shell Auger rates $A(n_0j_0l_0, n_1j_1l_1, n_2j_2l_2)$ (in mau) as function of Z for Zn-like ions.

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
$3p4s4p^*$	2.95[-2]	7.51[-2]	1.47[-1]	1.85[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p4s4p$	8.39[-1]	1.69[0]	2.43[0]	2.79[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p4s4d^*$	8.48[-2]	1.53[-1]	1.88[-1]	2.02[-1]	2.22[-1]	2.30[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p4s4d$	2.46[-1]	2.57[-1]	2.29[-1]	2.28[-1]	2.35[-1]	2.43[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p4s4f^*$	2.83[-2]	1.77[-1]	2.72[-1]	2.66[-1]	2.39[-1]	2.53[-1]	2.58[-1]	2.99[-1]	0.00[0]	0.00[0]
$3p4s4f$	5.47[-2]	3.61[-1]	5.29[-1]	4.61[-1]	2.33[-1]	3.28[-1]	3.49[-1]	4.48[-1]	0.00[0]	0.00[0]
$3p4p^*4p$	8.25[-1]	1.89[0]	2.81[0]	3.28[0]	3.88[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p4p^*4d^*$	5.25[-2]	9.69[-2]	1.16[-1]	1.16[-1]	1.10[-1]	1.06[-1]	1.01[-1]	0.00[0]	0.00[0]	0.00[0]
$3p4p^*4d$	2.36[-1]	3.64[-1]	4.94[-1]	5.67[-1]	5.88[-1]	6.99[-1]	7.56[-1]	0.00[0]	0.00[0]	0.00[0]
$3p4p^*4f$	1.89[-2]	2.00[-1]	7.95[-1]	1.43[0]	2.45[0]	3.59[0]	3.35[0]	3.79[0]	0.00[0]	0.00[0]
$3p4p4p$	1.22[0]	2.88[0]	4.33[0]	5.11[0]	5.88[0]	6.15[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p4p4d^*$	1.41[0]	3.83[0]	6.30[0]	7.57[0]	9.90[0]	9.47[0]	1.01[1]	1.07[1]	0.00[0]	0.00[0]
$3p4p4d$	2.04[0]	5.43[0]	8.85[0]	1.06[1]	8.48[0]	1.28[1]	1.37[1]	1.45[1]	0.00[0]	0.00[0]
$3p4p4f^*$	4.42[-2]	7.83[-1]	3.29[0]	5.44[0]	8.38[0]	2.81[0]	1.08[1]	1.15[1]	1.28[1]	1.36[1]
$3p4p4f$	5.90[-2]	9.33[-1]	3.80[0]	6.34[0]	9.91[0]	7.65[1]	1.24[1]	1.37[1]	1.50[1]	1.60[1]
$3p4d^*4d$	1.14[-1]	2.29[-1]	4.27[-1]	6.60[-1]	1.15[0]	2.50[1]	1.72[0]	2.01[0]	2.36[0]	2.62[0]
$3p4d4d$	1.24[-1]	3.15[-1]	4.26[-1]	4.76[-1]	6.04[-1]	1.12[0]	7.93[-1]	8.95[-1]	1.03[0]	1.12[0]
$3p4d4f^*$	1.20[-2]	9.16[-2]	4.16[-1]	8.53[-1]	1.76[0]	2.14[0]	1.04[0]	2.61[0]	4.20[0]	3.94[0]
$3p4d4f$	2.08[-2]	1.65[-1]	4.92[-1]	8.35[-1]	1.55[0]	1.86[0]	1.53[0]	1.46[0]	3.77[0]	3.28[0]
$3p4p^*5p$	2.13[-1]	4.62[-1]	6.61[-1]	7.64[-1]	8.97[-1]	9.47[-1]	1.02[0]	1.12[0]	1.24[0]	1.33[0]
$3p4p5s$	2.59[-1]	6.25[-1]	9.72[-1]	1.15[0]	1.36[0]	1.44[0]	1.55[0]	1.68[0]	1.84[0]	1.94[0]
$3p4p5p^*$	2.77[-1]	7.10[-1]	1.14[0]	1.38[0]	1.69[0]	1.80[0]	1.95[0]	2.15[0]	2.36[0]	2.75[0]
$3p4p5p$	7.34[-1]	1.82[0]	2.82[0]	3.34[0]	3.98[0]	4.19[0]	4.47[0]	4.81[0]	5.15[0]	5.49[0]
$3p4p5d^*$	5.98[-1]	1.65[0]	2.73[0]	3.29[0]	3.95[0]	4.17[0]	4.45[0]	4.78[0]	5.12[0]	5.45[0]
$3p4p5d$	8.56[-1]	2.34[0]	3.86[0]	4.64[0]	5.53[0]	5.81[0]	6.16[0]	6.56[0]	6.95[0]	7.32[0]
$3p4p5f^*$	3.43[-2]	5.52[-1]	2.05[0]	3.12[0]	4.40[0]	4.78[0]	5.23[0]	5.70[0]	6.11[0]	6.46[0]
$3p4p5f$	4.52[-2]	6.56[-1]	2.41[0]	3.71[0]	5.26[0]	5.72[0]	6.25[0]	6.77[0]	7.20[0]	7.53[0]
$3p4d^*5p$	3.69[-1]	9.42[-1]	1.48[0]	1.75[0]	2.05[0]	2.14[0]	2.26[0]	2.40[0]	2.55[0]	2.70[0]
$3p4d5p$	5.47[-1]	1.35[0]	2.07[0]	2.41[0]	2.77[0]	2.88[0]	3.02[0]	3.17[0]	3.33[0]	3.49[0]
$3p4p6p^*$	1.28[-1]	3.48[-1]	5.82[-1]	7.16[-1]	8.90[-1]	9.53[-1]	1.04[0]	1.15[0]	1.26[0]	1.39[0]
$3p4p6p$	3.29[-1]	8.46[-1]	1.35[0]	1.63[0]	1.96[0]	2.08[0]	2.23[0]	2.42[0]	2.60[0]	2.79[0]
$3p4p6d^*$	3.11[-1]	8.65[-1]	1.44[0]	1.75[0]	2.11[0]	2.24[0]	2.40[0]	2.58[0]	2.78[0]	2.97[0]
$3p4p6d$	4.43[-1]	1.23[0]	2.05[0]	2.48[0]	2.97[0]	3.13[0]	3.33[0]	3.56[0]	3.79[0]	4.00[0]
$3p4p6f^*$	2.37[-2]	3.62[-1]	1.26[0]	1.85[0]	2.52[0]	2.72[0]	2.96[0]	3.20[0]	3.43[0]	3.62[0]
$3p4p6f$	3.10[-2]	4.29[-1]	1.49[0]	2.21[0]	3.03[0]	3.26[0]	3.54[0]	3.81[0]	4.04[0]	4.23[0]
$3p4p6g^*$	8.69[-4]	2.66[-2]	1.62[-1]	3.29[-1]	6.49[-1]	7.81[-1]	9.60[-1]	1.16[0]	1.35[0]	1.51[0]
$3p4p6g$	1.17[-3]	3.57[-2]	2.09[-1]	4.15[-1]	7.90[-1]	9.40[-1]	1.14[0]	1.36[0]	1.57[0]	1.72[0]
$3p4d^*6p$	1.56[-1]	3.92[-1]	6.08[-1]	7.14[-1]	8.30[-1]	8.66[-1]	9.13[-1]	9.68[-1]	1.03[0]	1.08[0]
$3p4d6p$	2.34[-1]	5.63[-1]	8.50[-1]	9.80[-1]	1.11[0]	1.16[0]	1.21[0]	1.27[0]	1.33[0]	1.39[0]
$3p4d6g$	3.55[-4]	7.87[-3]	7.39[-2]	1.86[-1]	4.59[-1]	5.84[-1]	7.58[-1]	9.59[-1]	1.14[0]	1.26[0]
$3p4f^*6p$	3.90[-3]	6.35[-2]	2.64[-1]	4.41[-1]	6.92[-1]	7.75[-1]	8.76[-1]	9.79[-1]	1.07[0]	1.13[0]
$3p4f^*6f$	1.58[-3]	9.35[-2]	5.68[-1]	9.69[-1]	1.40[0]	1.50[0]	1.60[0]	1.68[0]	1.72[0]	1.75[0]
$3p4f6p$	5.23[-3]	7.25[-2]	3.11[-1]	5.54[-1]	9.35[-1]	1.07[0]	1.23[0]	1.40[0]	1.53[0]	1.63[0]
$3p4f6f^*$	1.62[-3]	9.70[-2]	5.89[-1]	9.99[-1]	1.42[0]	1.51[0]	1.60[0]	1.66[0]	1.68[0]	1.68[0]
$3p4f6f$	1.15[-3]	7.22[-2]	4.65[-1]	8.26[-1]	1.26[0]	1.37[0]	1.49[0]	1.59[0]	1.66[0]	1.70[0]
$3p4p^*7p$	4.67[-2]	1.00[-1]	1.42[-1]	1.64[-1]	1.92[-1]	2.03[-1]	2.19[-1]	2.41[-1]	2.68[-1]	3.00[-1]
$3p4p7s$	6.04[-2]	1.66[-1]	2.78[-1]	3.40[-1]	4.19[-1]	4.47[-1]	4.85[-1]	5.33[-1]	5.86[-1]	6.42[-1]
$3p4p7p^*$	7.02[-2]	1.97[-1]	3.38[-1]	4.20[-1]	5.28[-1]	5.67[-1]	6.19[-1]	6.84[-1]	7.56[-1]	8.31[-1]
$3p4p7p$	1.77[-1]	4.68[-1]	7.64[-1]	9.28[-1]	1.13[0]	1.21[0]	1.30[0]	1.41[0]	1.53[0]	1.64[0]
$3p4p7d^*$	1.82[-1]	5.11[-1]	8.57[-1]	1.04[0]	1.27[0]	1.35[0]	1.45[0]	1.56[0]	1.68[0]	1.80[0]
$3p4p7d$	2.60[-1]	7.28[-1]	1.22[0]	1.48[0]	1.79[0]	1.89[0]	2.01[0]	2.16[0]	2.30[0]	2.43[0]
$3p4d^*7p$	8.14[-2]	2.05[-1]	3.16[-1]	3.70[-1]	4.30[-1]	4.48[-1]	4.72[-1]	5.00[-1]	5.29[-1]	5.59[-1]
$3p4d7p$	1.23[-1]	2.96[-1]	4.43[-1]	5.08[-1]	5.75[-1]	5.95[-1]	6.20[-1]	6.50[-1]	6.80[-1]	7.13[-1]
$3p5s5p$	6.54[-2]	1.49[-1]	2.24[-1]	2.61[-1]	3.06[-1]	3.22[-1]	3.45[-1]	3.75[-1]	4.11[-1]	4.50[-1]
$3p5s5d$	2.27[-2]	2.14[-2]	1.76[-2]	1.82[-2]	2.15[-2]	2.28[-2]	2.44[-2]	2.59[-2]	2.79[-2]	3.24[-2]
$3p5p^*5p$	7.17[-2]	1.74[-1]	2.70[-1]	3.23[-1]	3.91[-1]	4.17[-1]	4.53[-1]	4.99[-1]	5.53[-1]	6.13[-1]
$3p5p^*5d$	2.42[-2]	3.44[-2]	4.29[-2]	4.65[-2]	5.08[-2]	5.24[-2]	5.44[-2]	5.62[-2]	5.72[-2]	5.75[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3p5p5p$	1.08[-1]	2.70[-1]	4.19[-1]	4.97[-1]	5.94[-1]	6.27[-1]	6.72[-1]	7.24[-1]	7.80[-1]	8.35[-1]
$3p5p5d^*$	1.56[-1]	4.06[-1]	6.44[-1]	7.63[-1]	8.98[-1]	9.43[-1]	1.00[0]	1.07[0]	1.14[0]	1.22[0]
$3p5p5d$	2.27[-1]	5.76[-1]	9.03[-1]	1.06[0]	1.23[0]	1.29[0]	1.36[0]	1.44[0]	1.52[0]	1.60[0]
$3p5p5f$	1.01[-2]	1.35[-1]	5.07[-1]	7.96[-1]	1.14[0]	1.24[0]	1.34[0]	1.44[0]	1.52[0]	1.58[0]
$3p5d^*5d$	1.66[-2]	3.06[-2]	5.78[-2]	9.45[-2]	1.70[-1]	2.01[-1]	2.44[-1]	2.93[-1]	3.37[-1]	3.71[-1]
$3p5d5d$	1.97[-2]	4.18[-2]	4.65[-2]	5.38[-2]	8.09[-2]	9.52[-2]	1.16[-1]	1.42[-1]	1.65[-1]	1.82[-1]
$3p5s6p$	2.74[-2]	6.18[-2]	9.17[-2]	1.07[-1]	1.24[-1]	1.31[-1]	1.40[-1]	1.52[-1]	1.67[-1]	1.83[-1]
$3p5p^*6p$	3.02[-2]	7.25[-2]	1.11[-1]	1.33[-1]	1.61[-1]	1.71[-1]	1.86[-1]	2.05[-1]	2.28[-1]	2.54[-1]
$3p5p6s$	2.89[-2]	7.18[-2]	1.12[-1]	1.33[-1]	1.60[-1]	1.69[-1]	1.82[-1]	1.99[-1]	2.19[-1]	2.41[-1]
$3p5p6p^*$	3.32[-2]	8.55[-2]	1.38[-1]	1.68[-1]	2.07[-1]	2.21[-1]	2.41[-1]	2.67[-1]	2.96[-1]	3.28[-1]
$3p5p6p$	9.60[-2]	2.46[-1]	3.88[-1]	4.65[-1]	5.60[-1]	5.94[-1]	6.38[-1]	6.91[-1]	7.47[-1]	8.02[-1]
$3p5p6d^*$	8.12[-2]	2.14[-1]	3.41[-1]	4.06[-1]	4.81[-1]	5.07[-1]	5.40[-1]	5.80[-1]	6.23[-1]	6.66[-1]
$3p5p6d$	1.17[-1]	3.03[-1]	4.80[-1]	5.66[-1]	6.64[-1]	6.96[-1]	7.37[-1]	7.84[-1]	8.31[-1]	8.76[-1]
$3p5d^*6p$	6.60[-2]	1.69[-1]	2.65[-1]	3.12[-1]	3.64[-1]	3.82[-1]	4.04[-1]	4.31[-1]	4.60[-1]	4.90[-1]
$3p5d^*6d$	8.21[-3]	1.42[-2]	2.86[-2]	4.85[-2]	8.81[-2]	1.04[-1]	1.27[-1]	1.51[-1]	1.74[-1]	1.92[-1]
$3p5d6p$	9.65[-2]	2.41[-1]	3.70[-1]	4.30[-1]	4.96[-1]	5.16[-1]	5.43[-1]	5.73[-1]	6.05[-1]	6.35[-1]
$3p5d6d^*$	8.33[-3]	1.57[-2]	2.91[-2]	4.72[-2]	8.47[-2]	1.01[-1]	1.22[-1]	1.46[-1]	1.67[-1]	1.84[-1]
$3p5d6d$	1.99[-2]	4.04[-2]	4.40[-2]	5.22[-2]	8.28[-2]	9.86[-2]	1.22[-1]	1.49[-1]	1.74[-1]	1.93[-1]
$3p5p^*7p$	1.57[-2]	3.78[-2]	5.80[-2]	6.91[-2]	8.39[-2]	8.94[-2]	9.72[-2]	1.07[-1]	1.20[-1]	1.33[-1]
$3p5p7s$	1.53[-2]	3.99[-2]	6.43[-2]	7.74[-2]	9.39[-2]	9.99[-2]	1.08[-1]	1.19[-1]	1.31[-1]	1.44[-1]
$3p5p7p^*$	1.82[-2]	4.84[-2]	8.01[-2]	9.84[-2]	1.23[-1]	1.32[-1]	1.44[-1]	1.60[-1]	1.77[-1]	1.96[-1]
$3p5p7p$	5.14[-2]	1.34[-1]	2.16[-1]	2.60[-1]	3.17[-1]	3.36[-1]	3.63[-1]	3.94[-1]	4.27[-1]	4.59[-1]
$3p5p7d^*$	4.76[-2]	1.27[-1]	2.03[-1]	2.43[-1]	2.89[-1]	3.05[-1]	3.26[-1]	3.52[-1]	3.78[-1]	4.05[-1]
$3p5p7d$	6.85[-2]	1.80[-1]	2.86[-1]	3.39[-1]	4.00[-1]	4.21[-1]	4.46[-1]	4.76[-1]	5.06[-1]	5.34[-1]
$3p5p7f^*$	3.68[-3]	5.22[-2]	1.72[-1]	2.46[-1]	3.24[-1]	3.47[-1]	3.73[-1]	4.00[-1]	4.26[-1]	4.48[-1]
$3p5p7f$	4.77[-3]	6.04[-2]	2.05[-1]	3.00[-1]	3.99[-1]	4.26[-1]	4.55[-1]	4.84[-1]	5.08[-1]	5.27[-1]
$3p5d^*7p$	3.45[-2]	8.84[-2]	1.38[-1]	1.62[-1]	1.88[-1]	1.97[-1]	2.09[-1]	2.22[-1]	2.37[-1]	2.52[-1]
$3p5d^*7d$	4.67[-3]	7.82[-3]	1.64[-2]	2.83[-2]	5.19[-2]	6.15[-2]	7.42[-2]	8.86[-2]	1.02[-1]	1.12[-1]
$3p5d7p$	5.06[-2]	1.25[-1]	1.92[-1]	2.22[-1]	2.55[-1]	2.65[-1]	2.79[-1]	2.94[-1]	3.10[-1]	3.26[-1]
$3p5d7d^*$	4.76[-3]	8.98[-3]	1.63[-2]	2.64[-2]	4.90[-2]	5.89[-2]	7.02[-2]	8.44[-2]	9.63[-2]	1.03[-1]
$3p5d7d$	1.15[-2]	2.28[-2]	2.41[-2]	2.93[-2]	4.89[-2]	5.90[-2]	7.19[-2]	8.85[-2]	1.03[-1]	1.13[-1]
$3p6s6p$	1.20[-2]	2.96[-2]	4.59[-2]	5.43[-2]	6.47[-2]	6.84[-2]	7.37[-2]	8.06[-2]	8.89[-2]	9.79[-2]
$3p6p^*6p$	1.40[-2]	3.56[-2]	5.69[-2]	6.90[-2]	8.50[-2]	9.10[-2]	9.93[-2]	1.10[-1]	1.22[-1]	1.36[-1]
$3p6p6p$	2.13[-2]	5.55[-2]	8.86[-2]	1.07[-1]	1.29[-1]	1.37[-1]	1.48[-1]	1.61[-1]	1.74[-1]	1.88[-1]
$3p6p6d^*$	3.43[-2]	8.92[-2]	1.40[-1]	1.66[-1]	1.95[-1]	2.05[-1]	2.18[-1]	2.34[-1]	2.51[-1]	2.68[-1]
$3p6p6d$	4.98[-2]	1.26[-1]	1.96[-1]	2.30[-1]	2.67[-1]	2.79[-1]	2.95[-1]	3.13[-1]	3.31[-1]	3.49[-1]
$3p6p6f^*$	2.13[-3]	3.07[-2]	1.05[-1]	1.53[-1]	2.05[-1]	2.19[-1]	2.35[-1]	2.52[-1]	2.67[-1]	2.80[-1]
$3p6p6f$	2.77[-3]	3.51[-2]	1.27[-1]	1.92[-1]	2.61[-1]	2.80[-1]	2.99[-1]	3.17[-1]	3.30[-1]	3.41[-1]
$3p6d^*6d$	4.15[-3]	7.41[-3]	1.50[-2]	2.52[-2]	4.52[-2]	5.34[-2]	6.46[-2]	7.72[-2]	8.85[-2]	9.74[-2]
$3p6d6d$	5.05[-3]	9.89[-3]	1.07[-2]	1.32[-2]	2.18[-2]	2.61[-2]	3.23[-2]	3.98[-2]	4.65[-2]	5.17[-2]
$3p6s7p$	6.31[-3]	1.55[-2]	2.39[-2]	2.82[-2]	3.35[-2]	3.54[-2]	3.81[-2]	4.18[-2]	4.61[-2]	5.09[-2]
$3p6p^*7p$	7.30[-3]	1.86[-2]	2.97[-2]	3.60[-2]	4.44[-2]	4.75[-2]	5.19[-2]	5.75[-2]	6.41[-2]	7.14[-2]
$3p6p7s$	6.36[-3]	1.65[-2]	2.63[-2]	3.15[-2]	3.81[-2]	4.04[-2]	4.38[-2]	4.81[-2]	5.31[-2]	5.86[-2]
$3p6p7p^*$	7.65[-3]	2.02[-2]	3.31[-2]	4.05[-2]	5.05[-2]	5.42[-2]	5.93[-2]	6.59[-2]	7.33[-2]	8.14[-2]
$3p6p7p$	2.27[-2]	6.05[-2]	9.78[-2]	1.18[-1]	1.45[-1]	1.54[-1]	1.66[-1]	1.81[-1]	1.97[-1]	2.12[-1]
$3p6p7d^*$	2.01[-2]	5.28[-2]	8.37[-2]	9.92[-2]	1.17[-1]	1.24[-1]	1.32[-1]	1.42[-1]	1.52[-1]	1.63[-1]
$3p6p7d$	2.91[-2]	7.49[-2]	1.17[-1]	1.38[-1]	1.61[-1]	1.69[-1]	1.79[-1]	1.90[-1]	2.02[-1]	2.13[-1]
$3p6d^*7p$	1.79[-2]	4.66[-2]	7.31[-2]	8.62[-2]	1.01[-1]	1.06[-1]	1.13[-1]	1.21[-1]	1.29[-1]	1.38[-1]
$3p6d7p$	2.60[-2]	6.59[-2]	1.02[-1]	1.19[-1]	1.38[-1]	1.44[-1]	1.51[-1]	1.61[-1]	1.70[-1]	1.79[-1]
$3p6d7d$	5.82[-3]	1.10[-2]	1.14[-2]	1.45[-2]	2.56[-2]	3.12[-2]	3.92[-2]	4.74[-2]	5.56[-2]	6.23[-2]
$3p7s7p$	3.34[-3]	8.63[-3]	1.37[-2]	1.63[-2]	1.97[-2]	2.09[-2]	2.26[-2]	2.49[-2]	2.76[-2]	3.04[-2]
$3p7p^*7p$	3.99[-3]	1.05[-2]	1.73[-2]	2.12[-2]	2.64[-2]	2.83[-2]	3.10[-2]	3.45[-2]	3.84[-2]	4.27[-2]
$3p7p7p$	6.08[-3]	1.65[-2]	2.69[-2]	3.28[-2]	4.03[-2]	4.29[-2]	4.64[-2]	5.07[-2]	5.52[-2]	5.96[-2]
$3p7p7d^*$	1.05[-2]	2.76[-2]	4.36[-2]	5.15[-2]	6.08[-2]	6.40[-2]	6.82[-2]	7.32[-2]	7.87[-2]	8.42[-2]
$3p7p7d$	1.52[-2]	3.91[-2]	6.10[-2]	7.14[-2]	8.31[-2]	8.70[-2]	9.19[-2]	9.78[-2]	1.04[-1]	1.09[-1]
$3p7p7f$	9.70[-4]	1.21[-2]	4.26[-2]	6.31[-2]	8.36[-2]	8.87[-2]	9.41[-2]	9.89[-2]	1.03[-1]	1.06[-1]
$3p7d7d$	1.68[-3]	3.01[-3]	3.12[-3]	4.17[-3]	7.61[-3]	9.16[-3]	1.17[-2]	1.43[-2]	1.68[-2]	1.90[-2]

TABLE VIII. M_4 -shell Auger rates $A(n_0j_0l_0, n_1j_1l_1, n_2j_2l_2)$ (in mau) as function of Z for Zn-like ions.

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
$3d^*4p^*4f^*$	2.75[0]	2.75[0]	1.94[0]	1.46[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d^*4p^*4f$	3.19[0]	2.81[0]	1.63[0]	1.01[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d^*4p4f^*$	1.39[0]	1.95[0]	1.68[0]	1.31[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d^*4p4f$	6.52[-1]	6.49[-1]	5.17[-1]	4.38[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d^*4d^*4d^*$	4.13[0]	6.03[0]	7.47[0]	8.12[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d^*4d^*4d$	8.72[0]	1.27[1]	1.57[1]	1.70[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d^*4d^*4f^*$	6.51[-1]	1.93[0]	4.48[0]	6.73[0]	1.01[1]	1.15[1]	1.30[1]	0.00[0]	0.00[0]	0.00[0]
$3d^*4d^*4f$	6.12[-1]	2.81[0]	7.01[0]	9.68[0]	1.35[1]	1.42[1]	1.54[1]	1.66[1]	0.00[0]	0.00[0]
$3d^*4d4d$	1.02[-1]	1.83[-1]	2.39[-1]	2.62[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d^*4d4f^*$	2.52[-1]	3.17[-1]	2.32[0]	5.20[0]	1.03[1]	1.24[1]	1.50[1]	1.77[1]	0.00[0]	0.00[0]
$3d^*4d4f$	5.83[-2]	1.21[-1]	2.43[-1]	3.70[-1]	5.66[-1]	6.50[-1]	7.42[-1]	8.33[-1]	0.00[0]	0.00[0]
$3d^*4f^*4f^*$	9.89[-2]	8.54[-1]	3.66[0]	6.68[0]	8.13[0]	1.45[1]	1.60[1]	1.79[1]	2.00[1]	2.14[1]
$3d^*4f^*4f$	3.20[-1]	2.71[0]	1.13[1]	2.02[1]	6.54[0]	3.85[1]	4.59[1]	5.19[1]	5.74[1]	6.13[1]
$3d^*4p^*5p$	1.44[0]	2.12[-1]	1.04[-1]	1.40[-1]	1.90[-1]	1.79[-1]	1.81[-1]	1.86[-1]	1.85[-1]	1.87[-1]
$3d^*4p^*5d^*$	1.99[0]	1.05[0]	8.84[-1]	8.85[-1]	5.74[-1]	7.84[-1]	9.92[-1]	1.01[0]	1.04[0]	1.16[0]
$3d^*4p^*5d$	1.82[0]	3.58[-1]	1.03[-1]	1.09[-1]	1.53[-1]	7.16[-2]	1.26[-1]	1.05[-1]	1.09[-1]	1.03[-1]
$3d^*4p^*5f^*$	1.35[0]	1.25[0]	6.56[-1]	4.03[-1]	2.62[-1]	1.31[0]	2.57[-1]	1.08[0]	2.42[-1]	4.20[-1]
$3d^*4p^*5f$	1.58[0]	1.31[0]	5.81[-1]	2.83[-1]	9.05[-2]	2.54[-2]	3.22[-2]	1.06[-1]	6.10[-2]	1.50[-1]
$3d^*4p^*5g$	4.88[-1]	5.71[-1]	5.72[-1]	5.29[-1]	4.73[-1]	1.92[-1]	6.75[-1]	8.66[-1]	3.88[0]	8.72[-1]
$3d^*4p5d^*$	2.19[0]	2.02[0]	2.04[0]	2.10[0]	2.12[0]	8.35[-1]	2.64[0]	3.62[0]	4.25[-1]	2.46[0]
$3d^*4d^*5s$	1.16[0]	1.42[0]	1.60[0]	1.68[0]	1.78[0]	1.56[0]	2.31[0]	2.26[0]	2.78[0]	2.26[0]
$3d^*4d^*5p^*$	1.13[0]	1.29[0]	1.50[0]	1.63[0]	1.81[0]	1.88[0]	2.11[0]	1.27[0]	7.25[-1]	2.51[0]
$3d^*4d^*5p$	2.18[0]	2.82[0]	3.35[0]	3.64[0]	3.99[0]	4.12[0]	4.25[0]	4.43[0]	4.66[0]	5.40[0]
$3d^*4d^*5d^*$	2.88[0]	4.11[0]	5.04[0]	5.48[0]	6.00[0]	6.18[0]	6.41[0]	6.70[0]	7.02[0]	6.61[0]
$3d^*4d^*5d$	3.54[0]	5.22[0]	6.54[0]	7.20[0]	7.94[0]	8.19[0]	8.50[0]	8.86[0]	9.24[0]	1.12[1]
$3d^*4d^*5f^*$	3.98[-1]	1.20[0]	2.77[0]	3.93[0]	5.36[0]	5.80[0]	6.30[0]	6.79[0]	7.19[0]	7.45[0]
$3d^*4d^*5f$	4.12[-1]	1.82[0]	4.21[0]	5.60[0]	7.08[0]	7.49[0]	7.96[0]	8.41[0]	8.78[0]	9.05[0]
$3d^*4d^*5g^*$	3.19[-2]	1.46[-1]	4.04[-1]	6.31[-1]	9.88[-1]	1.12[0]	1.29[0]	1.48[0]	1.65[0]	1.79[0]
$3d^*4d^*5g$	3.03[-2]	1.34[-1]	3.89[-1]	6.31[-1]	1.04[0]	1.20[0]	1.41[0]	1.63[0]	1.83[0]	1.94[0]
$3d^*4d5d^*$	2.48[0]	3.34[0]	3.87[0]	4.09[0]	4.30[0]	4.36[0]	4.44[0]	4.54[0]	4.65[0]	3.62[0]
$3d^*4d5f^*$	1.11[-1]	1.87[-1]	1.48[0]	2.84[0]	4.68[0]	5.26[0]	5.93[0]	6.59[0]	7.11[0]	7.50[0]
$3d^*4f^*5s$	1.13[-1]	3.29[-1]	5.43[-1]	6.58[-1]	8.12[-1]	8.74[-1]	9.73[-1]	1.13[0]	1.35[0]	1.69[0]
$3d^*4f^*5d^*$	1.68[-1]	3.98[-1]	9.88[-1]	1.67[0]	2.83[0]	3.25[0]	3.78[0]	4.30[0]	4.70[0]	4.93[0]
$3d^*4f^*5d$	9.04[-2]	8.51[-2]	8.33[-1]	1.99[0]	4.12[0]	4.93[0]	5.98[0]	7.11[0]	8.09[0]	8.84[0]
$3d^*4f^*5f^*$	1.12[-1]	9.12[-1]	3.48[0]	5.89[0]	9.37[0]	1.05[1]	1.19[1]	1.33[1]	1.45[1]	1.53[1]
$3d^*4f^*5f$	1.91[-1]	1.60[0]	6.02[0]	1.01[1]	1.61[1]	1.81[1]	2.06[1]	2.30[1]	2.49[1]	2.63[1]
$3d^*4f^*5g$	2.95[-2]	3.59[-1]	1.68[0]	3.31[0]	6.48[0]	7.80[0]	9.57[0]	1.15[1]	1.33[1]	1.45[1]
$3d^*4f5d^*$	1.30[-1]	5.82[-1]	1.42[0]	1.97[0]	2.60[0]	2.78[0]	2.98[0]	3.17[0]	3.30[0]	3.39[0]
$3d^*4f5f^*$	1.68[-1]	1.24[0]	4.35[0]	6.93[0]	1.02[1]	1.12[1]	1.23[1]	1.34[1]	1.41[1]	1.45[1]
$3d^*4d^*6s$	4.88[-1]	6.46[-1]	7.69[-1]	8.30[-1]	9.09[-1]	9.40[-1]	9.84[-1]	1.04[0]	1.12[0]	1.20[0]
$3d^*4d^*6p^*$	4.79[-1]	6.21[-1]	7.62[-1]	8.44[-1]	9.57[-1]	9.99[-1]	1.06[0]	1.13[0]	1.22[0]	1.32[0]
$3d^*4d^*6p$	9.77[-1]	1.36[0]	1.69[0]	1.86[0]	2.09[0]	2.17[0]	2.27[0]	2.40[0]	2.54[0]	2.69[0]
$3d^*4d^*6d^*$	1.40[0]	2.00[0]	2.47[0]	2.70[0]	2.98[0]	3.07[0]	3.20[0]	3.35[0]	3.52[0]	3.70[0]
$3d^*4d^*6d$	1.80[0]	2.69[0]	3.41[0]	3.78[0]	4.21[0]	4.35[0]	4.54[0]	4.75[0]	4.97[0]	5.19[0]
$3d^*4d^*6f^*$	2.45[-1]	7.52[-1]	1.70[0]	2.33[0]	3.04[0]	3.24[0]	3.48[0]	3.71[0]	3.90[0]	4.05[0]
$3d^*4d^*6f$	2.65[-1]	1.16[0]	2.56[0]	3.32[0]	4.09[0]	4.31[0]	4.55[0]	4.79[0]	5.00[0]	5.16[0]
$3d^*4d^*6g^*$	2.69[-2]	1.20[-1]	3.13[-1]	4.76[-1]	7.21[-1]	8.10[-1]	9.24[-1]	1.05[0]	1.16[0]	1.24[0]
$3d^*4d^*6g$	2.53[-2]	1.12[-1]	3.12[-1]	4.98[-1]	8.02[-1]	9.16[-1]	1.06[0]	1.22[0]	1.36[0]	1.46[0]
$3d^*4d6d^*$	1.10[0]	1.44[0]	1.63[0]	1.70[0]	1.76[0]	1.78[0]	1.80[0]	1.83[0]	1.87[0]	1.91[0]
$3d^*4d6f^*$	5.62[-2]	1.26[-1]	9.07[-1]	1.60[0]	2.41[0]	2.65[0]	2.91[0]	3.15[0]	3.35[0]	3.49[0]
$3d^*4f^*6d^*$	8.10[-2]	1.59[-1]	4.13[-1]	7.49[-1]	1.33[0]	1.55[0]	1.82[0]	2.09[0]	2.29[0]	2.40[0]
$3d^*4f^*6d$	5.34[-2]	3.89[-2]	4.17[-1]	1.03[0]	2.12[0]	2.55[0]	3.10[0]	3.70[0]	4.21[0]	4.62[0]
$3d^*4f^*6f^*$	7.36[-2]	5.01[-1]	1.94[0]	3.17[0]	4.86[0]	5.42[0]	6.10[0]	6.79[0]	7.34[0]	7.74[0]
$3d^*4f^*6f$	1.34[-1]	8.88[-1]	3.49[0]	5.68[0]	8.67[0]	9.68[0]	1.09[1]	1.21[1]	1.31[1]	1.38[1]
$3d^*4f^*6g^*$	1.89[-2]	1.62[-1]	7.44[-1]	1.40[0]	2.64[0]	3.14[0]	3.80[0]	4.55[0]	5.19[0]	5.67[0]
$3d^*4f^*6g$	3.61[-2]	3.04[-1]	1.38[0]	2.60[0]	4.85[0]	5.75[0]	6.93[0]	8.25[0]	9.36[0]	1.01[1]
$3d^*4f^*6h^*$	9.36[-4]	2.92[-2]	1.25[-1]	2.73[-1]	6.13[-1]	7.64[-1]	9.79[-1]	1.24[0]	1.47[0]	1.66[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3d^*4f6d^*$	5.08[-2]	2.27[-1]	5.48[-1]	7.54[-1]	9.87[-1]	1.05[0]	1.13[0]	1.19[0]	1.24[0]	1.26[0]
$3d^*4f6f^*$	9.49[-2]	6.51[-1]	2.10[0]	3.17[0]	4.40[0]	4.74[0]	5.10[0]	5.41[0]	5.62[0]	5.74[0]
$3d^*4f6g^*$	7.17[-3]	5.68[-2]	2.25[-1]	4.07[-1]	7.28[-1]	8.52[-1]	1.02[0]	1.19[0]	1.34[0]	1.45[0]
$3d^*4s7d^*$	2.77[-1]	2.80[-1]	2.58[-1]	2.42[-1]	2.24[-1]	2.21[-1]	2.20[-1]	2.25[-1]	2.36[-1]	2.54[-1]
$3d^*4s7f^*$	1.25[-1]	1.42[-1]	1.11[-1]	1.04[-1]	1.03[-1]	1.05[-1]	1.10[-1]	1.21[-1]	1.41[-1]	1.71[-1]
$3d^*4p^*7s$	1.53[-1]	4.06[-2]	2.71[-3]	6.26[-3]	1.09[-2]	1.22[-2]	1.36[-2]	1.51[-2]	1.41[-2]	1.08[-2]
$3d^*4p^*7p^*$	1.69[-1]	3.15[-2]	3.54[-3]	9.35[-3]	1.43[-2]	1.54[-2]	1.66[-2]	1.82[-2]	1.81[-2]	1.59[-2]
$3d^*4p^*7p$	2.89[-1]	6.05[-2]	2.23[-2]	3.35[-2]	3.92[-2]	4.02[-2]	4.16[-2]	4.58[-2]	4.71[-2]	4.51[-2]
$3d^*4p^*7d^*$	4.93[-1]	2.58[-1]	1.84[-1]	1.84[-1]	1.92[-1]	1.95[-1]	2.00[-1]	2.07[-1]	2.19[-1]	2.38[-1]
$3d^*4p^*7d$	4.55[-1]	1.01[-1]	2.75[-2]	2.87[-2]	2.79[-2]	2.74[-2]	2.70[-2]	2.76[-2]	2.51[-2]	2.04[-2]
$3d^*4p^*7f^*$	4.87[-1]	3.74[-1]	1.78[-1]	9.26[-2]	5.77[-2]	5.77[-2]	6.19[-2]	6.82[-2]	7.61[-2]	8.89[-2]
$3d^*4p^*7f$	5.76[-1]	4.03[-1]	1.67[-1]	6.48[-2]	1.33[-2]	7.81[-3]	5.60[-3]	6.61[-3]	1.39[-2]	3.40[-2]
$3d^*4p^*7g^*$	1.79[-1]	2.59[-1]	2.22[-1]	1.73[-1]	1.54[-1]	1.49[-1]	1.48[-1]	1.60[-1]	1.91[-1]	2.46[-1]
$3d^*4p^*7g$	2.17[-1]	3.10[-1]	2.78[-1]	2.19[-1]	1.96[-1]	1.90[-1]	1.87[-1]	1.96[-1]	2.35[-1]	3.14[-1]
$3d^*4p^*7h$	4.44[-2]	9.89[-2]	7.83[-2]	8.02[-2]	9.88[-2]	1.05[-1]	1.14[-1]	1.25[-1]	1.56[-1]	2.12[-1]
$3d^*4p7d^*$	5.16[-1]	4.59[-1]	4.45[-1]	4.49[-1]	4.55[-1]	4.58[-1]	4.64[-1]	4.73[-1]	4.87[-1]	5.05[-1]
$3d^*4p7f^*$	2.64[-1]	2.52[-1]	1.12[-1]	5.71[-2]	5.28[-2]	6.28[-2]	7.94[-2]	9.79[-2]	1.12[-1]	1.19[-1]
$3d^*4p7f$	1.15[-1]	8.60[-2]	4.14[-2]	2.52[-2]	2.05[-2]	2.15[-2]	2.38[-2]	2.65[-2]	2.91[-2]	3.06[-2]
$3d^*4p7g^*$	5.08[-2]	7.93[-2]	1.00[-1]	1.27[-1]	1.75[-1]	1.89[-1]	2.04[-1]	2.18[-1]	2.28[-1]	2.34[-1]
$3d^*4d^*7s$	2.52[-1]	3.52[-1]	4.33[-1]	4.75[-1]	5.30[-1]	5.51[-1]	5.79[-1]	6.17[-1]	6.61[-1]	7.10[-1]
$3d^*4d^*7p^*$	2.54[-1]	3.49[-1]	4.41[-1]	4.95[-1]	5.68[-1]	5.95[-1]	6.33[-1]	6.80[-1]	7.34[-1]	7.91[-1]
$3d^*4d^*7p$	5.25[-1]	7.63[-1]	9.71[-1]	1.09[0]	1.23[0]	1.29[0]	1.35[0]	1.44[0]	1.53[0]	1.62[0]
$3d^*4d^*7d^*$	7.92[-1]	1.14[0]	1.42[0]	1.56[0]	1.73[0]	1.79[0]	1.87[0]	1.96[0]	2.06[0]	2.17[0]
$3d^*4d^*7d$	1.05[0]	1.58[0]	2.02[0]	2.25[0]	2.52[0]	2.61[0]	2.72[0]	2.86[0]	3.00[0]	3.13[0]
$3d^*4d^*7f^*$	1.59[-1]	4.93[-1]	1.09[0]	1.47[0]	1.87[0]	1.99[0]	2.12[0]	2.26[0]	2.37[0]	2.46[0]
$3d^*4d^*7f$	1.77[-1]	7.62[-1]	1.64[0]	2.10[0]	2.56[0]	2.69[0]	2.83[0]	2.98[0]	3.11[0]	3.21[0]
$3d^*4d7d^*$	5.91[-1]	7.65[-1]	8.58[-1]	8.90[-1]	9.16[-1]	9.24[-1]	9.34[-1]	9.47[-1]	9.64[-1]	9.84[-1]
$3d^*4f^*7p^*$	4.59[-2]	7.79[-2]	1.21[-1]	1.34[-1]	1.40[-1]	1.47[-1]	1.68[-1]	2.06[-1]	2.51[-1]	3.14[-1]
$3d^*4f^*7p$	6.49[-2]	1.12[-1]	1.80[-1]	1.83[-1]	1.53[-1]	1.47[-1]	1.50[-1]	1.55[-1]	1.44[-1]	1.17[-1]
$3d^*4f^*7f^*$	4.84[-2]	3.25[-1]	1.13[0]	1.87[0]	2.85[0]	3.20[0]	3.64[0]	3.97[0]	4.30[0]	4.63[0]
$3d^*4f^*7f$	9.01[-2]	5.96[-1]	2.03[0]	3.35[0]	5.15[0]	5.80[0]	6.60[0]	7.16[0]	7.75[0]	8.37[0]
$3d^*4f7f^*$	5.83[-2]	3.84[-1]	1.18[0]	1.73[0]	2.32[0]	2.48[0]	2.64[0]	2.77[0]	2.86[0]	2.90[0]
$3d^*5s5p^*$	8.04[-2]	2.75[-2]	9.39[-3]	1.09[-2]	1.43[-2]	1.52[-2]	1.60[-2]	1.63[-2]	1.60[-2]	1.48[-2]
$3d^*5s5p$	6.77[-2]	3.67[-2]	9.05[-3]	6.71[-3]	8.02[-3]	8.67[-3]	9.45[-3]	1.02[-2]	1.07[-2]	1.12[-2]
$3d^*5s5d^*$	3.20[-1]	3.69[-1]	3.91[-1]	3.97[-1]	4.07[-1]	4.13[-1]	4.24[-1]	4.43[-1]	4.70[-1]	5.04[-1]
$3d^*5s5d$	2.87[-2]	3.95[-2]	3.61[-2]	3.20[-2]	2.72[-2]	2.60[-2]	2.50[-2]	2.48[-2]	2.58[-2]	2.78[-2]
$3d^*5s5f^*$	6.65[-2]	1.57[-1]	2.06[-1]	2.20[-1]	2.33[-1]	2.40[-1]	2.53[-1]	2.80[-1]	3.27[-1]	3.96[-1]
$3d^*5s5f$	2.18[-2]	4.13[-2]	3.68[-2]	4.17[-2]	5.28[-2]	5.65[-2]	6.08[-2]	6.49[-2]	6.84[-2]	7.15[-2]
$3d^*5p^*5p^*$	5.19[-2]	2.32[-3]	2.72[-3]	6.49[-3]	9.56[-3]	1.02[-2]	1.07[-2]	1.12[-2]	1.15[-2]	1.13[-2]
$3d^*5p^*5p$	1.13[-1]	2.07[-2]	3.59[-2]	4.42[-2]	4.67[-2]	4.62[-2]	4.53[-2]	4.43[-2]	4.38[-2]	4.40[-2]
$3d^*5p^*5d^*$	3.30[-1]	3.25[-1]	3.53[-1]	3.74[-1]	4.05[-1]	4.17[-1]	4.36[-1]	4.61[-1]	4.94[-1]	5.31[-1]
$3d^*5p^*5d$	1.10[-1]	2.94[-2]	2.50[-2]	2.98[-2]	3.69[-2]	3.90[-2]	4.10[-2]	4.13[-2]	3.89[-2]	3.37[-2]
$3d^*5p^*5f^*$	1.51[-1]	2.05[-1]	1.53[-1]	1.23[-1]	1.15[-1]	1.21[-1]	1.31[-1]	1.47[-1]	1.67[-1]	1.97[-1]
$3d^*5p^*5f$	1.30[-1]	1.46[-1]	7.62[-2]	3.92[-2]	1.60[-2]	1.33[-2]	1.19[-2]	1.20[-2]	1.46[-2]	2.43[-2]
$3d^*5p^*5g^*$	1.29[-2]	3.26[-2]	4.12[-2]	4.79[-2]	6.31[-2]	7.04[-2]	8.15[-2]	9.65[-2]	1.15[-1]	1.38[-1]
$3d^*5p^*5g$	1.49[-2]	3.79[-2]	5.21[-2]	5.58[-2]	5.84[-2]	5.98[-2]	6.33[-2]	7.11[-2]	8.53[-2]	1.08[-1]
$3d^*5p5p$	2.37[-2]	1.23[-2]	1.50[-2]	1.65[-2]	1.72[-2]	1.72[-2]	1.72[-2]	1.70[-2]	1.68[-2]	1.65[-2]
$3d^*5p5d^*$	6.09[-1]	7.20[-1]	8.13[-1]	8.62[-1]	9.23[-1]	9.45[-1]	9.76[-1]	1.02[0]	1.06[0]	1.11[0]
$3d^*5p5d$	3.85[-2]	2.91[-2]	2.43[-2]	2.60[-2]	3.12[-2]	3.34[-2]	3.64[-2]	3.99[-2]	4.35[-2]	4.67[-2]
$3d^*5p5f^*$	1.53[-1]	2.40[-1]	1.83[-1]	1.32[-1]	1.07[-1]	1.09[-1]	1.17[-1]	1.27[-1]	1.29[-1]	1.21[-1]
$3d^*5p5f$	3.25[-2]	4.89[-2]	4.34[-2]	3.34[-2]	2.30[-2]	2.09[-2]	1.94[-2]	1.89[-2]	1.89[-2]	1.89[-2]
$3d^*5d^*5d^*$	4.81[-1]	6.54[-1]	7.76[-1]	8.32[-1]	8.96[-1]	9.17[-1]	9.47[-1]	9.84[-1]	1.03[0]	1.08[0]
$3d^*5d^*5d$	1.01[0]	1.38[0]	1.63[0]	1.74[0]	1.86[0]	1.90[0]	1.95[0]	2.02[0]	2.08[0]	2.15[0]
$3d^*5d^*5f^*$	1.02[-1]	2.51[-1]	6.43[-1]	9.86[-1]	1.44[0]	1.57[0]	1.73[0]	1.88[0]	1.99[0]	2.06[0]
$3d^*5d^*5f$	9.04[-2]	3.92[-1]	8.81[-1]	1.15[0]	1.42[0]	1.50[0]	1.58[0]	1.65[0]	1.70[0]	1.74[0]
$3d^*5d5d$	1.14[-2]	1.84[-2]	2.26[-2]	2.41[-2]	2.57[-2]	2.62[-2]	2.69[-2]	2.79[-2]	2.91[-2]	3.05[-2]
$3d^*5d5f^*$	4.30[-2]	6.04[-2]	5.68[-1]	1.12[0]	1.88[0]	2.13[0]	2.42[0]	2.71[0]	2.94[0]	3.12[0]
$3d^*5f^*5f^*$	3.01[-2]	2.44[-1]	8.27[-1]	1.28[0]	1.82[0]	1.98[0]	2.15[0]	2.31[0]	2.43[0]	2.52[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3d^*5f^*5f$	9.76[-2]	7.63[-1]	2.47[0]	3.74[0]	5.20[0]	5.61[0]	6.05[0]	6.45[0]	6.74[0]	6.93[0]
$3d^*5f^*5g$	1.57[-2]	1.35[-1]	5.22[-1]	8.94[-1]	1.47[0]	1.68[0]	1.94[0]	2.21[0]	2.43[0]	2.58[0]
$3d^*5s6d^*$	1.40[-1]	1.59[-1]	1.64[-1]	1.64[-1]	1.66[-1]	1.68[-1]	1.71[-1]	1.78[-1]	1.88[-1]	2.02[-1]
$3d^*5s6f^*$	3.98[-2]	8.40[-2]	9.85[-2]	9.92[-2]	9.87[-2]	9.97[-2]	1.03[-1]	1.12[-1]	1.30[-1]	1.57[-1]
$3d^*5p^*6d^*$	1.50[-1]	1.39[-1]	1.45[-1]	1.52[-1]	1.63[-1]	1.68[-1]	1.75[-1]	1.84[-1]	1.96[-1]	2.11[-1]
$3d^*5p^*6f^*$	9.29[-2]	1.06[-1]	7.21[-2]	5.31[-2]	4.98[-2]	5.26[-2]	5.76[-2]	6.38[-2]	7.01[-2]	7.91[-2]
$3d^*5p6d^*$	2.67[-1]	3.07[-1]	3.39[-1]	3.57[-1]	3.77[-1]	3.85[-1]	3.96[-1]	4.10[-1]	4.28[-1]	4.48[-1]
$3d^*5p6f^*$	9.15[-2]	1.24[-1]	7.96[-2]	5.27[-2]	4.68[-2]	5.11[-2]	5.91[-2]	6.80[-2]	7.31[-2]	7.28[-2]
$3d^*5d^*6s$	1.34[-1]	1.67[-1]	1.87[-1]	1.96[-1]	2.07[-1]	2.12[-1]	2.20[-1]	2.31[-1]	2.46[-1]	2.64[-1]
$3d^*5d^*6p^*$	1.38[-1]	1.56[-1]	1.80[-1]	1.95[-1]	2.15[-1]	2.23[-1]	2.34[-1]	2.49[-1]	2.67[-1]	2.88[-1]
$3d^*5d^*6p$	2.72[-1]	3.48[-1]	4.10[-1]	4.43[-1]	4.84[-1]	4.99[-1]	5.19[-1]	5.44[-1]	5.73[-1]	6.04[-1]
$3d^*5d^*6d^*$	4.59[-1]	6.21[-1]	7.34[-1]	7.87[-1]	8.47[-1]	8.67[-1]	8.95[-1]	9.31[-1]	9.72[-1]	1.02[0]
$3d^*5d^*6d$	5.18[-1]	7.11[-1]	8.53[-1]	9.19[-1]	9.92[-1]	1.02[0]	1.05[0]	1.08[0]	1.13[0]	1.17[0]
$3d^*5d^*6f^*$	6.31[-2]	1.60[-1]	4.00[-1]	5.82[-1]	7.96[-1]	8.57[-1]	9.26[-1]	9.90[-1]	1.04[0]	1.07[0]
$3d^*5d^*6f$	5.90[-2]	2.51[-1]	5.42[-1]	6.90[-1]	8.31[-1]	8.68[-1]	9.09[-1]	9.47[-1]	9.77[-1]	9.99[-1]
$3d^*5d6d^*$	4.48[-1]	5.93[-1]	6.87[-1]	7.25[-1]	7.65[-1]	7.78[-1]	7.95[-1]	8.15[-1]	8.39[-1]	8.64[-1]
$3d^*5d6f^*$	2.30[-2]	4.30[-2]	3.51[-1]	6.33[-1]	9.76[-1]	1.08[0]	1.19[0]	1.30[0]	1.39[0]	1.46[0]
$3d^*5f^*6s$	2.59[-2]	7.36[-2]	1.03[-1]	1.15[-1]	1.26[-1]	1.30[-1]	1.38[-1]	1.53[-1]	1.79[-1]	2.17[-1]
$3d^*5f^*6p$	5.91[-2]	1.14[-1]	9.06[-2]	7.24[-2]	6.47[-2]	6.68[-2]	7.16[-2]	7.63[-2]	7.67[-2]	7.07[-2]
$3d^*5f^*6d^*$	4.29[-2]	9.98[-2]	2.75[-1]	4.40[-1]	6.63[-1]	7.33[-1]	8.13[-1]	8.87[-1]	9.40[-1]	9.70[-1]
$3d^*5f^*6d$	2.04[-2]	2.62[-2]	2.93[-1]	5.76[-1]	9.76[-1]	1.11[0]	1.26[0]	1.41[0]	1.54[0]	1.64[0]
$3d^*5f^*6f^*$	3.99[-2]	2.82[-1]	9.04[-1]	1.35[0]	1.86[0]	1.99[0]	2.14[0]	2.28[0]	2.38[0]	2.46[0]
$3d^*5f^*6f$	7.06[-2]	4.69[-1]	1.44[0]	2.12[0]	2.89[0]	3.10[0]	3.33[0]	3.53[0]	3.68[0]	3.78[0]
$3d^*5f^*6g$	1.34[-2]	1.35[-1]	4.27[-1]	7.26[-1]	1.18[0]	1.33[0]	1.52[0]	1.71[0]	1.87[0]	1.97[0]
$3d^*5f6d^*$	3.57[-2]	1.55[-1]	3.45[-1]	4.48[-1]	5.48[-1]	5.74[-1]	6.02[-1]	6.26[-1]	6.44[-1]	6.55[-1]
$3d^*5f6f^*$	5.61[-2]	4.06[-1]	1.23[0]	1.77[0]	2.32[0]	2.45[0]	2.60[0]	2.72[0]	2.80[0]	2.85[0]
$3d^*5g6f^*$	9.21[-3]	6.51[-2]	2.27[-1]	3.64[-1]	5.58[-1]	6.24[-1]	7.04[-1]	7.83[-1]	8.46[-1]	8.88[-1]
$3d^*5s7d^*$	7.52[-2]	8.47[-2]	8.67[-2]	8.61[-2]	8.62[-2]	8.69[-2]	8.85[-2]	9.19[-2]	9.71[-2]	1.04[-1]
$3d^*5p^*7d^*$	8.17[-2]	7.21[-2]	7.70[-2]	7.96[-2]	8.46[-2]	8.67[-2]	8.99[-2]	9.46[-2]	1.01[-1]	1.08[-1]
$3d^*5p7d^*$	1.44[-1]	1.62[-1]	1.79[-1]	1.87[-1]	1.96[-1]	2.00[-1]	2.05[-1]	2.12[-1]	2.21[-1]	2.31[-1]
$3d^*5p7g^*$	4.29[-3]	6.81[-3]	2.00[-2]	3.75[-2]	6.42[-2]	7.29[-2]	8.30[-2]	9.25[-2]	9.97[-2]	1.05[-1]
$3d^*5d^*7s$	6.96[-2]	9.08[-2]	1.05[-1]	1.12[-1]	1.21[-1]	1.24[-1]	1.30[-1]	1.37[-1]	1.46[-1]	1.57[-1]
$3d^*5d^*7p^*$	7.24[-2]	8.76[-2]	1.04[-1]	1.14[-1]	1.28[-1]	1.33[-1]	1.41[-1]	1.50[-1]	1.61[-1]	1.73[-1]
$3d^*5d^*7p$	1.46[-1]	1.95[-1]	2.37[-1]	2.59[-1]	2.87[-1]	2.97[-1]	3.10[-1]	3.27[-1]	3.45[-1]	3.65[-1]
$3d^*5d^*7d^*$	2.58[-1]	3.50[-1]	4.15[-1]	4.45[-1]	4.80[-1]	4.92[-1]	5.08[-1]	5.29[-1]	5.53[-1]	5.80[-1]
$3d^*5d^*7d$	3.01[-1]	4.17[-1]	5.05[-1]	5.47[-1]	5.94[-1]	6.09[-1]	6.29[-1]	6.54[-1]	6.80[-1]	7.07[-1]
$3d^*5d^*7f^*$	4.10[-2]	1.06[-1]	2.59[-1]	3.67[-1]	4.85[-1]	5.18[-1]	5.55[-1]	5.89[-1]	6.14[-1]	6.32[-1]
$3d^*5d^*7f$	3.96[-2]	1.67[-1]	3.50[-1]	4.39[-1]	5.23[-1]	5.45[-1]	5.69[-1]	5.92[-1]	6.10[-1]	6.24[-1]
$3d^*5d^*7g^*$	4.51[-3]	1.84[-2]	4.43[-2]	6.36[-2]	8.96[-2]	9.84[-2]	1.09[-1]	1.21[-1]	1.31[-1]	1.38[-1]
$3d^*5d^*7g$	3.47[-3]	1.35[-2]	3.59[-2]	5.63[-2]	8.82[-2]	9.98[-2]	1.15[-1]	1.30[-1]	1.42[-1]	1.51[-1]
$3d^*5d7d^*$	2.42[-1]	3.16[-1]	3.62[-1]	3.81[-1]	3.99[-1]	4.04[-1]	4.12[-1]	4.21[-1]	4.33[-1]	4.45[-1]
$3d^*5d7f^*$	1.36[-2]	3.04[-2]	2.25[-1]	3.87[-1]	5.70[-1]	6.21[-1]	6.78[-1]	7.32[-1]	7.76[-1]	8.11[-1]
$3d^*5f^*7s$	1.52[-2]	4.16[-2]	6.08[-2]	6.52[-2]	7.57[-2]	8.01[-2]	8.49[-2]	9.23[-2]	1.07[-1]	1.30[-1]
$3d^*5f^*7d^*$	2.37[-2]	5.07[-2]	1.46[-1]	2.46[-1]	3.74[-1]	4.14[-1]	4.59[-1]	5.07[-1]	5.37[-1]	5.50[-1]
$3d^*5f^*7d$	1.25[-2]	1.69[-2]	1.67[-1]	3.48[-1]	5.78[-1]	6.50[-1]	7.37[-1]	8.43[-1]	9.19[-1]	9.65[-1]
$3d^*5f^*7f^*$	2.61[-2]	1.73[-1]	5.62[-1]	8.24[-1]	1.10[0]	1.17[0]	1.24[0]	1.32[0]	1.38[0]	1.41[0]
$3d^*5f^*7f$	4.71[-2]	2.91[-1]	9.37[-1]	1.36[0]	1.78[0]	1.89[0]	2.01[0]	2.15[0]	2.23[0]	2.26[0]
$3d^*5f^*7g^*$	5.18[-3]	4.41[-2]	1.83[-1]	2.81[-1]	4.49[-1]	5.10[-1]	5.75[-1]	6.39[-1]	6.93[-1]	7.34[-1]
$3d^*5f^*7g$	1.04[-2]	8.54[-2]	3.46[-1]	5.37[-1]	8.51[-1]	9.64[-1]	1.08[0]	1.20[0]	1.30[0]	1.37[0]
$3d^*5f7d^*$	1.82[-2]	7.89[-2]	1.75[-1]	2.26[-1]	2.76[-1]	2.89[-1]	3.02[-1]	3.13[-1]	3.21[-1]	3.26[-1]
$3d^*5f7f^*$	3.53[-2]	2.42[-1]	7.01[-1]	9.81[-1]	1.25[0]	1.31[0]	1.37[0]	1.42[0]	1.45[0]	1.47[0]
$3d^*5g^*7f^*$	2.96[-3]	1.87[-2]	6.17[-2]	9.57[-2]	1.43[-1]	1.59[-1]	1.78[-1]	1.97[-1]	2.13[-1]	2.24[-1]
$3d^*5g7f^*$	5.76[-3]	3.67[-2]	1.20[-1]	1.86[-1]	2.74[-1]	3.03[-1]	3.38[-1]	3.72[-1]	3.99[-1]	4.16[-1]
$3d^*6s6d^*$	5.87[-2]	7.17[-2]	7.85[-2]	8.09[-2]	8.44[-2]	8.61[-2]	8.88[-2]	9.30[-2]	9.88[-2]	1.06[-1]
$3d^*6s6f^*$	1.58[-2]	3.90[-2]	5.03[-2]	5.30[-2]	5.39[-2]	5.46[-2]	5.67[-2]	6.19[-2]	7.15[-2]	8.62[-2]
$3d^*6s6f$	4.30[-3]	7.74[-3]	7.74[-3]	9.57[-3]	1.23[-2]	1.30[-2]	1.38[-2]	1.46[-2]	1.53[-2]	1.59[-2]
$3d^*6p^*6d^*$	6.07[-2]	6.61[-2]	7.42[-2]	7.96[-2]	8.69[-2]	8.98[-2]	9.40[-2]	9.97[-2]	1.07[-1]	1.15[-1]
$3d^*6p^*6f^*$	3.12[-2]	4.46[-2]	3.26[-2]	2.73[-2]	2.82[-2]	3.02[-2]	3.32[-2]	3.68[-2]	4.05[-2]	4.53[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3d^*6p^*6g^*$	3.28[-3]	8.27[-3]	1.02[-2]	1.33[-2]	1.93[-2]	2.18[-2]	2.53[-2]	2.97[-2]	3.47[-2]	4.03[-2]
$3d^*6p^*6g$	3.64[-3]	9.70[-3]	1.25[-2]	1.37[-2]	1.44[-2]	1.47[-2]	1.55[-2]	1.73[-2]	2.03[-2]	2.50[-2]
$3d^*6p6d^*$	1.19[-1]	1.48[-1]	1.72[-1]	1.84[-1]	1.98[-1]	2.04[-1]	2.11[-1]	2.20[-1]	2.31[-1]	2.43[-1]
$3d^*6p6f^*$	3.54[-2]	5.85[-2]	4.08[-2]	3.03[-2]	2.84[-2]	3.08[-2]	3.49[-2]	3.92[-2]	4.13[-2]	4.03[-2]
$3d^*6p6g^*$	1.72[-3]	2.94[-3]	1.08[-2]	2.39[-2]	4.70[-2]	5.53[-2]	6.55[-2]	7.56[-2]	8.38[-2]	8.99[-2]
$3d^*6d^*6d^*$	1.09[-1]	1.46[-1]	1.71[-1]	1.83[-1]	1.96[-1]	2.00[-1]	2.06[-1]	2.14[-1]	2.23[-1]	2.34[-1]
$3d^*6d^*6d$	2.29[-1]	3.07[-1]	3.60[-1]	3.83[-1]	4.08[-1]	4.16[-1]	4.26[-1]	4.39[-1]	4.54[-1]	4.69[-1]
$3d^*6d^*6f^*$	2.53[-2]	6.30[-2]	1.71[-1]	2.58[-1]	3.63[-1]	3.93[-1]	4.27[-1]	4.58[-1]	4.80[-1]	4.93[-1]
$3d^*6d^*6f$	2.35[-2]	9.99[-2]	2.13[-1]	2.69[-1]	3.21[-1]	3.34[-1]	3.48[-1]	3.61[-1]	3.70[-1]	3.77[-1]
$3d^*6d^*6g^*$	2.48[-3]	1.04[-2]	2.54[-2]	3.66[-2]	5.17[-2]	5.67[-2]	6.28[-2]	6.91[-2]	7.43[-2]	7.81[-2]
$3d^*6d^*6g$	1.66[-3]	6.37[-3]	1.70[-2]	2.65[-2]	4.18[-2]	4.73[-2]	5.44[-2]	6.16[-2]	6.75[-2]	7.13[-2]
$3d^*6d6f^*$	9.92[-3]	1.97[-2]	1.79[-1]	3.24[-1]	5.06[-1]	5.60[-1]	6.22[-1]	6.82[-1]	7.31[-1]	7.70[-1]
$3d^*6d6f$	2.40[-3]	3.83[-3]	9.41[-3]	1.45[-2]	2.10[-2]	2.30[-2]	2.51[-2]	2.70[-2]	2.82[-2]	2.88[-2]
$3d^*6d6g^*$	2.31[-3]	9.23[-3]	1.93[-2]	2.47[-2]	2.93[-2]	3.02[-2]	3.09[-2]	3.11[-2]	3.07[-2]	3.00[-2]
$3d^*6f^*6f^*$	1.23[-2]	8.43[-2]	2.44[-1]	3.55[-1]	4.66[-1]	4.93[-1]	5.23[-1]	5.49[-1]	5.68[-1]	5.83[-1]
$3d^*6f^*6f$	3.93[-2]	2.62[-1]	7.16[-1]	1.02[0]	1.31[0]	1.38[0]	1.45[0]	1.51[0]	1.55[0]	1.58[0]
$3d^*6f^*6g^*$	3.15[-3]	3.31[-2]	9.84[-2]	1.60[-1]	2.39[-1]	2.65[-1]	2.97[-1]	3.30[-1]	3.55[-1]	3.74[-1]
$3d^*6f^*6g$	6.46[-3]	6.37[-2]	1.91[-1]	3.08[-1]	4.59[-1]	5.09[-1]	5.68[-1]	6.27[-1]	6.72[-1]	7.03[-1]
$3d^*6f6g^*$	2.17[-3]	1.35[-2]	4.29[-2]	6.76[-2]	1.06[-1]	1.20[-1]	1.39[-1]	1.58[-1]	1.76[-1]	1.90[-1]
$3d^*6s7d^*$	3.15[-2]	3.82[-2]	4.14[-2]	4.24[-2]	4.38[-2]	4.46[-2]	4.59[-2]	4.80[-2]	5.09[-2]	5.46[-2]
$3d^*6s7f^*$	1.03[-2]	2.31[-2]	2.85[-2]	2.90[-2]	2.83[-2]	2.84[-2]	2.92[-2]	3.17[-2]	3.64[-2]	4.38[-2]
$3d^*6p^*7d^*$	3.31[-2]	3.51[-2]	3.87[-2]	4.11[-2]	4.49[-2]	4.63[-2]	4.85[-2]	5.12[-2]	5.47[-2]	5.89[-2]
$3d^*6p^*7f^*$	2.03[-2]	2.62[-2]	1.85[-2]	1.49[-2]	1.53[-2]	1.65[-2]	1.82[-2]	2.01[-2]	2.17[-2]	2.36[-2]
$3d^*6p7d^*$	6.39[-2]	7.85[-2]	9.02[-2]	9.61[-2]	1.03[-1]	1.06[-1]	1.09[-1]	1.14[-1]	1.20[-1]	1.26[-1]
$3d^*6p7f^*$	2.26[-2]	3.39[-2]	2.21[-2]	1.57[-2]	1.58[-2]	1.76[-2]	2.05[-2]	2.36[-2]	2.54[-2]	2.54[-2]
$3d^*6d^*7s$	3.04[-2]	3.89[-2]	4.41[-2]	4.63[-2]	4.92[-2]	5.04[-2]	5.23[-2]	5.50[-2]	5.86[-2]	6.28[-2]
$3d^*6d^*7p^*$	3.18[-2]	3.69[-2]	4.32[-2]	4.68[-2]	5.18[-2]	5.37[-2]	5.65[-2]	6.01[-2]	6.43[-2]	6.91[-2]
$3d^*6d^*7p$	6.41[-2]	8.32[-2]	9.91[-2]	1.07[-1]	1.18[-1]	1.21[-1]	1.26[-1]	1.32[-1]	1.39[-1]	1.47[-1]
$3d^*6d^*7f^*$	1.62[-2]	4.18[-2]	1.11[-1]	1.62[-1]	2.20[-1]	2.36[-1]	2.53[-1]	2.69[-1]	2.81[-1]	2.88[-1]
$3d^*6d^*7f$	1.59[-2]	6.65[-2]	1.38[-1]	1.72[-1]	2.02[-1]	2.10[-1]	2.18[-1]	2.26[-1]	2.31[-1]	2.36[-1]
$3d^*6d7f^*$	5.68[-3]	1.46[-2]	1.14[-1]	1.98[-1]	2.96[-1]	3.23[-1]	3.54[-1]	3.84[-1]	4.08[-1]	4.28[-1]
$3d^*6f^*7s$	8.43[-3]	2.39[-2]	2.74[-2]	2.90[-2]	3.18[-2]	3.28[-2]	3.49[-2]	3.71[-2]	4.32[-2]	5.32[-2]
$3d^*6f^*7p^*$	1.62[-2]	2.52[-2]	1.69[-2]	1.46[-2]	1.71[-2]	1.86[-2]	2.09[-2]	2.28[-2]	2.52[-2]	2.88[-2]
$3d^*6f^*7p$	2.11[-2]	3.52[-2]	2.16[-2]	1.63[-2]	1.78[-2]	1.95[-2]	2.22[-2]	2.46[-2]	2.58[-2]	2.46[-2]
$3d^*6f^*7d^*$	1.41[-2]	3.28[-2]	9.29[-2]	1.44[-1]	2.04[-1]	2.22[-1]	2.41[-1]	2.58[-1]	2.71[-1]	2.78[-1]
$3d^*6f^*7d$	6.32[-3]	1.13[-2]	1.09[-1]	1.97[-1]	3.01[-1]	3.34[-1]	3.70[-1]	4.05[-1]	4.34[-1]	4.57[-1]
$3d^*6f^*7f^*$	1.57[-2]	1.03[-1]	3.02[-1]	4.22[-1]	5.42[-1]	5.74[-1]	6.05[-1]	6.27[-1]	6.48[-1]	6.66[-1]
$3d^*6f^*7f$	2.60[-2]	1.60[-1]	4.72[-1]	6.35[-1]	8.05[-1]	8.53[-1]	8.96[-1]	9.18[-1]	9.45[-1]	9.70[-1]
$3d^*6f^*7g$	5.16[-3]	4.48[-2]	1.43[-1]	2.13[-1]	3.29[-1]	3.68[-1]	4.14[-1]	4.45[-1]	4.78[-1]	5.06[-1]
$3d^*6f7d^*$	1.20[-2]	5.11[-2]	1.08[-1]	1.36[-1]	1.62[-1]	1.68[-1]	1.75[-1]	1.81[-1]	1.85[-1]	1.88[-1]
$3d^*6f7f^*$	2.40[-2]	1.58[-1]	4.12[-1]	5.71[-1]	7.09[-1]	7.40[-1]	7.71[-1]	7.96[-1]	8.13[-1]	8.24[-1]
$3d^*7s7d^*$	1.63[-2]	2.07[-2]	2.32[-2]	2.42[-2]	2.55[-2]	2.61[-2]	2.70[-2]	2.84[-2]	3.02[-2]	3.24[-2]
$3d^*7s7f^*$	5.15[-3]	1.45[-2]	1.52[-2]	1.62[-2]	1.68[-2]	1.69[-2]	1.76[-2]	1.92[-2]	2.21[-2]	2.68[-2]
$3d^*7p^*7d^*$	1.73[-2]	1.97[-2]	2.24[-2]	2.42[-2]	2.68[-2]	2.77[-2]	2.91[-2]	3.09[-2]	3.31[-2]	3.55[-2]
$3d^*7p^*7f^*$	1.03[-2]	1.49[-2]	9.38[-3]	8.22[-3]	9.38[-3]	1.00[-2]	1.12[-2]	1.25[-2]	1.35[-2]	1.48[-2]
$3d^*7p^*7g^*$	1.02[-3]	2.50[-3]	3.51[-3]	4.68[-3]	7.14[-3]	8.14[-3]	9.47[-3]	1.09[-2]	1.26[-2]	1.46[-2]
$3d^*7p7d^*$	3.44[-2]	4.42[-2]	5.21[-2]	5.63[-2]	6.13[-2]	6.30[-2]	6.54[-2]	6.85[-2]	7.21[-2]	7.60[-2]
$3d^*7p7f^*$	1.31[-2]	2.11[-2]	1.13[-2]	8.97[-3]	9.95[-3]	1.10[-2]	1.28[-2]	1.47[-2]	1.56[-2]	1.54[-2]
$3d^*7d^*7d^*$	3.41[-2]	4.55[-2]	5.34[-2]	5.70[-2]	6.10[-2]	6.24[-2]	6.43[-2]	6.68[-2]	6.97[-2]	7.29[-2]
$3d^*7d^*7d$	7.19[-2]	9.60[-2]	1.12[-1]	1.20[-1]	1.27[-1]	1.30[-1]	1.33[-1]	1.37[-1]	1.42[-1]	1.47[-1]
$3d^*7d^*7f^*$	9.00[-3]	2.18[-2]	6.05[-2]	8.94[-2]	1.22[-1]	1.32[-1]	1.42[-1]	1.51[-1]	1.57[-1]	1.62[-1]
$3d^*7d^*7f$	8.12[-3]	3.40[-2]	7.02[-2]	8.72[-2]	1.02[-1]	1.06[-1]	1.10[-1]	1.13[-1]	1.16[-1]	1.17[-1]
$3d^*7d7f^*$	3.67[-3]	7.79[-3]	7.02[-2]	1.18[-1]	1.75[-1]	1.93[-1]	2.12[-1]	2.27[-1]	2.43[-1]	2.57[-1]
$3d^*7f^*7f^*$	4.93[-3]	3.15[-2]	9.10[-2]	1.23[-1]	1.56[-1]	1.64[-1]	1.73[-1]	1.78[-1]	1.84[-1]	1.89[-1]
$3d^*7f^*7f$	1.57[-2]	9.68[-2]	2.68[-1]	3.50[-1]	4.35[-1]	4.57[-1]	4.78[-1]	4.87[-1]	4.98[-1]	5.10[-1]
$3d^*7f^*7g^*$	1.46[-3]	1.36[-2]	3.73[-2]	5.65[-2]	8.55[-2]	9.36[-2]	1.05[-1]	1.14[-1]	1.23[-1]	1.29[-1]
$3d^*7f^*7g$	3.00[-3]	2.64[-2]	7.34[-2]	1.11[-1]	1.65[-1]	1.81[-1]	2.01[-1]	2.18[-1]	2.32[-1]	2.42[-1]

TABLE IX. M_5 -shell Auger rates $A(n_0j_0l_0, n_1j_1l_1, n_2j_2l_2)$ (in mau) as function of Z for Zn-like ions.

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
$3d4p^*4f^*$	8.19[-2]	1.69[-1]	2.22[-1]	2.33[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d4p^*4f$	4.86[-1]	8.71[-1]	9.74[-1]	9.39[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d4p4f^*$	2.87[0]	2.41[0]	1.31[0]	7.71[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d4p4f$	4.63[0]	4.52[0]	2.95[0]	1.98[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d4d^*4d^*$	4.53[-2]	7.67[-2]	9.67[-2]	1.04[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d4d^*4d$	5.97[0]	8.70[0]	1.07[1]	1.17[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d4d^*4f^*$	3.51[-2]	5.87[-2]	1.37[-1]	2.55[-1]	4.73[-1]	5.53[-1]	6.58[-1]	0.00[0]	0.00[0]	0.00[0]
$3d4d^*4f$	1.96[-1]	2.46[-1]	1.45[0]	3.27[0]	6.52[0]	7.75[0]	9.28[0]	0.00[0]	0.00[0]	0.00[0]
$3d4d4d$	7.25[0]	1.05[1]	1.28[1]	1.39[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3d4d4f^*$	5.13[-1]	2.21[0]	5.55[0]	7.91[0]	1.11[1]	1.19[1]	1.31[1]	0.00[0]	0.00[0]	0.00[0]
$3d4d4f$	9.16[-1]	2.81[0]	7.12[0]	1.13[1]	1.75[1]	1.96[1]	2.24[1]	0.00[0]	0.00[0]	0.00[0]
$3d4f^*4f$	2.67[-1]	2.21[0]	9.16[0]	1.64[1]	2.23[1]	3.47[1]	3.87[1]	4.46[1]	5.03[1]	0.00[0]
$3d4f4f$	1.80[-1]	1.51[0]	6.38[0]	1.16[1]	1.02[1]	2.32[1]	2.75[1]	3.19[1]	3.54[1]	0.00[0]
$3d4p^*5d$	1.02[0]	1.05[0]	1.10[0]	1.12[0]	1.10[0]	1.18[0]	1.25[0]	1.34[0]	1.37[0]	1.47[0]
$3d4p5s$	1.15[0]	2.71[-1]	5.51[-2]	5.16[-2]	7.36[-2]	8.52[-2]	9.45[-2]	1.06[-1]	1.08[-1]	1.11[-1]
$3d4p5p$	2.15[0]	2.42[-1]	1.50[-1]	2.24[-1]	2.74[-1]	2.87[-1]	2.80[-1]	2.49[-1]	3.09[-1]	2.84[-1]
$3d4p5d^*$	1.43[0]	2.96[-1]	1.17[-1]	1.29[-1]	1.29[0]	1.42[-1]	1.65[-1]	2.05[-1]	1.98[-1]	2.16[-1]
$3d4p5d$	3.95[0]	2.20[0]	1.76[0]	1.96[0]	2.39[0]	2.09[0]	1.89[0]	6.60[0]	1.95[0]	2.25[0]
$3d4p5f^*$	1.41[0]	1.10[0]	4.34[-1]	1.82[-1]	5.15[-2]	4.14[-2]	4.32[-2]	5.92[-1]	2.43[-1]	1.19[-1]
$3d4p5f$	2.29[0]	2.03[0]	9.39[-1]	4.81[-1]	2.47[-1]	2.47[-1]	2.28[-1]	9.91[-2]	6.46[-1]	3.19[-1]
$3d4p5g$	6.20[-1]	7.13[-1]	6.78[-1]	6.30[-1]	5.94[-1]	5.53[-1]	1.06[0]	1.88[-1]	1.06[-1]	7.25[-1]
$3d4d^*5d$	1.69[0]	2.28[0]	2.66[0]	2.81[0]	2.98[0]	3.03[0]	3.11[0]	3.19[0]	6.17[-2]	3.24[0]
$3d4d^*5f$	8.69[-2]	1.30[-1]	9.34[-1]	1.79[0]	2.94[0]	3.29[0]	3.70[0]	4.07[0]	4.34[0]	4.13[0]
$3d4d5s$	1.22[0]	1.48[0]	1.65[0]	1.73[0]	1.76[0]	2.41[0]	1.96[0]	2.02[0]	2.48[0]	2.34[0]
$3d4d5p^*$	1.13[0]	1.48[0]	1.77[0]	1.92[0]	2.13[0]	2.17[0]	2.13[0]	1.96[0]	3.59[0]	2.82[0]
$3d4d5p$	2.39[0]	2.76[0]	3.20[0]	3.46[0]	3.80[0]	3.89[0]	3.77[0]	2.58[-1]	4.30[-1]	4.71[0]
$3d4d5d^*$	2.42[0]	3.56[0]	4.46[0]	4.91[0]	5.45[0]	5.62[0]	5.89[0]	6.12[0]	6.28[0]	7.59[0]
$3d4d5d$	5.02[0]	7.07[0]	8.57[0]	9.28[0]	1.01[1]	1.03[1]	1.07[1]	1.10[1]	1.12[1]	1.13[1]
$3d4d5f^*$	3.37[-1]	1.42[0]	3.31[0]	4.46[0]	5.74[0]	6.12[0]	6.59[0]	7.08[0]	7.54[0]	1.16[1]
$3d4d5f$	5.55[-1]	1.76[0]	4.39[0]	6.36[0]	8.80[0]	9.55[0]	1.04[1]	1.13[1]	1.20[1]	1.40[1]
$3d4d5g^*$	3.04[-2]	1.30[-1]	3.63[-1]	5.83[-1]	9.59[-1]	1.11[0]	1.31[0]	1.55[0]	1.78[0]	1.95[0]
$3d4d5g$	4.67[-2]	2.04[-1]	5.53[-1]	8.59[-1]	1.34[0]	1.53[0]	1.77[0]	2.04[0]	2.28[0]	2.32[0]
$3d4f^*5d$	1.12[-1]	4.62[-1]	1.14[0]	1.63[0]	2.25[0]	2.46[0]	2.70[0]	2.96[0]	3.20[0]	3.26[0]
$3d4f^*5f$	1.41[-1]	1.02[0]	3.59[0]	5.77[0]	8.65[0]	9.57[0]	1.07[1]	1.18[1]	1.27[1]	1.34[1]
$3d4f5s$	1.22[-1]	3.49[-1]	5.58[-1]	6.72[-1]	8.27[-1]	8.90[-1]	9.89[-1]	1.14[0]	1.33[-1]	1.63[0]
$3d4f5d^*$	6.89[-2]	6.53[-2]	5.19[-1]	1.23[0]	2.52[0]	3.00[0]	3.61[0]	4.22[0]	4.70[0]	5.26[0]
$3d4f5d$	2.36[-1]	5.85[-1]	1.65[0]	2.87[0]	4.94[0]	5.71[0]	6.71[0]	7.78[0]	8.72[0]	1.27[1]
$3d4f5f^*$	1.58[-1]	1.28[0]	4.76[0]	7.99[0]	1.27[1]	1.44[1]	1.64[1]	1.86[1]	2.05[1]	2.20[1]
$3d4f5f$	2.02[-1]	1.59[0]	5.95[0]	9.96[0]	1.57[1]	1.77[1]	2.01[1]	2.25[1]	2.46[1]	2.62[1]
$3d4f5g^*$	2.52[-2]	2.97[-1]	1.38[0]	2.73[0]	5.43[0]	6.59[0]	8.21[0]	1.01[1]	1.20[1]	1.36[1]
$3d4f5g$	2.29[-2]	2.77[-1]	1.30[0]	2.57[0]	5.10[0]	6.19[0]	7.69[0]	9.46[0]	1.11[1]	1.25[1]
$3d4p6d$	1.69[0]	9.55[-1]	7.95[-1]	7.97[-1]	8.09[-1]	8.15[-1]	8.27[-1]	8.44[-1]	8.69[-1]	8.97[-1]
$3d4p6f$	1.35[0]	1.12[0]	4.08[-1]	1.85[-1]	1.11[-1]	1.21[-1]	1.47[-1]	1.79[-1]	2.01[-1]	2.04[-1]
$3d4d^*6d$	7.45[-1]	9.81[-1]	1.12[0]	1.17[0]	1.22[0]	1.24[0]	1.26[0]	1.30[0]	1.34[0]	1.38[0]
$3d4d^*6f$	4.42[-2]	8.40[-2]	5.73[-1]	1.01[0]	1.52[0]	1.66[0]	1.82[0]	1.96[0]	2.06[0]	2.12[0]
$3d4d6s$	5.09[-1]	6.68[-1]	7.90[-1]	8.51[-1]	9.32[-1]	9.63[-1]	1.01[0]	1.07[0]	1.14[0]	1.22[0]
$3d4d6p^*$	5.07[-1]	7.09[-1]	8.80[-1]	9.76[-1]	1.10[0]	1.15[0]	1.21[0]	1.29[0]	1.39[0]	1.49[0]
$3d4d6p$	1.02[0]	1.33[0]	1.62[0]	1.78[0]	2.00[0]	2.08[0]	2.19[0]	2.32[0]	2.45[0]	2.58[0]
$3d4d6d^*$	1.23[0]	1.83[0]	2.32[0]	2.58[0]	2.88[0]	2.98[0]	3.11[0]	3.27[0]	3.45[0]	3.62[0]
$3d4d6d$	2.43[0]	3.42[0]	4.18[0]	4.55[0]	4.96[0]	5.10[0]	5.27[0]	5.47[0]	5.68[0]	5.88[0]
$3d4d6f^*$	2.15[-1]	9.01[-1]	2.01[0]	2.63[0]	3.29[0]	3.49[0]	3.73[0]	3.98[0]	4.23[0]	4.46[0]
$3d4d6f$	3.40[-1]	1.11[0]	2.68[0]	3.73[0]	4.92[0]	5.26[0]	5.66[0]	6.05[0]	6.38[0]	6.65[0]
$3d4d6g^*$	2.51[-2]	1.06[-1]	2.84[-1]	4.48[-1]	7.19[-1]	8.24[-1]	9.66[-1]	1.13[0]	1.29[0]	1.42[0]
$3d4d6g$	3.87[-2]	1.65[-1]	4.21[-1]	6.35[-1]	9.63[-1]	1.08[0]	1.24[0]	1.41[0]	1.57[0]	1.70[0]
$3d4f^*6d$	4.50[-2]	1.81[-1]	4.47[-1]	6.39[-1]	8.86[-1]	9.67[-1]	1.07[0]	1.17[0]	1.26[0]	1.34[0]
$3d4f^*6f$	8.07[-2]	5.40[-1]	1.76[0]	2.69[0]	3.80[0]	4.14[0]	4.52[0]	4.90[0]	5.22[0]	5.47[0]
$3d4f^*6g$	7.95[-3]	6.20[-2]	2.55[-1]	4.68[-1]	8.57[-1]	1.01[0]	1.23[0]	1.47[0]	1.69[0]	1.88[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3d4f6d^*$	4.06[-2]	2.93[-2]	2.56[-1]	6.27[-1]	1.29[0]	1.54[0]	1.85[0]	2.17[0]	2.41[0]	2.56[0]
$3d4f6d$	1.15[-1]	2.34[-1]	7.01[-1]	1.30[0]	2.33[0]	2.73[0]	3.24[0]	3.79[0]	4.28[0]	4.67[0]
$3d4f6f^*$	1.09[-1]	7.04[-1]	2.72[0]	4.42[0]	6.76[0]	7.57[0]	8.58[0]	9.63[0]	1.06[1]	1.13[1]
$3d4f6f$	1.31[-1]	8.67[-1]	3.26[0]	5.28[0]	8.01[0]	8.92[0]	1.00[1]	1.12[1]	1.22[1]	1.30[1]
$3d4f6g^*$	3.10[-2]	2.47[-1]	1.13[0]	2.14[0]	4.03[0]	4.81[0]	5.88[0]	7.14[0]	8.31[0]	9.30[0]
$3d4f6g$	2.91[-2]	2.33[-1]	1.07[0]	2.02[0]	3.81[0]	4.55[0]	5.55[0]	6.71[0]	7.79[0]	8.66[0]
$3d4f6h^*$	1.31[-3]	3.63[-2]	1.59[-1]	3.44[-1]	7.75[-1]	9.73[-1]	1.26[0]	1.63[0]	2.00[0]	2.33[0]
$3d4f6h$	1.32[-3]	3.73[-2]	1.61[-1]	3.51[-1]	7.95[-1]	9.99[-1]	1.29[0]	1.67[0]	2.04[0]	2.35[0]
$3d4s7p$	1.04[-1]	1.20[-1]	3.73[-2]	1.91[-2]	1.46[-2]	1.44[-2]	1.43[-2]	1.45[-2]	1.49[-2]	1.54[-2]
$3d4s7d$	3.04[-1]	3.07[-1]	2.81[-1]	2.61[-1]	2.40[-1]	2.36[-1]	2.35[-1]	2.40[-1]	2.53[-1]	2.75[-1]
$3d4s7f$	1.50[-1]	1.51[-1]	1.06[-1]	9.97[-2]	1.00[-1]	1.02[-1]	1.05[-1]	1.12[-1]	1.24[-1]	1.42[-1]
$3d4s7g$	5.80[-2]	1.07[-1]	1.15[-1]	1.13[-1]	1.04[-1]	1.03[-1]	1.03[-1]	1.07[-1]	1.14[-1]	1.25[-1]
$3d4p^*7d$	2.37[-1]	2.36[-1]	2.39[-1]	2.43[-1]	2.50[-1]	2.53[-1]	2.60[-1]	2.70[-1]	2.86[-1]	3.05[-1]
$3d4p^*7f$	9.60[-2]	1.11[-1]	6.53[-2]	4.35[-2]	3.66[-2]	3.82[-2]	4.19[-2]	4.70[-2]	5.33[-2]	6.38[-2]
$3d4p7s$	1.91[-1]	5.53[-2]	9.09[-3]	1.28[-2]	1.93[-2]	2.17[-2]	2.48[-2]	2.89[-2]	3.08[-2]	3.03[-2]
$3d4p7p^*$	1.59[-1]	3.85[-2]	2.08[-2]	2.80[-2]	3.22[-2]	3.34[-2]	3.50[-2]	3.86[-2]	4.08[-2]	4.13[-2]
$3d4p7p$	4.00[-1]	6.99[-2]	3.62[-2]	5.57[-2]	6.49[-2]	6.59[-2]	6.67[-2]	7.04[-2]	7.14[-2]	6.95[-2]
$3d4p7d^*$	3.57[-1]	8.06[-2]	3.15[-2]	3.42[-2]	3.71[-2]	3.84[-2]	4.10[-2]	4.64[-2]	5.05[-2]	5.26[-2]
$3d4p7d$	9.64[-1]	5.25[-1]	4.12[-1]	4.13[-1]	4.19[-1]	4.23[-1]	4.28[-1]	4.34[-1]	4.46[-1]	4.61[-1]
$3d4p7f^*$	5.15[-1]	3.36[-1]	1.19[-1]	3.74[-2]	8.12[-3]	9.90[-3]	1.69[-2]	2.56[-2]	3.47[-2]	4.26[-2]
$3d4p7f$	8.30[-1]	6.06[-1]	2.44[-1]	1.03[-1]	6.53[-2]	7.53[-2]	9.54[-2]	1.15[-1]	1.30[-1]	1.38[-1]
$3d4p7g^*$	2.11[-1]	2.87[-1]	2.44[-1]	1.88[-1]	1.56[-1]	1.44[-1]	1.32[-1]	1.18[-1]	1.14[-1]	1.17[-1]
$3d4p7g$	2.76[-1]	3.83[-1]	3.23[-1]	2.57[-1]	2.32[-1]	2.24[-1]	2.16[-1]	2.14[-1]	2.18[-1]	2.26[-1]
$3d4p7h$	5.46[-2]	1.21[-1]	9.65[-2]	9.96[-2]	1.12[-1]	1.12[-1]	1.12[-1]	1.07[-1]	1.09[-1]	1.18[-1]
$3d4d^*7d$	4.01[-1]	5.22[-1]	5.90[-1]	6.14[-1]	6.37[-1]	6.45[-1]	6.56[-1]	6.71[-1]	6.90[-1]	7.13[-1]
$3d4d7s$	2.63[-1]	3.63[-1]	4.44[-1]	4.87[-1]	5.42[-1]	5.63[-1]	5.92[-1]	6.30[-1]	6.74[-1]	7.21[-1]
$3d4d7p^*$	2.73[-1]	3.97[-1]	5.05[-1]	5.66[-1]	6.47[-1]	6.76[-1]	7.16[-1]	7.66[-1]	8.22[-1]	8.81[-1]
$3d4d7p$	5.43[-1]	7.45[-1]	9.34[-1]	1.04[0]	1.19[0]	1.24[0]	1.31[0]	1.39[0]	1.48[0]	1.56[0]
$3d4d7d^*$	7.14[-1]	1.07[0]	1.37[0]	1.53[0]	1.72[0]	1.78[0]	1.86[0]	1.96[0]	2.07[0]	2.18[0]
$3d4d7d$	1.37[0]	1.95[0]	2.40[0]	2.62[0]	2.87[0]	2.95[0]	3.06[0]	3.18[0]	3.31[0]	3.44[0]
$3d4d7f^*$	1.43[-1]	5.92[-1]	1.29[0]	1.66[0]	2.05[0]	2.17[0]	2.31[0]	2.46[0]	2.61[0]	2.75[0]
$3d4d7f$	2.21[-1]	7.30[-1]	1.72[0]	2.35[0]	3.02[0]	3.21[0]	3.42[0]	3.64[0]	3.82[0]	3.98[0]
$3d4f7p$	8.73[-2]	1.41[-1]	1.98[-1]	2.00[-1]	1.73[-1]	1.71[-1]	1.79[-1]	1.87[-1]	1.77[-1]	1.54[-1]
$3d4f7d$	6.02[-2]	1.13[-1]	3.81[-1]	7.10[-1]	1.33[0]	1.58[0]	1.89[0]	2.19[0]	2.48[0]	2.72[0]
$3d4f7f^*$	7.26[-2]	4.71[-1]	1.58[0]	2.58[0]	3.99[0]	4.52[0]	5.16[0]	5.64[0]	6.17[0]	6.73[0]
$3d4f7f$	8.54[-2]	5.59[-1]	1.89[0]	3.07[0]	4.65[0]	5.22[0]	5.92[0]	6.46[0]	7.03[0]	7.61[0]
$3d5s5p$	1.19[-1]	4.69[-2]	1.51[-2]	1.62[-2]	2.11[-2]	2.26[-2]	2.43[-2]	2.57[-2]	2.68[-2]	2.74[-2]
$3d5s5d^*$	1.97[-2]	2.72[-2]	2.49[-2]	2.20[-2]	1.86[-2]	1.77[-2]	1.70[-2]	1.67[-2]	1.74[-2]	1.89[-2]
$3d5s5d$	3.36[-1]	3.87[-1]	4.07[-1]	4.12[-1]	4.20[-1]	4.26[-1]	4.37[-1]	4.55[-1]	4.81[-1]	5.14[-1]
$3d5s5f^*$	1.93[-2]	3.81[-2]	3.72[-2]	4.13[-2]	5.01[-2]	5.32[-2]	5.72[-2]	6.19[-2]	6.72[-2]	7.35[-2]
$3d5s5f$	7.17[-2]	1.64[-1]	2.08[-1]	2.20[-1]	2.32[-1]	2.38[-1]	2.49[-1]	2.71[-1]	3.09[-1]	3.68[-1]
$3d5p^*5p$	5.62[-2]	2.10[-2]	3.35[-2]	3.83[-2]	4.01[-2]	4.01[-2]	4.04[-2]	4.12[-2]	4.30[-2]	4.57[-2]
$3d5p^*5d$	3.11[-1]	3.77[-1]	4.29[-1]	4.58[-1]	4.96[-1]	5.11[-1]	5.32[-1]	5.62[-1]	5.98[-1]	6.40[-1]
$3d5p^*5f$	7.21[-2]	1.26[-1]	1.19[-1]	1.03[-1]	9.27[-2]	9.41[-2]	9.94[-2]	1.11[-1]	1.31[-1]	1.67[-1]
$3d5p5p$	1.23[-1]	1.30[-2]	2.49[-2]	3.43[-2]	3.84[-2]	3.83[-2]	3.75[-2]	3.64[-2]	3.56[-2]	3.53[-2]
$3d5p5d^*$	9.26[-2]	3.25[-2]	3.14[-2]	3.77[-2]	4.82[-2]	5.23[-2]	5.75[-2]	6.32[-2]	6.82[-2]	7.21[-2]
$3d5p5d$	6.96[-1]	7.00[-1]	7.64[-1]	8.08[-1]	8.66[-1]	8.88[-1]	9.19[-1]	9.57[-1]	1.00[0]	1.05[0]
$3d5p5f^*$	1.25[-1]	1.36[-1]	7.03[-2]	3.71[-2]	2.18[-2]	2.29[-2]	2.75[-2]	3.46[-2]	4.12[-2]	4.54[-2]
$3d5p5f$	2.75[-1]	3.58[-1]	2.34[-1]	1.60[-1]	1.31[-1]	1.37[-1]	1.50[-1]	1.64[-1]	1.66[-1]	1.54[-1]
$3d5p5g^*$	1.54[-2]	3.71[-2]	5.17[-2]	5.84[-2]	6.63[-2]	6.93[-2]	7.36[-2]	7.90[-2]	8.50[-2]	9.09[-2]
$3d5p5g$	2.10[-2]	5.03[-2]	6.95[-2]	9.05[-2]	1.33[-1]	1.51[-1]	1.76[-1]	2.06[-1]	2.36[-1]	2.63[-1]
$3d5d^*5d$	6.89[-1]	9.37[-1]	1.11[0]	1.19[0]	1.28[0]	1.31[0]	1.35[0]	1.40[0]	1.46[0]	1.52[0]
$3d5d^*5f$	3.30[-2]	4.13[-2]	3.55[-1]	6.97[-1]	1.17[0]	1.31[0]	1.48[0]	1.64[0]	1.75[0]	1.82[0]
$3d5d5d$	8.39[-1]	1.13[0]	1.33[0]	1.41[0]	1.51[0]	1.54[0]	1.58[0]	1.62[0]	1.67[0]	1.72[0]
$3d5d5f^*$	7.56[-2]	3.07[-1]	7.05[-1]	9.43[-1]	1.20[0]	1.28[0]	1.37[0]	1.46[0]	1.55[0]	1.63[0]
$3d5d5f$	1.42[-1]	3.77[-1]	1.06[0]	1.66[0]	2.44[0]	2.69[0]	2.97[0]	3.26[0]	3.50[0]	3.68[0]
$3d5f^*5f$	8.11[-2]	6.16[-1]	1.98[0]	3.00[0]	4.19[0]	4.54[0]	4.93[0]	5.31[0]	5.63[0]	5.89[0]
$3d5f5f$	5.44[-2]	4.25[-1]	1.41[0]	2.16[0]	3.06[0]	3.32[0]	3.61[0]	3.88[0]	4.10[0]	4.26[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3d5f5g^*$	1.32[-2]	1.12[-1]	4.27[-1]	7.34[-1]	1.23[0]	1.41[0]	1.65[0]	1.91[0]	2.16[0]	2.36[0]
$3d5f5g$	1.21[-2]	1.04[-1]	3.98[-1]	6.83[-1]	1.14[0]	1.31[0]	1.52[0]	1.76[0]	1.97[0]	2.14[0]
$3d5s6d$	1.47[-1]	1.67[-1]	1.72[-1]	1.71[-1]	1.71[-1]	1.73[-1]	1.76[-1]	1.83[-1]	1.93[-1]	2.06[-1]
$3d5s6f$	4.28[-2]	8.71[-2]	9.82[-2]	9.85[-2]	9.74[-2]	9.77[-2]	9.99[-2]	1.06[-1]	1.19[-1]	1.40[-1]
$3d5p^*6d$	1.35[-1]	1.60[-1]	1.80[-1]	1.90[-1]	2.03[-1]	2.09[-1]	2.17[-1]	2.28[-1]	2.42[-1]	2.59[-1]
$3d5p6d$	3.17[-1]	2.98[-1]	3.17[-1]	3.32[-1]	3.52[-1]	3.60[-1]	3.71[-1]	3.84[-1]	4.01[-1]	4.18[-1]
$3d5p6f$	1.68[-1]	1.85[-1]	1.06[-1]	6.61[-2]	5.95[-2]	6.59[-2]	7.67[-2]	8.78[-2]	9.29[-2]	9.02[-2]
$3d5p6g$	2.44[-2]	4.17[-2]	5.57[-2]	6.88[-2]	9.36[-2]	1.03[-1]	1.16[-1]	1.30[-1]	1.44[-1]	1.56[-1]
$3d5d^*6d$	3.04[-1]	4.04[-1]	4.68[-1]	4.96[-1]	5.26[-1]	5.36[-1]	5.50[-1]	5.67[-1]	5.88[-1]	6.11[-1]
$3d5d^*6f$	1.77[-2]	2.83[-2]	2.20[-1]	3.95[-1]	6.06[-1]	6.66[-1]	7.33[-1]	7.92[-1]	8.34[-1]	8.58[-1]
$3d5d6s$	1.40[-1]	1.74[-1]	1.94[-1]	2.02[-1]	2.13[-1]	2.17[-1]	2.25[-1]	2.36[-1]	2.50[-1]	2.67[-1]
$3d5d6p^*$	1.40[-1]	1.81[-1]	2.15[-1]	2.33[-1]	2.57[-1]	2.66[-1]	2.79[-1]	2.95[-1]	3.15[-1]	3.37[-1]
$3d5d6p$	2.93[-1]	3.35[-1]	3.87[-1]	4.18[-1]	4.58[-1]	4.73[-1]	4.93[-1]	5.17[-1]	5.44[-1]	5.71[-1]
$3d5d6d^*$	3.52[-1]	4.83[-1]	5.80[-1]	6.26[-1]	6.78[-1]	6.96[-1]	7.20[-1]	7.49[-1]	7.81[-1]	8.15[-1]
$3d5d6d$	7.99[-1]	1.07[0]	1.25[0]	1.33[0]	1.42[0]	1.45[0]	1.49[0]	1.53[0]	1.58[0]	1.62[0]
$3d5d6f^*$	4.88[-2]	1.96[-1]	4.32[-1]	5.61[-1]	6.93[-1]	7.30[-1]	7.75[-1]	8.23[-1]	8.68[-1]	9.09[-1]
$3d5d6f$	8.71[-2]	2.42[-1]	6.58[-1]	9.72[-1]	1.34[0]	1.44[0]	1.56[0]	1.68[0]	1.78[0]	1.85[0]
$3d5d6g$	8.67[-3]	3.51[-2]	8.60[-2]	1.24[-1]	1.78[-1]	1.97[-1]	2.20[-1]	2.45[-1]	2.67[-1]	2.84[-1]
$3d5f^*6f$	4.71[-2]	3.31[-1]	9.92[-1]	1.43[0]	1.89[0]	2.01[0]	2.15[0]	2.28[0]	2.38[0]	2.47[0]
$3d5f6s$	2.74[-2]	7.57[-2]	1.03[-1]	1.14[-1]	1.25[-1]	1.29[-1]	1.36[-1]	1.49[-1]	1.71[-1]	2.04[-1]
$3d5f6p$	9.11[-2]	1.50[-1]	1.07[-1]	8.31[-2]	7.76[-2]	8.18[-2]	8.93[-2]	9.59[-2]	9.60[-2]	8.75[-2]
$3d5f6d^*$	1.59[-2]	1.79[-2]	1.82[-1]	3.57[-1]	6.01[-1]	6.77[-1]	7.65[-1]	8.48[-1]	9.07[-1]	9.39[-1]
$3d5f6d$	6.02[-2]	1.50[-1]	4.63[-1]	7.49[-1]	1.13[0]	1.26[0]	1.40[0]	1.55[0]	1.67[0]	1.76[0]
$3d5f6f^*$	5.77[-2]	3.72[-1]	1.14[0]	1.67[0]	2.29[0]	2.46[0]	2.65[0]	2.84[0]	2.99[0]	3.12[0]
$3d5f6f$	7.14[-2]	4.89[-1]	1.53[0]	2.26[0]	3.08[0]	3.31[0]	3.56[0]	3.78[0]	3.96[0]	4.10[0]
$3d5f6g^*$	1.16[-2]	1.10[-1]	3.48[-1]	5.93[-1]	9.74[-1]	1.11[0]	1.28[0]	1.47[0]	1.64[0]	1.78[0]
$3d5f6g$	1.06[-2]	1.03[-1]	3.24[-1]	5.52[-1]	9.06[-1]	1.03[0]	1.19[0]	1.35[0]	1.50[0]	1.62[0]
$3d5g^*6f$	7.65[-3]	5.36[-2]	1.85[-1]	2.98[-1]	4.63[-1]	5.21[-1]	5.96[-1]	6.77[-1]	7.50[-1]	8.12[-1]
$3d5s7d$	7.92[-2]	8.93[-2]	9.07[-2]	8.96[-2]	8.91[-2]	8.96[-2]	9.10[-2]	9.42[-2]	9.93[-2]	1.06[-1]
$3d5p^*7d$	7.24[-2]	8.50[-2]	9.45[-2]	9.95[-2]	1.06[-1]	1.09[-1]	1.12[-1]	1.18[-1]	1.25[-1]	1.34[-1]
$3d5p7d$	1.72[-1]	1.56[-1]	1.67[-1]	1.74[-1]	1.83[-1]	1.86[-1]	1.91[-1]	1.98[-1]	2.06[-1]	2.14[-1]
$3d5p7f$	1.08[-1]	1.14[-1]	5.50[-2]	3.43[-2]	3.40[-2]	3.90[-2]	4.66[-2]	5.39[-2]	5.78[-2]	5.74[-2]
$3d5d^*7d$	1.64[-1]	2.15[-1]	2.47[-1]	2.61[-1]	2.74[-1]	2.79[-1]	2.85[-1]	2.94[-1]	3.04[-1]	3.15[-1]
$3d5d^*7f$	1.05[-2]	1.97[-2]	1.41[-1]	2.42[-1]	3.54[-1]	3.85[-1]	4.18[-1]	4.47[-1]	4.67[-1]	4.78[-1]
$3d5d7s$	7.24[-2]	9.39[-2]	1.08[-1]	1.15[-1]	1.24[-1]	1.27[-1]	1.32[-1]	1.39[-1]	1.48[-1]	1.58[-1]
$3d5d7p^*$	7.53[-2]	1.02[-1]	1.24[-1]	1.36[-1]	1.51[-1]	1.57[-1]	1.65[-1]	1.75[-1]	1.87[-1]	2.00[-1]
$3d5d7p$	1.54[-1]	1.88[-1]	2.24[-1]	2.45[-1]	2.72[-1]	2.82[-1]	2.96[-1]	3.12[-1]	3.29[-1]	3.46[-1]
$3d5d7d^*$	2.04[-1]	2.83[-1]	3.43[-1]	3.72[-1]	4.05[-1]	4.16[-1]	4.31[-1]	4.50[-1]	4.70[-1]	4.91[-1]
$3d5d7d$	4.49[-1]	6.00[-1]	7.07[-1]	7.54[-1]	8.05[-1]	8.22[-1]	8.43[-1]	8.68[-1]	8.94[-1]	9.22[-1]
$3d5d7f^*$	3.25[-2]	1.30[-1]	2.78[-1]	3.56[-1]	4.32[-1]	4.54[-1]	4.80[-1]	5.08[-1]	5.35[-1]	5.61[-1]
$3d5d7f$	5.65[-2]	1.61[-1]	4.26[-1]	6.09[-1]	8.10[-1]	8.66[-1]	9.30[-1]	9.90[-1]	1.04[0]	1.08[0]
$3d5d7g^*$	3.64[-3]	1.37[-2]	3.47[-2]	5.31[-2]	8.22[-2]	9.32[-2]	1.08[-1]	1.24[-1]	1.40[-1]	1.54[-1]
$3d5d7g$	6.52[-3]	2.56[-2]	6.01[-2]	8.56[-2]	1.20[-1]	1.32[-1]	1.47[-1]	1.63[-1]	1.77[-1]	1.88[-1]
$3d5f^*7d$	1.55[-2]	6.21[-2]	1.43[-1]	1.92[-1]	2.44[-1]	2.59[-1]	2.76[-1]	2.95[-1]	3.12[-1]	3.26[-1]
$3d5f^*7f$	2.96[-2]	1.97[-1]	5.71[-1]	8.03[-1]	1.03[0]	1.09[0]	1.15[0]	1.20[0]	1.25[0]	1.29[0]
$3d5f^*7g$	2.85[-3]	1.96[-2]	6.79[-2]	1.10[-1]	1.75[-1]	1.99[-1]	2.29[-1]	2.61[-1]	2.90[-1]	3.12[-1]
$3d5f7s$	1.62[-2]	4.20[-2]	6.12[-2]	6.55[-2]	7.55[-2]	7.93[-2]	8.31[-2]	9.03[-2]	1.03[-1]	1.22[-1]
$3d5f7d^*$	9.56[-3]	1.13[-2]	1.02[-1]	2.14[-1]	3.54[-1]	3.96[-1]	4.46[-1]	5.03[-1]	5.38[-1]	5.53[-1]
$3d5f7d$	3.30[-2]	7.76[-2]	2.48[-1]	4.20[-1]	6.41[-1]	7.09[-1]	7.92[-1]	8.86[-1]	9.57[-1]	1.00[0]
$3d5f7f^*$	3.83[-2]	2.31[-1]	7.32[-1]	1.07[0]	1.40[0]	1.48[0]	1.58[0]	1.71[0]	1.79[0]	1.84[0]
$3d5f7f$	4.66[-2]	2.98[-1]	9.45[-1]	1.37[0]	1.81[0]	1.92[0]	2.04[0]	2.18[0]	2.27[0]	2.32[0]
$3d5f7g^*$	8.92[-3]	6.97[-2]	2.82[-1]	4.41[-1]	7.02[-1]	7.98[-1]	9.05[-1]	1.03[0]	1.14[0]	1.22[0]
$3d5f7g$	8.15[-3]	6.47[-2]	2.64[-1]	4.11[-1]	6.54[-1]	7.43[-1]	8.40[-1]	9.48[-1]	1.04[0]	1.10[0]
$3d6s6d$	6.13[-2]	7.47[-2]	8.13[-2]	8.35[-2]	8.66[-2]	8.81[-2]	9.06[-2]	9.47[-2]	1.00[-1]	1.07[-1]
$3d6s6f^*$	3.92[-3]	7.61[-3]	8.13[-3]	9.56[-3]	1.15[-2]	1.21[-2]	1.29[-2]	1.37[-2]	1.47[-2]	1.59[-2]
$3d6s6f$	1.67[-2]	4.00[-2]	5.01[-2]	5.26[-2]	5.32[-2]	5.36[-2]	5.51[-2]	5.89[-2]	6.65[-2]	7.84[-2]
$3d6p^*6d$	6.10[-2]	7.72[-2]	9.01[-2]	9.69[-2]	1.06[-1]	1.09[-1]	1.14[-1]	1.20[-1]	1.28[-1]	1.36[-1]
$3d6p^*6f$	1.71[-2]	3.18[-2]	2.73[-2]	2.30[-2]	2.09[-2]	2.14[-2]	2.28[-2]	2.52[-2]	2.87[-2]	3.48[-2]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3d6p6d^*$	1.35[-2]	5.74[-3]	6.64[-3]	8.28[-3]	1.10[-2]	1.19[-2]	1.32[-2]	1.45[-2]	1.56[-2]	1.64[-2]
$3d6p6d$	1.29[-1]	1.42[-1]	1.61[-1]	1.72[-1]	1.87[-1]	1.92[-1]	1.99[-1]	2.08[-1]	2.18[-1]	2.28[-1]
$3d6p6f^*$	2.39[-2]	2.65[-2]	1.26[-2]	6.34[-3]	4.53[-3]	5.24[-3]	6.72[-3]	8.70[-3]	1.04[-2]	1.14[-2]
$3d6p6f$	5.75[-2]	7.89[-2]	4.91[-2]	3.56[-2]	3.53[-2]	3.88[-2]	4.43[-2]	4.98[-2]	5.17[-2]	4.92[-2]
$3d6p6g$	5.47[-3]	1.28[-2]	1.86[-2]	2.75[-2]	4.34[-2]	4.94[-2]	5.73[-2]	6.60[-2]	7.43[-2]	8.18[-2]
$3d6d^*6d$	1.56[-1]	2.08[-1]	2.45[-1]	2.61[-1]	2.79[-1]	2.85[-1]	2.94[-1]	3.04[-1]	3.16[-1]	3.28[-1]
$3d6d^*6f^*$	1.44[-3]	1.95[-3]	8.50[-3]	1.51[-2]	2.36[-2]	2.61[-2]	2.89[-2]	3.13[-2]	3.28[-2]	3.34[-2]
$3d6d^*6f$	7.78[-3]	1.28[-2]	1.12[-1]	2.01[-1]	3.13[-1]	3.45[-1]	3.80[-1]	4.11[-1]	4.34[-1]	4.46[-1]
$3d6d6d$	1.89[-1]	2.50[-1]	2.92[-1]	3.10[-1]	3.29[-1]	3.35[-1]	3.43[-1]	3.52[-1]	3.62[-1]	3.72[-1]
$3d6d6f^*$	1.95[-2]	7.81[-2]	1.72[-1]	2.22[-1]	2.74[-1]	2.88[-1]	3.05[-1]	3.23[-1]	3.40[-1]	3.55[-1]
$3d6d6f$	3.53[-2]	9.64[-2]	2.87[-1]	4.35[-1]	6.14[-1]	6.67[-1]	7.28[-1]	7.85[-1]	8.33[-1]	8.71[-1]
$3d6d6g$	3.63[-3]	1.47[-2]	3.51[-2]	5.00[-2]	7.02[-2]	7.69[-2]	8.52[-2]	9.36[-2]	1.01[-1]	1.06[-1]
$3d6f^*6f$	3.25[-2]	2.10[-1]	5.71[-1]	8.09[-1]	1.05[0]	1.10[0]	1.17[0]	1.23[0]	1.28[0]	1.32[0]
$3d6f^*6g$	2.13[-3]	1.41[-2]	4.37[-2]	6.91[-2]	1.07[-1]	1.21[-1]	1.38[-1]	1.57[-1]	1.73[-1]	1.87[-1]
$3d6f6f$	2.21[-2]	1.46[-1]	4.11[-1]	5.92[-1]	7.72[-1]	8.17[-1]	8.65[-1]	9.07[-1]	9.40[-1]	9.67[-1]
$3d6f6g^*$	5.60[-3]	5.23[-2]	1.55[-1]	2.51[-1]	3.79[-1]	4.23[-1]	4.78[-1]	5.37[-1]	5.90[-1]	6.34[-1]
$3d6f6g$	5.09[-3]	4.88[-2]	1.44[-1]	2.33[-1]	3.52[-1]	3.92[-1]	4.42[-1]	4.94[-1]	5.38[-1]	5.73[-1]
$3d6s7d$	3.29[-2]	3.99[-2]	4.29[-2]	4.37[-2]	4.50[-2]	4.56[-2]	4.68[-2]	4.88[-2]	5.16[-2]	5.50[-2]
$3d6s7f$	1.08[-2]	2.36[-2]	2.83[-2]	2.87[-2]	2.79[-2]	2.78[-2]	2.82[-2]	2.98[-2]	3.33[-2]	3.90[-2]
$3d6p^*7d$	3.26[-2]	4.09[-2]	4.74[-2]	5.08[-2]	5.52[-2]	5.68[-2]	5.91[-2]	6.23[-2]	6.62[-2]	7.06[-2]
$3d6p^*7f$	1.09[-2]	1.85[-2]	1.48[-2]	1.18[-2]	1.06[-2]	1.09[-2]	1.16[-2]	1.27[-2]	1.42[-2]	1.67[-2]
$3d6p7d$	7.03[-2]	7.54[-2]	8.42[-2]	8.95[-2]	9.68[-2]	9.94[-2]	1.03[-1]	1.07[-1]	1.12[-1]	1.18[-1]
$3d6p7f$	3.72[-2]	4.62[-2]	2.72[-2]	1.90[-2]	1.99[-2]	2.25[-2]	2.63[-2]	3.00[-2]	3.17[-2]	3.09[-2]
$3d6p7g$	4.18[-3]	8.52[-3]	1.42[-2]	1.93[-2]	2.90[-2]	3.25[-2]	3.68[-2]	4.13[-2]	4.56[-2]	4.96[-2]
$3d6d^*7d$	8.39[-2]	1.11[-1]	1.29[-1]	1.37[-1]	1.46[-1]	1.49[-1]	1.52[-1]	1.57[-1]	1.63[-1]	1.69[-1]
$3d6d^*7f$	4.47[-3]	9.37[-3]	7.13[-2]	1.23[-1]	1.83[-1]	1.99[-1]	2.17[-1]	2.32[-1]	2.43[-1]	2.49[-1]
$3d6d7s$	3.16[-2]	4.04[-2]	4.55[-2]	4.76[-2]	5.03[-2]	5.14[-2]	5.32[-2]	5.58[-2]	5.92[-2]	6.31[-2]
$3d6d7p^*$	3.29[-2]	4.33[-2]	5.18[-2]	5.64[-2]	6.22[-2]	6.44[-2]	6.74[-2]	7.13[-2]	7.59[-2]	8.09[-2]
$3d6d7p$	6.79[-2]	7.98[-2]	9.32[-2]	1.01[-1]	1.11[-1]	1.15[-1]	1.20[-1]	1.26[-1]	1.32[-1]	1.39[-1]
$3d6d7d^*$	9.03[-2]	1.22[-1]	1.45[-1]	1.55[-1]	1.67[-1]	1.71[-1]	1.76[-1]	1.83[-1]	1.90[-1]	1.98[-1]
$3d6d7f^*$	1.30[-2]	5.20[-2]	1.11[-1]	1.41[-1]	1.71[-1]	1.79[-1]	1.89[-1]	1.99[-1]	2.09[-1]	2.18[-1]
$3d6d7f$	2.25[-2]	6.45[-2]	1.85[-1]	2.72[-1]	3.70[-1]	3.97[-1]	4.28[-1]	4.58[-1]	4.82[-1]	5.01[-1]
$3d6f^*7d$	1.01[-2]	4.01[-2]	8.82[-2]	1.14[-1]	1.40[-1]	1.48[-1]	1.56[-1]	1.65[-1]	1.73[-1]	1.81[-1]
$3d6f^*7f$	1.99[-2]	1.27[-1]	3.31[-1]	4.57[-1]	5.71[-1]	5.99[-1]	6.28[-1]	6.54[-1]	6.77[-1]	6.96[-1]
$3d6f7s$	8.97[-3]	2.42[-2]	2.74[-2]	2.88[-2]	3.15[-2]	3.24[-2]	3.40[-2]	3.55[-2]	4.03[-2]	4.87[-2]
$3d6f7p^*$	1.05[-2]	1.90[-2]	1.48[-2]	1.24[-2]	1.29[-2]	1.36[-2]	1.49[-2]	1.59[-2]	1.83[-2]	2.28[-2]
$3d6f7p$	3.05[-2]	4.44[-2]	2.56[-2]	1.91[-2]	2.19[-2]	2.43[-2]	2.80[-2]	3.07[-2]	3.18[-2]	3.00[-2]
$3d6f7d^*$	4.88[-3]	7.42[-3]	6.74[-2]	1.22[-1]	1.86[-1]	2.05[-1]	2.24[-1]	2.44[-1]	2.56[-1]	2.62[-1]
$3d6f7d$	1.95[-2]	5.04[-2]	1.57[-1]	2.44[-1]	3.46[-1]	3.77[-1]	4.11[-1]	4.45[-1]	4.72[-1]	4.92[-1]
$3d6f7f^*$	2.14[-2]	1.28[-1]	3.73[-1]	5.03[-1]	6.38[-1]	6.77[-1]	7.13[-1]	7.39[-1]	7.68[-1]	7.95[-1]
$3d6f7f$	2.81[-2]	1.77[-1]	5.09[-1]	7.04[-1]	8.96[-1]	9.47[-1]	9.96[-1]	1.03[0]	1.07[0]	1.09[0]
$3d6f7g^*$	4.43[-3]	3.64[-2]	1.17[-1]	1.74[-1]	2.71[-1]	3.06[-1]	3.47[-1]	3.79[-1]	4.16[-1]	4.51[-1]
$3d6f7g$	4.03[-3]	3.40[-2]	1.08[-1]	1.61[-1]	2.51[-1]	2.83[-1]	3.21[-1]	3.48[-1]	3.79[-1]	4.09[-1]
$3d7s7d$	1.70[-2]	2.15[-2]	2.40[-2]	2.49[-2]	2.61[-2]	2.66[-2]	2.75[-2]	2.88[-2]	3.05[-2]	3.25[-2]
$3d7s7f$	5.49[-3]	1.46[-2]	1.51[-2]	1.60[-2]	1.66[-2]	1.66[-2]	1.71[-2]	1.81[-2]	2.04[-2]	2.42[-2]
$3d7p^*7d$	1.76[-2]	2.30[-2]	2.73[-2]	2.96[-2]	3.25[-2]	3.35[-2]	3.50[-2]	3.70[-2]	3.93[-2]	4.19[-2]
$3d7p^*7f$	6.50[-3]	1.15[-2]	7.74[-3]	6.63[-3]	6.60[-3]	6.79[-3]	7.40[-3]	8.12[-3]	9.12[-3]	1.09[-2]
$3d7p7d$	3.68[-2]	4.24[-2]	4.87[-2]	5.26[-2]	5.76[-2]	5.94[-2]	6.19[-2]	6.48[-2]	6.80[-2]	7.13[-2]
$3d7p7f$	1.93[-2]	2.65[-2]	1.38[-2]	1.06[-2]	1.24[-2]	1.39[-2]	1.62[-2]	1.84[-2]	1.93[-2]	1.85[-2]
$3d7d^*7d$	4.87[-2]	6.51[-2]	7.65[-2]	8.16[-2]	8.71[-2]	8.90[-2]	9.15[-2]	9.47[-2]	9.83[-2]	1.02[-1]
$3d7d7d$	5.92[-2]	7.82[-2]	9.11[-2]	9.67[-2]	1.03[-1]	1.04[-1]	1.07[-1]	1.10[-1]	1.13[-1]	1.16[-1]
$3d7d7f^*$	6.74[-3]	2.66[-2]	5.71[-2]	7.26[-2]	8.76[-2]	9.18[-2]	9.67[-2]	1.02[-1]	1.07[-1]	1.11[-1]
$3d7d7f$	1.25[-2]	3.36[-2]	1.02[-1]	1.51[-1]	2.07[-1]	2.23[-1]	2.42[-1]	2.57[-1]	2.72[-1]	2.84[-1]
$3d7f^*7f$	1.30[-2]	7.76[-2]	2.13[-1]	2.79[-1]	3.47[-1]	3.66[-1]	3.84[-1]	3.94[-1]	4.08[-1]	4.23[-1]
$3d7f7f$	8.85[-3]	5.42[-2]	1.54[-1]	2.04[-1]	2.57[-1]	2.71[-1]	2.85[-1]	2.92[-1]	3.01[-1]	3.10[-1]
$3d7f7g^*$	2.57[-3]	2.14[-2]	6.01[-2]	9.01[-2]	1.36[-1]	1.50[-1]	1.69[-1]	1.86[-1]	2.02[-1]	2.17[-1]
$3d7f7g$	2.34[-3]	2.00[-2]	5.54[-2]	8.33[-2]	1.26[-1]	1.39[-1]	1.56[-1]	1.71[-1]	1.85[-1]	1.97[-1]

TABLE X. Coster-Kronig rates $A(n_0j_0l_0, n_1j_1l_1, n_2j_2l_2)$ (in mau) as function of Z for Cu-like ions.

	$Z=32$	$Z=36$	$Z=42$	$Z=47$	$Z=56$	$Z=60$	$Z=66$	$Z=74$	$Z=83$	$Z=92$
$2s2p^*4s$	2.34[0]	4.12[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*4p^*$	1.29[0]	2.65[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*4p$	1.76[0]	3.65[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*4d^*$	1.30[0]	2.07[0]	2.61[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*4d$	2.20[0]	3.59[0]	4.62[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*4f^*$	2.20[-2]	5.85[-1]	3.43[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*4f$	2.94[-2]	7.83[-1]	4.73[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p4s$	4.11[0]	6.93[0]	9.72[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p4p^*$	1.50[0]	2.99[0]	4.42[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p4p$	3.37[0]	6.53[0]	9.30[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p4d^*$	3.41[0]	6.20[0]	9.14[0]	1.12[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p4d$	4.87[0]	8.65[0]	1.24[1]	1.49[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p4f^*$	3.27[-2]	8.91[-1]	5.40[0]	1.05[1]	1.85[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p4f$	4.34[-2]	1.18[0]	7.12[0]	1.37[1]	2.40[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*4f^*$	1.62[0]	1.72[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*4f$	2.23[0]	2.41[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p4f^*$	3.01[0]	3.33[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p4f$	3.95[0]	4.32[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*4s$	1.01[1]	1.49[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*4p^*$	1.26[0]	2.44[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*4p$	1.21[0]	2.06[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*4d^*$	3.86[-1]	1.80[0]	4.28[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*4d$	2.40[-1]	1.48[0]	4.81[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*4f^*$	8.25[-2]	1.27[0]	4.60[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*4f$	1.28[-1]	1.79[0]	5.69[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d4s$	1.50[1]	2.22[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d4p^*$	6.33[-1]	9.63[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d4p$	2.85[0]	5.28[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d4d^*$	2.38[-1]	1.51[0]	4.93[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d4d$	6.74[-1]	3.34[0]	8.60[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d4f^*$	1.44[-1]	2.02[0]	6.52[0]	8.97[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d4f$	1.72[-1]	2.58[0]	9.01[0]	1.32[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*4p^*$	1.26[1]	2.07[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*4p$	1.94[1]	3.31[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*4d^*$	2.01[0]	5.14[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*4d$	1.90[0]	3.13[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*4f^*$	1.20[0]	1.62[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*4f$	1.89[0]	2.56[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d4p^*$	2.07[1]	3.08[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d4p$	2.02[0]	3.33[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d4d^*$	4.26[0]	3.56[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d4d$	3.68[-1]	9.56[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d4f^*$	5.68[-2]	6.21[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d4f$	5.21[-2]	5.41[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*4p^*$	1.52[0]	2.79[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*4p$	1.62[1]	2.44[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*4d^*$	4.21[-1]	1.32[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*4d$	2.56[0]	2.02[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*4f^*$	1.54[-1]	1.99[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*4f$	2.59[-1]	3.32[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d4p^*$	1.08[1]	1.88[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d4p$	2.96[1]	4.79[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d4d^*$	1.17[0]	1.97[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d4d$	3.66[0]	7.46[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d4f^*$	1.42[0]	1.90[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d4f$	1.69[0]	2.25[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$2s2p^*5s$	7.15[-1]	1.47[0]	2.32[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*5p^*$	4.37[-1]	9.81[-1]	1.63[0]	2.05[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*5p$	5.98[-1]	1.34[0]	2.22[0]	2.77[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*5d^*$	5.26[-1]	8.56[-1]	1.15[0]	1.34[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*5d$	8.96[-1]	1.51[0]	2.09[0]	2.42[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*5f^*$	1.82[-2]	4.10[-1]	1.92[0]	3.05[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*5f$	2.44[-2]	5.50[-1]	2.58[0]	4.12[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p5s$	1.26[0]	2.49[0]	3.78[0]	4.46[0]	4.93[0]	4.72[0]	5.33[0]	1.64[1]	5.18[0]	5.02[0]
$2s2p5p^*$	5.08[-1]	1.11[0]	1.74[0]	2.07[0]	2.03[0]	2.14[0]	2.53[0]	1.27[0]	2.29[0]	2.21[0]
$2s2p5p$	1.15[0]	2.46[0]	3.73[0]	4.29[0]	7.58[0]	3.40[0]	4.19[0]	4.04[0]	3.60[0]	3.18[0]
$2s2p5d^*$	1.40[0]	2.57[0]	3.90[0]	4.84[0]	6.37[0]	5.36[0]	6.94[0]	9.33[0]	1.08[1]	1.21[1]
$2s2p5d$	1.99[0]	3.55[0]	5.21[0]	6.32[0]	8.09[0]	8.67[0]	1.56[1]	1.14[1]	1.30[1]	1.43[1]
$2s2p5f^*$	2.66[-2]	6.62[-1]	3.34[0]	5.79[0]	9.08[0]	1.01[1]	1.13[1]	1.23[1]	1.28[1]	1.25[1]
$2s2p5f$	3.54[-2]	8.75[-1]	4.40[0]	7.58[0]	1.18[1]	1.31[1]	1.45[1]	1.57[1]	1.60[1]	1.53[1]
$2p^*2p5s$	2.14[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	5.35[-1]	5.65[-1]
$2p^*2p5p^*$	6.78[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	4.15[0]	4.67[0]
$2p^*2p5p$	2.61[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	1.39[0]	1.29[0]
$2p^*2p5d^*$	1.04[0]	2.27[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	6.80[0]	6.21[0]	6.67[0]
$2p^*2p5d$	4.82[-1]	9.28[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	2.06[0]	1.19[0]	1.77[0]
$3s3p^*5s$	3.97[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*5p^*$	2.92[0]	6.11[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*5p$	7.56[0]	1.35[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*5d^*$	8.77[-1]	4.13[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*5d$	5.94[-1]	4.30[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*5f^*$	1.07[0]	8.95[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*5f$	1.47[0]	1.27[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*5g^*$	9.88[-2]	2.58[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*5g$	1.24[-1]	3.23[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p5s$	7.34[0]	1.24[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p5p^*$	7.26[0]	1.29[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p5p$	1.21[1]	2.25[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p5d^*$	6.96[-1]	4.67[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p5d$	1.64[0]	8.57[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p5f^*$	2.06[0]	1.81[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p5f$	2.69[0]	2.33[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p5g^*$	1.85[-1]	4.36[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p5g$	2.31[-1]	5.44[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*5s$	2.37[0]	3.60[0]	4.17[0]	4.31[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*5p^*$	3.97[-1]	7.75[-1]	1.07[0]	1.20[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*5p$	3.59[-1]	6.05[-1]	7.89[-1]	9.06[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*5d^*$	1.90[-1]	8.28[-1]	1.74[0]	2.25[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*5d$	1.14[-1]	7.87[-1]	2.23[0]	3.23[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*5f^*$	6.35[-2]	7.90[-1]	2.18[0]	2.65[0]	3.46[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*5f$	9.92[-2]	1.12[0]	2.62[0]	3.07[0]	3.02[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d5s$	3.51[0]	5.34[0]	6.14[0]	6.32[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d5p^*$	1.83[-1]	2.69[-1]	3.02[-1]	3.25[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d5p$	8.84[-1]	1.63[0]	2.16[0]	2.39[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d5d^*$	1.14[-1]	8.04[-1]	2.28[0]	3.30[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d5d$	3.30[-1]	1.60[0]	3.67[0]	4.98[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d5f^*$	1.11[-1]	1.26[0]	3.00[0]	3.55[0]	3.55[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d5f$	1.33[-1]	1.61[0]	4.23[0]	5.53[0]	6.12[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*5s$	3.48[0]	6.51[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*5p^*$	3.68[0]	6.32[0]	8.46[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*5p$	6.37[0]	1.17[1]	1.59[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*5d^*$	8.13[-1]	2.19[0]	4.40[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*5d$	6.44[-1]	1.69[0]	4.90[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*5f^*$	8.50[-1]	9.78[0]	2.58[1]	3.28[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*5f$	1.35[0]	1.58[1]	4.27[1]	5.55[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3p^*3d^*5g^*$	4.42[-2]	1.71[0]	1.08[1]	2.19[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*5g$	5.73[-2]	2.21[0]	1.41[1]	2.81[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d5s$	4.56[-1]	7.06[-1]	9.22[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d5p^*$	5.48[0]	7.77[0]	8.44[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d5p$	6.24[-1]	1.06[0]	1.31[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d5d^*$	1.46[0]	9.13[-1]	3.07[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d5d$	1.53[-1]	3.95[-1]	6.65[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d5f^*$	4.33[-2]	4.42[-1]	1.49[0]	2.29[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d5f$	3.79[-2]	3.36[-1]	9.18[-1]	1.24[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*5s$	6.69[-1]	1.14[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*5p^*$	4.89[-1]	9.60[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*5p$	4.43[0]	6.52[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*5d^*$	1.81[-1]	5.67[-1]	1.10[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*5d$	8.64[-1]	5.69[-1]	5.66[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*5f^*$	1.11[-1]	1.18[0]	3.04[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*5f$	1.90[-1]	2.05[0]	5.62[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d5s$	3.51[0]	6.50[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d5p^*$	3.47[0]	6.53[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d5p$	8.73[0]	1.47[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d5d^*$	3.93[-1]	1.04[0]	3.22[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d5d$	1.39[0]	3.19[0]	6.72[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d5f^*$	1.03[0]	1.15[1]	3.08[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d5f$	1.22[0]	1.35[1]	3.54[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d5g^*$	4.54[-2]	1.83[0]	1.17[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d5g$	5.53[-2]	2.23[0]	1.43[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*6s$	3.14[-1]	6.96[-1]	1.18[0]	1.52[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*6p^*$	2.03[-1]	4.74[-1]	8.18[-1]	1.03[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*6p$	2.77[-1]	6.48[-1]	1.11[0]	1.41[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*6d^*$	2.72[-1]	4.48[-1]	6.18[-1]	6.85[-1]	8.73[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*6d$	4.64[-1]	7.95[-1]	1.13[0]	1.29[0]	1.57[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*6f^*$	1.22[-2]	2.69[-1]	1.10[0]	1.67[0]	2.07[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*6f$	1.63[-2]	3.60[-1]	1.49[0]	2.18[0]	2.82[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p6s$	5.54[-1]	1.19[0]	1.87[0]	2.25[0]	2.62[0]	2.70[0]	2.76[0]	2.76[0]	2.71[0]	2.63[0]
$2s2p6p^*$	2.38[-1]	5.46[-1]	8.73[-1]	1.06[0]	1.23[0]	1.26[0]	1.28[0]	1.27[0]	1.24[0]	1.20[0]
$2s2p6p$	5.41[-1]	1.22[0]	1.88[0]	2.22[0]	2.43[0]	2.43[0]	2.37[0]	2.21[0]	2.00[0]	1.78[0]
$2s2p6d^*$	7.10[-1]	1.32[0]	2.06[0]	2.57[0]	3.39[0]	3.74[0]	4.26[0]	4.94[0]	5.70[0]	6.41[0]
$2s2p6d$	1.01[0]	1.82[0]	2.74[0]	3.33[0]	4.27[0]	4.66[0]	5.24[0]	6.00[0]	6.82[0]	7.55[0]
$2s2p6f^*$	1.97[-2]	4.41[-1]	2.05[0]	3.38[0]	5.04[0]	5.59[0]	6.23[0]	6.81[0]	7.14[0]	7.11[0]
$2s2p6f$	2.61[-2]	5.82[-1]	2.70[0]	4.42[0]	6.54[0]	7.21[0]	7.97[0]	8.62[0]	8.90[0]	8.68[0]
$2p^*2p6s$	9.15[-2]	1.70[-1]	0.00[0]	0.00[0]	0.00[0]	2.86[-1]	2.86[-1]	2.03[-1]	2.72[-1]	2.58[-1]
$2p^*2p6p^*$	3.17[-1]	7.01[-1]	1.11[0]	0.00[0]	1.64[0]	1.74[0]	1.88[0]	2.47[0]	2.21[0]	2.37[0]
$2p^*2p6p$	1.22[-1]	2.65[-1]	4.26[-1]	0.00[0]	6.53[-1]	6.93[-1]	7.35[-1]	4.11[-1]	7.54[-1]	7.04[-1]
$2p^*2p6d^*$	5.35[-1]	1.19[0]	2.04[0]	2.56[0]	3.16[0]	3.32[0]	3.55[0]	5.13[0]	3.65[0]	3.58[0]
$2p^*2p6d$	2.47[-1]	4.83[-1]	7.49[-1]	9.01[-1]	1.06[0]	1.10[0]	1.13[0]	6.83[-1]	1.06[0]	9.70[-1]
$3s3p^*6s$	1.66[0]	3.18[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*6p^*$	1.30[0]	2.95[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*6p$	3.30[0]	6.36[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*6d^*$	4.56[-1]	2.20[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*6d$	3.12[-1]	2.36[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*6f^*$	7.37[-1]	4.98[0]	8.68[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*6f$	1.02[0]	7.14[0]	1.30[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*6g^*$	8.11[-2]	2.07[0]	7.50[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*6g$	1.01[-1]	2.60[0]	9.50[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p6s$	3.12[0]	5.69[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p6p^*$	3.19[0]	6.05[0]	8.33[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p6p$	5.40[0]	1.07[1]	1.50[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p6d^*$	3.79[-1]	2.51[0]	5.15[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p6d$	8.90[-1]	4.55[0]	8.50[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3s3p6f^*$	1.37[0]	1.07[1]	2.02[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p6f$	1.79[0]	1.36[1]	2.52[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p6g^*$	1.26[-1]	3.73[0]	1.43[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p6g$	1.58[-1]	4.65[0]	1.77[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*6s$	9.53[-1]	1.48[0]	1.70[0]	1.76[0]	1.78[0]	1.81[0]	1.83[0]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*6p^*$	1.79[-1]	3.55[-1]	4.95[-1]	5.63[-1]	6.34[-1]	6.76[-1]	7.11[-1]	0.00[0]	0.00[0]	0.00[0]
$3s3d^*6p$	1.59[-1]	2.70[-1]	3.64[-1]	4.32[-1]	5.55[-1]	6.08[-1]	6.95[-1]	0.00[0]	0.00[0]	1.27[0]
$3s3d^*6d^*$	1.05[-1]	4.44[-1]	9.02[-1]	1.14[0]	1.50[0]	1.44[0]	1.51[0]	1.56[0]	1.61[0]	1.63[0]
$3s3d^*6d$	6.37[-2]	4.50[-1]	1.22[0]	1.74[0]	2.67[0]	2.52[0]	2.72[0]	2.87[0]	2.92[0]	2.84[0]
$3s3d^*6f^*$	4.29[-2]	4.85[-1]	1.19[0]	1.49[0]	2.78[0]	1.95[0]	2.02[0]	2.12[0]	2.16[0]	2.12[0]
$3s3d^*6f$	6.73[-2]	6.86[-1]	1.41[0]	1.52[0]	3.79[0]	1.56[0]	1.60[0]	1.64[0]	1.65[0]	1.63[0]
$3s3d6s$	1.41[0]	2.19[0]	2.51[0]	2.57[0]	2.56[0]	2.58[0]	2.59[0]	0.00[0]	0.00[0]	2.64[0]
$3s3d6p^*$	7.98[-2]	1.18[-1]	1.43[-1]	1.67[-1]	2.27[-1]	2.33[-1]	2.60[-1]	2.90[-1]	3.17[-1]	3.37[-1]
$3s3d6p$	3.96[-1]	7.41[-1]	9.96[-1]	1.12[0]	1.22[0]	1.33[0]	1.40[0]	1.47[0]	1.54[0]	1.63[0]
$3s3d6d^*$	6.42[-2]	4.59[-1]	1.25[0]	1.79[0]	2.41[0]	2.63[0]	2.88[0]	3.07[0]	3.19[0]	3.17[0]
$3s3d6d$	1.83[-1]	8.73[-1]	1.93[0]	2.55[0]	2.84[0]	3.37[0]	3.58[0]	3.73[0]	3.77[0]	3.68[0]
$3s3d6f^*$	7.53[-2]	7.75[-1]	1.61[0]	1.77[0]	3.95[0]	1.86[0]	1.89[0]	1.95[0]	1.95[0]	1.95[0]
$3s3d6f$	9.00[-2]	9.87[-1]	2.30[0]	2.77[0]	2.02[0]	3.31[0]	3.39[0]	3.47[0]	3.45[0]	3.27[0]
$3p^*3d^*6s$	1.49[0]	3.11[0]	4.57[0]	5.67[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*6p^*$	1.61[0]	2.91[0]	3.82[0]	4.62[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*6p$	2.86[0]	5.64[0]	7.76[0]	8.83[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*6d^*$	3.93[-1]	1.20[0]	2.32[0]	3.24[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*6d$	2.82[-1]	1.05[0]	2.71[0]	4.09[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*6f^*$	6.26[-1]	5.71[0]	1.40[1]	1.66[1]	1.71[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*6f$	9.96[-1]	9.34[0]	2.37[1]	2.86[1]	3.02[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*6g^*$	5.32[-2]	1.36[0]	7.70[0]	1.41[1]	2.22[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d^*6g$	6.89[-2]	1.77[0]	1.00[1]	1.83[1]	2.90[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d6s$	1.87[-1]	3.02[-1]	3.88[-1]	4.44[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d6p^*$	2.32[0]	3.25[0]	3.25[0]	3.48[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d6p$	2.81[-1]	4.90[-1]	6.08[-1]	6.49[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d6d^*$	6.87[-1]	3.74[-1]	1.14[-1]	1.04[-1]	1.97[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d6d$	7.88[-2]	2.06[-1]	3.47[-1]	4.17[-1]	4.86[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p^*3d6f^*$	2.96[-2]	2.93[-1]	9.45[-1]	1.42[0]	1.95[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	2.77[0]
$3p^*3d6f$	2.53[-2]	2.09[-1]	5.32[-1]	6.95[-1]	8.11[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	1.02[0]
$3p3d^*6s$	2.82[-1]	5.18[-1]	7.49[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*6p^*$	2.22[-1]	4.54[-1]	6.75[-1]	8.09[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*6p$	1.90[0]	2.80[0]	3.20[0]	3.36[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*6d^*$	9.16[-2]	3.01[-1]	5.70[-1]	7.53[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*6d$	4.01[-1]	2.52[-1]	2.93[-1]	5.09[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*6f^*$	7.88[-2]	6.95[-1]	1.64[0]	1.86[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*6f$	1.35[-1]	1.24[0]	3.32[0]	3.78[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*6g$	1.03[-2]	2.17[-1]	1.30[0]	2.24[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d6s$	1.50[0]	3.06[0]	4.67[0]	5.76[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d6p^*$	1.57[0]	3.08[0]	4.53[0]	5.48[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d6p$	3.85[0]	6.71[0]	8.97[0]	1.02[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d6d^*$	1.65[-1]	6.18[-1]	1.77[0]	2.82[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d6d$	6.61[-1]	1.71[0]	3.40[0]	5.20[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d6f^*$	7.45[-1]	6.84[0]	1.68[1]	1.94[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d6f$	8.81[-1]	7.95[0]	1.91[1]	2.18[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d6g^*$	6.47[-2]	1.41[0]	8.34[0]	1.50[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d6g$	7.89[-2]	1.71[0]	1.01[1]	1.81[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*7s$	1.65[-1]	3.87[-1]	6.58[-1]	8.62[-1]	1.13[0]	1.25[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*7p^*$	1.10[-1]	2.70[-1]	4.56[-1]	5.99[-1]	7.73[-1]	8.68[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*7p$	1.51[-1]	3.70[-1]	6.16[-1]	8.09[-1]	1.01[0]	1.13[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*7d^*$	1.57[-1]	2.58[-1]	3.71[-1]	4.29[-1]	5.31[-1]	5.67[-1]	6.23[-1]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*7d$	2.69[-1]	4.60[-1]	6.88[-1]	7.98[-1]	9.39[-1]	1.01[0]	1.06[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p^*7f$	1.13[-2]	2.44[-1]	9.50[-1]	1.41[0]	1.58[0]	1.68[0]	1.62[0]	0.00[0]	0.00[0]	0.00[0]
$2s2p7s$	2.93[-1]	6.53[-1]	1.08[0]	1.32[0]	1.53[0]	1.59[0]	1.63[0]	1.62[0]	1.60[0]	1.54[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$2s2p7p^*$	1.30[-1]	3.03[-1]	5.17[-1]	6.31[-1]	7.19[-1]	7.50[-1]	7.71[-1]	7.54[-1]	7.45[-1]	7.15[-1]
$2s2p7p$	2.96[-1]	6.79[-1]	1.12[0]	1.33[0]	1.44[0]	1.46[0]	1.44[0]	1.33[0]	1.23[0]	1.09[0]
$2s2p7d^*$	4.15[-1]	7.90[-1]	1.21[0]	1.53[0]	2.04[0]	2.24[0]	2.54[0]	2.96[0]	3.41[0]	3.85[0]
$2s2p7d$	5.88[-1]	1.08[0]	1.60[0]	1.97[0]	2.55[0]	2.77[0]	3.11[0]	3.57[0]	4.06[0]	4.52[0]
$2s2p7f^*$	1.40[-2]	2.95[-1]	1.32[0]	2.05[0]	3.12[0]	3.43[0]	3.80[0]	4.15[0]	4.37[0]	4.39[0]
$2s2p7f$	1.85[-2]	3.90[-1]	1.74[0]	2.67[0]	4.03[0]	4.42[0]	4.85[0]	5.25[0]	5.44[0]	5.36[0]
$2p^*2p7s$	4.76[-2]	9.22[-2]	1.32[-1]	1.49[-1]	1.74[-1]	1.68[-1]	1.71[-1]	1.63[-1]	1.58[-1]	1.51[-1]
$2p^*2p7p^*$	1.74[-1]	3.98[-1]	6.38[-1]	7.76[-1]	8.97[-1]	1.10[0]	9.46[-1]	1.19[0]	1.29[0]	1.38[0]
$2p^*2p7p$	6.67[-2]	1.50[-1]	2.48[-1]	3.10[-1]	3.96[-1]	4.12[-1]	5.74[-1]	4.60[-1]	4.55[-1]	4.26[-1]
$2p^*2p7d^*$	3.13[-1]	7.07[-1]	1.22[0]	1.53[0]	1.38[0]	2.39[0]	1.30[0]	2.17[0]	2.19[0]	2.15[0]
$2p^*2p7d$	1.44[-1]	2.85[-1]	4.44[-1]	5.37[-1]	5.34[-1]	6.44[-1]	6.94[-1]	6.76[-1]	6.45[-1]	5.92[-1]
$3s3p^*7s$	8.76[-1]	1.76[0]	2.39[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*7p^*$	7.33[-1]	1.65[0]	2.38[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*7p$	1.85[0]	3.48[0]	4.53[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*7d^*$	2.86[-1]	1.26[0]	1.99[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*7d$	2.02[-1]	1.35[0]	2.48[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*7f^*$	4.94[-1]	3.06[0]	5.24[0]	5.35[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*7f$	6.84[-1]	4.41[0]	7.97[0]	8.40[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*7g^*$	6.46[-2]	1.25[0]	4.58[0]	7.30[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p^*7g$	8.06[-2]	1.57[0]	5.80[0]	9.33[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p7s$	1.58[0]	3.30[0]	4.40[0]	4.86[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p7p^*$	1.75[0]	3.47[0]	4.50[0]	4.89[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p7p$	2.96[0]	6.24[0]	8.19[0]	8.73[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3s3p7d^*$	2.40[-1]	1.58[0]	2.88[0]	3.29[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	2.97[0]
$3s3p7d$	5.53[-1]	2.84[0]	4.78[0]	5.33[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	6.01[0]
$3s3p7f^*$	9.15[-1]	6.45[0]	1.19[1]	1.33[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	1.57[1]
$3s3p7f$	1.19[0]	8.24[0]	1.47[1]	1.63[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	1.86[1]
$3s3p7g^*$	1.04[-1]	2.34[0]	8.17[0]	1.31[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	2.51[1]
$3s3p7g$	1.30[-1]	2.91[0]	1.01[1]	1.60[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	2.92[1]
$3s3d^*7s$	4.83[-1]	7.63[-1]	8.81[-1]	9.08[-1]	2.20[-1]	8.63[-1]	9.42[-1]	9.70[-1]	9.78[-1]	1.04[0]
$3s3d^*7p^*$	9.66[-2]	1.95[-1]	2.73[-1]	3.13[-1]	3.67[-1]	3.14[-1]	4.17[-1]	4.18[-1]	4.25[-1]	4.59[-1]
$3s3d^*7p$	8.47[-2]	1.47[-1]	2.02[-1]	2.45[-1]	3.22[-1]	3.95[-1]	4.05[-1]	4.91[-1]	5.78[-1]	7.23[-1]
$3s3d^*7d^*$	6.32[-2]	2.65[-1]	5.30[-1]	6.66[-1]	8.00[-1]	7.99[-1]	8.63[-1]	8.85[-1]	9.14[-1]	9.49[-1]
$3s3d^*7d$	3.89[-2]	2.77[-1]	7.42[-1]	1.05[0]	1.42[0]	1.48[0]	1.67[0]	1.66[0]	1.71[0]	1.72[0]
$3s3d^*7f^*$	2.94[-2]	3.12[-1]	7.27[-1]	8.84[-1]	1.07[0]	1.33[0]	1.19[0]	1.23[0]	1.31[0]	1.26[0]
$3s3d^*7f$	4.62[-2]	4.41[-1]	8.50[-1]	8.87[-1]	9.11[-1]	1.29[0]	1.03[0]	1.01[0]	1.10[0]	9.69[-1]
$3s3d7s$	7.16[-1]	1.13[0]	1.30[0]	1.33[0]	1.33[0]	1.07[0]	1.35[0]	1.35[0]	1.30[0]	1.37[0]
$3s3d7p^*$	4.24[-2]	6.38[-2]	8.13[-2]	9.90[-2]	1.34[-1]	3.86[-1]	1.65[-1]	1.83[-1]	2.06[-1]	2.19[-1]
$3s3d7p$	2.13[-1]	4.06[-1]	5.50[-1]	6.25[-1]	7.31[-1]	9.84[-1]	8.23[-1]	8.75[-1]	8.75[-1]	9.49[-1]
$3s3d7d^*$	3.93[-2]	2.83[-1]	7.59[-1]	1.08[0]	1.47[0]	1.20[0]	1.82[0]	3.06[0]	1.95[0]	1.97[0]
$3s3d7d$	1.11[-1]	5.26[-1]	1.15[0]	1.51[0]	1.89[0]	2.40[0]	2.19[0]	2.18[0]	1.69[0]	2.23[0]
$3s3d7f^*$	5.17[-2]	4.98[-1]	9.74[-1]	1.03[0]	1.07[0]	9.80[-1]	9.50[-1]	1.26[0]	7.45[-1]	1.21[0]
$3s3d7f$	6.17[-2]	6.35[-1]	1.40[0]	1.63[0]	1.86[0]	2.21[0]	2.15[0]	2.44[0]	1.48[0]	1.91[0]
$3p^*3d^*7s$	8.49[-1]	1.58[0]	2.78[0]	3.51[0]	3.96[0]	4.25[0]	4.51[0]	0.00[0]	0.00[0]	4.84[0]
$3p^*3d^*7p^*$	8.79[-1]	1.52[0]	2.30[0]	2.83[0]	3.08[0]	3.29[0]	3.48[0]	0.00[0]	3.64[0]	3.80[0]
$3p^*3d^*7p$	1.64[0]	2.94[0]	4.65[0]	5.52[0]	5.60[0]	5.81[0]	5.80[0]	5.28[0]	4.57[0]	3.97[0]
$3p^*3d^*7d^*$	2.35[-1]	6.31[-1]	1.46[0]	2.17[0]	2.66[0]	2.96[0]	3.23[0]	3.24[0]	3.21[0]	3.21[0]
$3p^*3d^*7d$	1.63[-1]	5.55[-1]	1.77[0]	2.81[0]	3.56[0]	3.95[0]	4.34[0]	4.38[0]	4.48[0]	4.79[0]
$3p^*3d^*7f^*$	4.33[-1]	3.81[0]	8.40[0]	9.10[0]	9.65[0]	9.56[0]	9.43[0]	9.66[0]	1.00[1]	1.03[1]
$3p^*3d^*7f$	6.91[-1]	6.27[0]	1.43[1]	1.57[1]	1.77[1]	1.71[1]	1.69[1]	1.74[1]	1.81[1]	1.87[1]
$3p^*3d^*7g^*$	4.21[-2]	1.06[0]	5.67[0]	9.08[0]	1.38[1]	1.47[1]	1.56[1]	1.70[1]	1.76[1]	1.75[1]
$3p^*3d^*7g$	5.46[-2]	1.37[0]	7.38[0]	1.16[1]	1.74[1]	1.96[1]	2.08[1]	2.26[1]	2.35[1]	2.35[1]
$3p^*3d7s$	9.58[-2]	1.59[-1]	2.10[-1]	2.35[-1]	2.64[-1]	2.72[-1]	2.80[-1]	2.85[-1]	2.87[-1]	2.83[-1]
$3p^*3d7p^*$	1.21[0]	1.70[0]	1.81[0]	1.84[0]	1.76[0]	1.77[0]	1.76[0]	1.76[0]	1.78[0]	1.77[0]
$3p^*3d7p$	1.51[-1]	2.69[-1]	3.41[-1]	3.62[-1]	3.78[-1]	3.76[-1]	3.74[-1]	3.65[-1]	3.51[-1]	3.29[-1]
$3p^*3d7d^*$	3.81[-1]	1.92[-1]	5.87[-2]	6.53[-2]	1.33[-1]	1.59[-1]	1.80[-1]	1.81[-1]	1.55[-1]	1.16[-1]
$3p^*3d7d$	4.61[-2]	1.21[-1]	2.05[-1]	2.44[-1]	2.84[-1]	2.96[-1]	3.06[-1]	3.11[-1]	3.14[-1]	3.14[-1]
$3p^*3d7f^*$	2.03[-2]	1.98[-1]	6.20[-1]	9.07[-1]	1.07[0]	1.28[0]	1.37[0]	1.46[0]	1.56[0]	1.61[0]

	$Z = 32$	$Z = 36$	$Z = 42$	$Z = 47$	$Z = 56$	$Z = 60$	$Z = 66$	$Z = 74$	$Z = 83$	$Z = 92$
$3p^*3d7f$	1.71[-2]	1.36[-1]	3.34[-1]	3.96[-1]	4.82[-1]	4.93[-1]	5.07[-1]	5.27[-1]	5.63[-1]	5.90[-1]
$3p3d^*7s$	1.53[-1]	2.70[-1]	4.37[-1]	5.13[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*7p^*$	1.24[-1]	2.45[-1]	4.01[-1]	4.73[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*7p$	1.01[0]	1.48[0]	1.75[0]	1.82[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*7d^*$	5.48[-2]	1.69[-1]	3.60[-1]	4.74[-1]	5.85[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*7d$	2.23[-1]	1.30[-1]	2.09[-1]	3.47[-1]	5.78[-1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*7f^*$	5.43[-2]	4.58[-1]	9.52[-1]	1.04[0]	1.03[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d^*7f$	9.35[-2]	8.28[-1]	1.87[0]	2.18[0]	2.31[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d7s$	8.52[-1]	1.58[0]	2.83[0]	3.44[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d7p^*$	8.82[-1]	1.65[0]	2.75[0]	3.26[0]	3.96[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d7p$	2.10[0]	3.55[0]	5.27[0]	5.99[0]	6.71[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d7d^*$	9.75[-2]	3.27[-1]	1.23[0]	1.94[0]	2.67[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d7d$	3.87[-1]	9.21[-1]	2.39[0]	3.46[0]	4.55[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d7f^*$	5.16[-1]	4.56[0]	9.82[0]	1.09[1]	1.10[1]	1.06[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d7f$	6.10[-1]	5.28[0]	1.11[1]	1.23[1]	1.22[1]	1.18[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d7g^*$	5.00[-2]	1.16[0]	5.81[0]	8.93[0]	1.39[1]	1.47[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]
$3p3d7g$	6.10[-2]	1.41[0]	7.03[0]	1.06[1]	1.66[1]	1.74[1]	0.00[0]	0.00[0]	0.00[0]	0.00[0]