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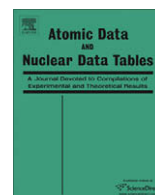
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### Auger transition rates for Ar-like ions

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#### ABSTRACT

The Auger transition rates for Ar-like ions have been calculated by the relativistic configuration interaction code and flexible atomic code. The calculations have been carried out for the atomic numbers from 18 to 54, that is, for argon to xenon. The calculated data for argon is shown to be in a good agreement with experimental data and other calculated data.

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## 1. Introduction

Ultrafast, high intensity X-rays can be produced from Compton scattering [1], relativistic nonlinear Thomson scattering [2–4], and laser-produced betatron radiation [5]. These methods have been practiced due to the development of high intensity femtosecond lasers. Based on the synchrotron technology, X-ray free electron lasers were proposed and have been under construction for generating ultrafast high intensity X-rays [6]. The ultrafast, high intensity X-rays will be useful for atomic and molecular physics, plasma physics, material science, chemistry, and life sciences [7,8]. The observation of atomic structure and dynamics [9], the investigation of the ultrafast phase transitions in solids [10], and time-resolved biomolecular imaging [11] are examples of specific applications.

For the proper use of ultrafast X-rays, the characterization of X-ray pulses is important. Moribayashi et al. have proposed X-ray nonlinear processes related to the inner-shell excited states of Ne-like ions for the characterization [12,13]. Ne-like ions are suitable to this application because they are stable with closed shell electronic states. Ar-like ions, whose electronic state is also a closed shell, are also applicable.

The atomic data for Auger transition rates are important not only for ultrafast X-ray applications [14–16], but also research such as inner-shell ionization for X-ray laser studies [17–19] and astrophysical photoionized plasmas [20,21]. Moreover, when ultrafast high intensity X-rays are irradiated on a target, the interaction of these high intensity X-rays with the matter may produce inner-shell excited states of highly charged ions. Therefore, the atomic data relevant to inner-shell excited states of highly charged ions for auto-ionization processes becomes important.

Some atomic data for inner-shell excited states have been calculated [22–24] and measured [25–27]. If the scope is limited to the Ar-like ion case, the data for neutral Ar and only a few Ar-like ions of low atomic number were calculated [23,24] or measured [26,27]. However, atomic data for higher atomic numbers relevant to shorter X-ray pulse measurements are not readily available, to our knowledge. Therefore, in this paper, we present atomic data relevant to the inner-shell states of Ar-like ions. For calculation of the Auger transition rates, we have used the relativistic configuration interaction (RCI) code developed by Kagawa et al. [28–30] and the flexible atomic code (FAC) by Gu [31].

## 2. Calculation method

## 2.1. RCI code

In the RCI code [28–30], a relativistic Hamiltonian  $H$  is described as the sum of a relativistic one-electron Hamiltonian

$H_D$ , a two-electron operator  $g(i,j)$  due to the interaction between electrons, and a term accounting for the quantum electrodynamical (QED) effects. In atomic units (a.u.), the Hamiltonian is

$$H = \sum_i H_D(i) + \sum_{i<j} g(i,j) + H_{QED}. \quad (1)$$

The one-electron Hamiltonian  $H_D$  for the potential due to the nuclear charge is written as

$$H_D = c\boldsymbol{\alpha}_i \cdot \mathbf{p}_i + c^2\beta_i + V_N(r_i) \quad (2)$$

where  $c$  is the speed of light, and  $\boldsymbol{\alpha}$  and  $\beta$  are the Dirac operators in a matrix form.  $V_N$  is the potential due to the nuclear charge. The nucleus is assumed to be a sphere with a uniform charge density and the potential is described as

$$V_N = \begin{cases} -(Z/2R)(3 - r^2/R^2) & \text{for } r \leq R \\ -Z/r & \text{for } r > R \end{cases} \quad (3)$$

where  $Z$  is the atomic number and  $R$  is the radius of the nucleus ( $R = 2.3 \times 10^{-5} A^{-1/3}$  a.u. with  $A$  being atomic mass). The two-electron operator  $g(i,j)$  includes the Coulomb and Breit interactions and is written as

$$g(i,j) = \frac{1}{r_{ij}} + H_B. \quad (4)$$

$H_B$  is an operator for the Breit interaction to first order given by

$$H_B(i,j) = -\frac{\boldsymbol{\alpha}_i \cdot \boldsymbol{\alpha}_j}{r_{ij}} - \frac{1}{2}(\boldsymbol{\alpha}_i \cdot \nabla_i)(\boldsymbol{\alpha}_j \cdot \nabla_j)r_{ij}. \quad (5)$$

The first-order QED effects of the self-energy and vacuum polarization  $H_{QED}$  have been given by Mohr and Kim [32] and Johnson and Soff [33]. An effective nuclear charge for each electron is used to obtain the QED energy correction by interpolating the accurate result of Mohr for hydrogenic ions.

A total configuration interaction (CI) wavefunction  $\Psi(\gamma JP)$  for a total angular momentum  $J$  and parity  $P$  is a linear combination of the configuration state functions (CSFs)  $\Phi_n(\gamma_n JP)$  as

$$\Psi(\gamma JP) = \sum_n c_n \Phi_n(\gamma_n JP) \quad (6)$$

where  $c_n$  is an expansion coefficient and  $\gamma_n$  indicates a set of quantum numbers other than  $J$  and  $P$ .  $J$  and  $P$  are needed to specify the state uniquely.

The one-electron functions (OEF) are calculated with the relativistic Hartree–Fock–Roothaan (RHFR) method as described below. Each CSF is constructed as a product of OEFs. The RCI code solves the equation for a Hamiltonian matrix governing the CSFs. For the initial states, each state itself is included in the CI expansion.

sion. The final states are constructed as superpositions of the allowed states. An OEF is a Dirac spinor  $\varphi_{n\kappa m}(r)$  and is expressed as

$$\varphi_{n\kappa m}(r) = \frac{1}{r} \begin{bmatrix} P_{n\kappa}(r) & \chi_{n\kappa}(\theta, \phi) \\ iQ_{n\kappa}(r) & \chi_{-n\kappa}(\theta, \phi) \end{bmatrix} \quad (7)$$

where  $P_{n\kappa}(r)$  and  $Q_{n\kappa}(r)$  are the large and small components of the radial part of a wavefunction, respectively.  $\chi_{n\kappa}(\theta, \phi)$  is a two-component spin-angular function and  $\kappa$  is a relativistic angular quantum number. In the RHF method, both  $P_{n\kappa}(r)$  and  $Q_{n\kappa}(r)$  are linear combinations of Slater-type orbitals (STOs)  $f_{ki}(r)$  as follows:

$$P_{n\kappa}(r) = \sum_i \xi_{n\kappa i} f_{ki}(r) \quad (8)$$

and

$$Q_{n\kappa}(r) = \sum_i \eta_{n\kappa i} f_{ki}(r) \quad (9)$$

where  $\xi_{n\kappa i}$  and  $\eta_{n\kappa i}$  are expansion coefficients. A STO has the form

$$f_{ki}(r) = (2\xi_{ki})^{v_{ki}+1/2} \left[ \Gamma(2v_{ki}+1)^{-1/2} r^{v_{ki}} \exp(-\xi_{ki}r) \right] \quad (10)$$

with

$$v_{ki} = n - 1 + [\kappa^2 - (Z\alpha)^2]^{1/2} \quad \text{for } n_i = 1, 2, 3, \dots \quad (11)$$

where  $\Gamma(2v_{ki}+1)$  is a gamma function and  $\alpha$  the fine structure constant.

To obtain a good energy value and wavefunction, an optimization of the STOs is required, and the relativistic virial theorem is used for that purpose. The relativistic virial theorem is written as

$$\langle |T| \rangle = -\langle |V| \rangle, \quad E = \langle |M| \rangle \quad (12)$$

where  $\langle |T| \rangle$ ,  $\langle |V| \rangle$  and  $\langle |M| \rangle$  are the expectation values of the kinetic, potential, and rest-mass energy operator, respectively. The multi-configuration relativistic Hartree–Fock–Roothaan (MCRHF) theory by Kagawa is adopted to evaluate the Hamiltonian matrix elements. In the MCRHF theory, tensor recoupling techniques in the second quantization form are used. The Dirac equation is solved numerically to obtain the continuum wavefunctions.

## 2.2. FAC

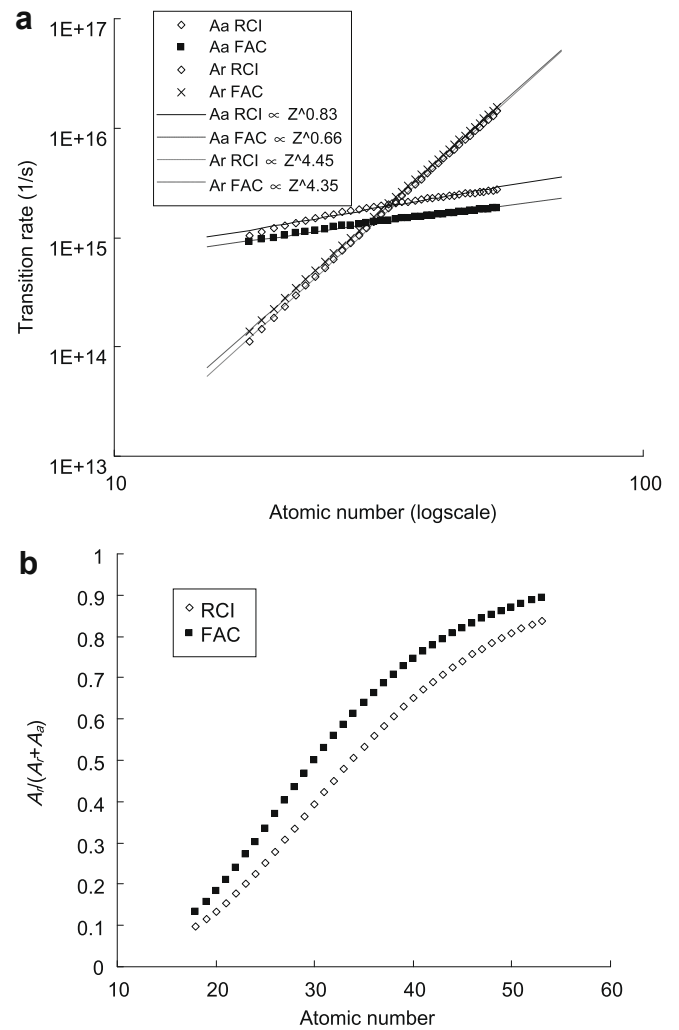
In the FAC [31], the Hamiltonian is similar to that used by the RCI code in that the Dirac Hamiltonian and the Coulomb interaction in the two-electron operator are used. Also a one-electron wavefunction is a Dirac spinor as in Eq. (7). As in the standard Dirac–Fock–Slater method, to obtain  $P_{n\kappa}(r)$  and  $Q_{n\kappa}(r)$ , the following relations are used:

$$\left( \frac{d}{dr} + \frac{\kappa}{r} \right) P_{n\kappa} = \alpha \left( \varepsilon_{n\kappa} - V + \frac{2}{\alpha^2} \right) Q_{n\kappa} \quad (13)$$

$$\left( \frac{d}{dr} - \frac{\kappa}{r} \right) Q_{n\kappa} = \alpha (-\varepsilon_{n\kappa} + V) P_{n\kappa} \quad (14)$$

where  $\varepsilon_{n\kappa}$  is a energy eigenvalue for a radial orbital.

The local central field  $V(r)$  includes the field due to the nuclear charge and the electron–electron interaction. The electron–electron interaction consists of the spherically averaged classical potential due to the bound electrons and a local approximation to the exchange interaction. The CSFs included in the CI expansion is the same as used in the RCI method. The QED corrections are only included through the Breit interaction with zero energy limit. Vacuum polarization and self-energy corrections are considered within the screened hydrogenic approximation. In the FAC, a new method proposed by Gaigalas et al. [34] is used to perform the angular integration. The relativistic distorted wave approximation is used to calculate the continuum wavefunctions.

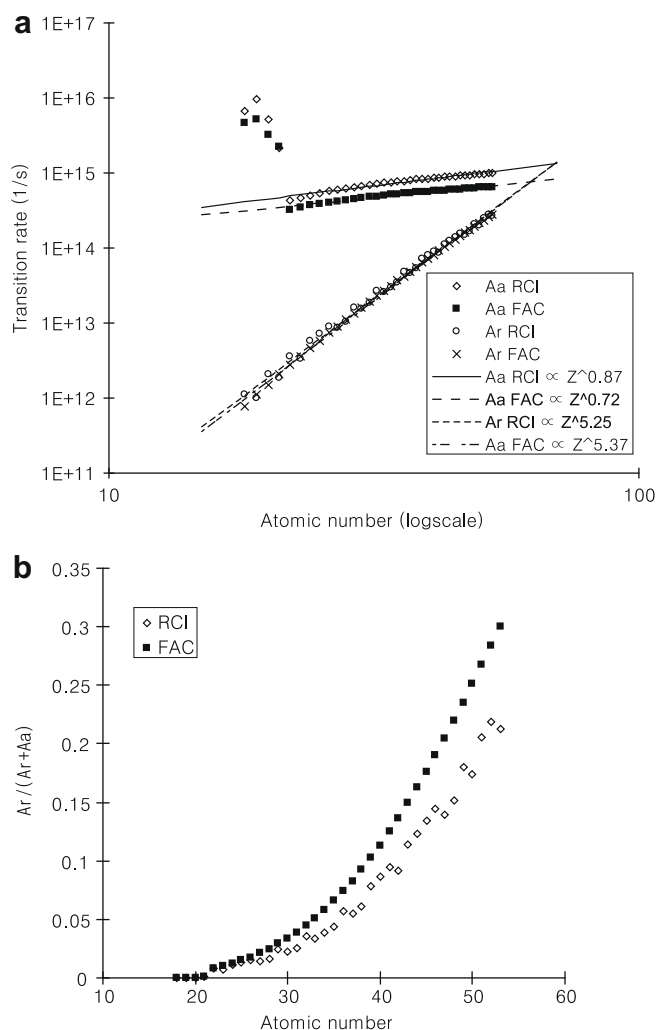


**Fig. 1.** (a) Total Auger transition rate ( $A_a$ ) and radiative transition rate ( $A_r$ ) for the K-hole state. (b) The ratio of total radiative transition rate to the rate for all transitions for the K-hole state as a function of atomic number.

## 3. Results and discussion

The Auger transition rates ( $A_a$ ) and the radiative transition probabilities ( $A_r$ ) from K- and L-hole states of the Ar-like ions have been calculated with the RCI code and the FAC. The atomic numbers of the ions studied are from 18 to 54. The ground state is used in order to optimize the radial function. In this paper, the energy levels and the rates related to single-hole states of the K,  $L_1$ ,  $L_2$ ,  $L_3$ ,  $M_1$ ,  $M_2$  and  $M_3$  shells, which correspond to the  $1s_{1/2}$ ,  $2s_{1/2}$ ,  $2p_{1/2}$ ,  $2p_{3/2}$ ,  $3s_{1/2}$ ,  $3p_{1/2}$  and  $3p_{3/2}$  levels, respectively, are calculated. An Auger transition,  $KL_1M_1$ , indicates that one hole in the K shell is transferred to those in the  $L_1$  and  $M_1$  shells. The single hole in the K shell is filled up by an electron from the  $L_1$  shell and, at the same time, another electron in the  $M_1$  shell is liberated, leaving two holes behind.

Fig. 1(a) shows the transition rates from the K-hole state as a function of atomic number ( $N_A$ ). From the fitting to the calculated results given by RCI and FAC,  $A_r \propto N_A^{4.45}$  and  $N_A^{4.35}$ , respectively, which is due to the fact that  $A_r \propto Z_e^4$ , where  $Z_e$  is the effective charge. On the other hand,  $A_a \propto N_A^{0.83}$  and  $N_A^{0.66}$  for the data calculated by RCI and FAC, respectively. Fig. 1(b) shows  $A_r/(A_r+A_a)$ , the ratio of the radiative transition rates to the all transition rates as a function of atomic number for the K-hole state. Overall, the results calculated by the RCI code agree well with those from FAC.



**Fig. 2.** (a) Total Auger transition rate ( $A_a$ ) and radiative transition rate ( $A_r$ ) for the  $L_1$ -hole state. (b) The ratio of total radiative transition rate to the rate for all transitions for the  $L_1$ -hole state as a function of atomic number.

**Table A**  
The Auger electron energies for the LMM transitions in argon. The unit of energy is eV.

		RCI	FAC	Experiment [27]
$L_2$	$M_1M_1$	172.9	167.3	180.1
$L_2$	$M_1M_{23}$	195.6	190.6	191.6
$L_2$	$M_{23}M_{23}$	214.0	209.5	206.4
$L_3$	$M_1M_1$	170.3	165.2	177.9
$L_3$	$M_1M_{23}$	193.0	188.5	189.7
$L_3$	$M_{23}M_{23}$	211.4	207.4	205.0

**Table B**  
The ratio of the  $L_2$ -MM and  $L_3$ -MM Auger transitions in argon.

		RCI	FAC	Experiment [27]
$L_2$	$M_1M_1$		4.2	3.9
	$M_1M_{23}$		19.0	14.9
	$M_{23}M_{23}$		76.9	81.3
$L_3$	$M_1M_1$	1.8	4.1	4.2
	$M_1M_{23}$	24.1	19.0	17.2
	$M_{23}M_{23}$	74.1	76.9	78.7

Fig. 2 shows the transition rates from the  $L_1$ -hole state. The trend of the transition rates is similar to that of K-hole case. The Auger transition rate for the L-hole state is about the same as that from the K-hole state, but the radiative transition rate from the L-shell state is reduced about two orders of magnitude. From the fitting to the data  $A_r \propto N_A^{5.25}$ ,  $A_a \propto N_A^{0.87}$  from the RCI code and  $A_r \propto N_A^{5.37}$ ,  $A_a \propto N_A^{0.72}$  from FAC. For the LLM transitions, we have calculated the Coster–Kronig transitions occurring for the atomic numbers from 18 to 21 by both FAC and the RCI code. Because of the contribution from the Coster–Kronig process, the Auger transition rate in the low-Z ions is more than ten times higher than in the high-Z ion.

In the core of Ar-like Sc, FAC predicts the existence of  $L_1L_2M_2$  and  $L_1L_3M_2$  Coster–Kronig transitions but the RCI code does not. This is due to the difference in the relative energy levels of the  $L_1$ -hole,  $L_2M_2$ -hole, and  $L_3M_2$ -hole state given by different codes. According to the FAC, the energy of the  $L_2M_2$ - and  $L_3M_2$ -hole states are 0.66 and 3.75 eV lower than the  $L_1$ -hole state, respectively. On the other hand, according to the RCI code, the  $L_2M_2$ - and  $L_3M_2$ -hole states are only 0.29 and 7.30 eV higher than the  $L_1$ -hole state, respectively.

Table A lists the average of the RCI and FAC results for the Auger transition energies. The experimentally measured data by Werme et al. [27] are also presented in the third column. In Table A, we have found that the calculated transition energies have a good agreement with the experimental data. The calculated and measured Auger transition rates are compared with each other in Table B. In Table B, the Auger transition rates are converted for convenience into the following ratio:

$$\text{Ratio}(L_2M_1M_1) = \frac{A_a(L_2M_1M_1)}{A_a(L_2M_1M_1) + A_a(L_2M_1M_{23}) + A_a(L_2M_{23}M_{23})} \times 100(\%) \quad (15)$$

Both of the transition rates calculated by the FAC and the RCI are similar to the experimental data. Table 1 lists a comparison of our calculated data with the results calculated by Chen and Crasemann [24]. The difference between the RCI and FAC results is smaller than their differences from the Chen data. The larger difference may be due to the Breit interaction, not included in Chen's calculation.

The  $L_1L_{23}M$  Coster–Kronig rates for argon are  $6.48 \times 10^{15}$  and  $4.34 \times 10^{15} \text{ s}^{-1}$  from the RCI and the FAC calculations, respectively. The experimental values of the total  $L_1$ -hole state decay rates, which are a little larger than the  $L_1L_{23}M$  Coster–Kronig rate, are  $3.42 \times 10^{15} \text{ s}^{-1}$  [35] and  $2.80 \times 10^{15} \text{ s}^{-1}$  [36]. Other calculations also overestimate the rate (e.g.,  $4.73 \times 10^{15} \text{ s}^{-1}$  [37]). The result of the FAC is similar to the other calculations but the result of the RCI code is larger. These overestimations could be due to the incomplete treatment of electron correlations.

#### 4. Conclusion

The Auger transition rates for Ar-like ions have been calculated using the RCI code and FAC. The calculations have been carried out for the atomic numbers from 18 to 54 (argon to xenon, Tables 1 and 2). For the K-hole state, the radiative transition rate scales as  $N_A^{4.45}$  (RCI) [or  $N_A^{4.35}$  (FAC)] and the Auger transition rate scales as  $N_A^{0.83}$  (RCI) [or  $N_A^{0.66}$  (FAC)]. For the  $L_1$ -hole state, the radiative transition rate scales as  $N_A^{5.25}$  (RCI) [or  $N_A^{5.37}$  (FAC)] and the Auger transition rate scales as  $N_A^{0.87}$  (RCI) [or  $N_A^{0.72}$  (FAC)]. The difference between the two codes could be due to the difference in the one-electron basis sets and the treatment of the continuum wavefunction. The calculated data for argon is compared with experimental data and other calculated data. In general, a good agreement is shown but the Coster–Kronig transition rate from the RCI code is larger than the experimental value and other calculated data.

## Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.adt.2008.10.002.

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**Explanation of Tables****Table 1. The Auger transition rates in argon**

The unit of transition rate is  $s^{-1}$ .

**Table 2. The Auger transition rates for Ar-like ions with atomic numbers from 19 to 54**

Each state is labeled with initial and final K, L and M designations.  $Z$  is the atomic number of each Ar-like ion. The blanks in the tables indicate that the transitions do not occur.

**Table 1**

The Auger transition rates in argon. See page 146 for Explanation of Tables.

		RCI	FAC	Chen and Crasemann [24]	FAC-RCI/FAC  (%)	FAC-Chen/FAC  (%)
K	L <sub>1</sub> L <sub>1</sub>	6.88E+13	3.95E+13	6.02E+13	42.6	12.5
K	L <sub>1</sub> L <sub>2</sub>	2.60E+13	1.83E+13	6.63E+13	29.7	155.0
K	L <sub>1</sub> L <sub>3</sub>	2.30E+14	1.62E+14	1.27E+14	29.2	44.7
K	L <sub>1</sub> M <sub>1</sub>	1.33E+13	1.31E+13	1.34E+13	1.5	0.8
K	L <sub>1</sub> M <sub>2</sub>	2.22E+12	2.17E+12	6.24E+12	2.2	181.4
K	L <sub>1</sub> M <sub>3</sub>	1.70E+13	1.98E+13	1.19E+13	16.4	30.1
K	L <sub>2</sub> L <sub>2</sub>	5.80E+13	7.54E+11	1.22E+13	98.7	79.0
K	L <sub>2</sub> L <sub>3</sub>	5.19E+14	4.27E+14	3.01E+14	17.6	42.0
K	L <sub>2</sub> M <sub>1</sub>	7.32E+12	8.35E+12	6.45E+12	14.1	11.9
K	L <sub>2</sub> M <sub>2</sub>	4.53E+12	7.14E+12	2.19E+12	57.5	51.6
K	L <sub>2</sub> M <sub>3</sub>	3.11E+13	7.18E+13	2.51E+13	131.2	19.2
K	L <sub>3</sub> L <sub>3</sub>	1.60E+13	5.10E+13	1.71E+14	217.6	964.4
K	L <sub>3</sub> M <sub>1</sub>	8.98E+12	7.81E+12	1.24E+13	13.1	37.6
K	L <sub>3</sub> M <sub>2</sub>	1.04E+13	2.01E+12	2.51E+13	80.6	141.2
K	L <sub>3</sub> M <sub>3</sub>	2.58E+13	8.98E+12	2.88E+13	65.1	11.8
K	M <sub>1</sub> M <sub>1</sub>	6.07E+11	7.44E+11	7.44E+11	22.6	22.6
K	M <sub>1</sub> M <sub>2</sub>	1.51E+11	2.44E+11	6.20E+11	62.3	311.9
K	M <sub>1</sub> M <sub>3</sub>	1.49E+12	2.51E+12	1.16E+12	67.9	22.4
K	M <sub>2</sub> M <sub>2</sub>	1.77E+09	9.24E+08		47.9	
K	M <sub>2</sub> M <sub>3</sub>	2.70E+12	5.53E+12	2.15E+12	104.9	20.4
K	M <sub>3</sub> M <sub>3</sub>	4.09E+11	7.33E+11	1.24E+12	79.2	203.3
L <sub>1</sub>	L <sub>2</sub> M <sub>1</sub>	1.90E+15	1.43E+15	7.35E+14	24.7	61.4
L <sub>1</sub>	L <sub>2</sub> M <sub>2</sub>	7.49E+14	7.01E+14	3.06E+14	6.5	59.2
L <sub>1</sub>	L <sub>2</sub> M <sub>3</sub>	4.31E+14	2.71E+14	3.09E+14	37.1	28.3
L <sub>1</sub>	L <sub>3</sub> M <sub>1</sub>	1.60E+15	7.78E+14	1.43E+15	51.4	10.6
L <sub>1</sub>	L <sub>3</sub> M <sub>2</sub>	5.03E+14	6.11E+14	3.02E+14	21.6	39.9
L <sub>1</sub>	L <sub>3</sub> M <sub>3</sub>	1.29E+15	5.51E+14	8.60E+14	57.3	33.4
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	4.29E+13	3.54E+13	3.16E+13	17.5	26.3
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	4.50E+13	4.16E+13	4.97E+13	7.5	10.6
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	1.42E+14	1.37E+14	9.84E+13	3.7	30.7
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	1.08E+10	9.42E+09		13.1	
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	6.58E+11	3.19E+10	2.89E+11	95.2	56.0
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	9.75E+11	2.96E+12	2.81E+12	203.8	188.2
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	2.38E+12	5.06E+12		112.4	
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	5.52E+13	6.67E+12		87.9	
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	3.40E+13	1.62E+13		52.2	
L <sub>2</sub>	M <sub>2</sub> M <sub>2</sub>	2.60E+13	7.07E+12		72.8	
L <sub>2</sub>	M <sub>2</sub> M <sub>3</sub>	6.77E+14	6.34E+13		90.6	
L <sub>2</sub>	M <sub>3</sub> M <sub>3</sub>	7.32E+14	2.23E+13		97.0	
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	5.99E+12	4.97E+12	2.56E+12	17.0	57.2
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	7.69E+12	1.27E+12	1.69E+12	83.5	78.0
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	7.08E+13	2.16E+13	5.35E+13	69.5	24.5
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	8.78E+12	2.51E+12		71.4	
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	1.25E+14	5.21E+13	7.11E+13	58.2	43.0
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	1.08E+14	3.81E+13	1.05E+14	64.8	2.8
Average					58.2	86.5



**Table 2**

The Auger transition rates for Ar-like ions with atomic numbers 19 to 54. See page 146 for Explanation of Tables.

Initial	Final	Z = 19		Z = 20		Z = 21	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	7.19E+13	4.13E+13	7.49E+13	4.32E+13	7.78E+13	4.50E+13
K	L <sub>1</sub> L <sub>2</sub>	2.75E+13	1.91E+13	2.91E+13	1.99E+13	3.08E+13	2.08E+13
K	L <sub>1</sub> L <sub>3</sub>	2.42E+14	1.69E+14	2.54E+14	1.75E+14	2.64E+14	1.81E+14
K	L <sub>1</sub> M <sub>1</sub>	1.54E+13	1.42E+13	1.75E+13	1.54E+13	1.96E+13	1.65E+13
K	L <sub>1</sub> M <sub>2</sub>	1.92E+13	2.57E+12	2.30E+13	2.99E+12	2.67E+13	3.47E+12
K	L <sub>1</sub> M <sub>3</sub>	5.06E+12	2.32E+13	6.24E+12	2.63E+13	7.54E+12	2.92E+13
K	L <sub>2</sub> L <sub>2</sub>	1.21E+14	4.77E+13	6.28E+13	4.76E+13	6.45E+13	4.85E+13
K	L <sub>2</sub> L <sub>3</sub>	5.49E+14	4.43E+14	5.75E+14	4.56E+14	6.00E+14	4.68E+14
K	L <sub>2</sub> M <sub>1</sub>	8.29E+12	8.61E+12	9.20E+12	8.89E+12	1.01E+13	9.19E+12
K	L <sub>2</sub> M <sub>2</sub>	5.67E+12	8.10E+12	6.75E+12	8.89E+12	7.73E+12	9.52E+12
K	L <sub>2</sub> M <sub>3</sub>	3.94E+13	8.14E+13	4.77E+13	8.95E+13	5.58E+13	9.61E+13
K	L <sub>3</sub> L <sub>3</sub>	1.87E+13	8.55E+12	2.85E+13	1.37E+13	3.66E+13	1.87E+13
K	L <sub>3</sub> M <sub>1</sub>	1.06E+13	9.00E+12	1.22E+13	1.02E+13	1.37E+13	1.13E+13
K	L <sub>3</sub> M <sub>2</sub>	1.31E+13	2.67E+12	1.65E+13	3.45E+12	2.07E+13	4.31E+12
K	L <sub>3</sub> M <sub>3</sub>	3.19E+13	1.21E+13	3.76E+13	1.59E+13	4.24E+13	2.06E+13
K	M <sub>1</sub> M <sub>1</sub>	7.66E+11	8.53E+11	9.37E+11	9.71E+11	1.11E+12	1.09E+12
K	M <sub>1</sub> M <sub>2</sub>	2.03E+11	2.92E+11	2.59E+11	3.40E+11	3.19E+11	3.88E+11
K	M <sub>1</sub> M <sub>3</sub>	2.03E+12	3.02E+12	2.62E+12	3.52E+12	3.23E+12	4.03E+12
K	M <sub>2</sub> M <sub>2</sub>	3.76E+09	2.23E+09	7.24E+09	4.72E+09	1.30E+10	9.08E+09
K	M <sub>2</sub> M <sub>3</sub>	3.88E+12	6.89E+12	5.19E+12	8.21E+12	6.56E+12	9.47E+12
K	M <sub>3</sub> M <sub>3</sub>	5.79E+11	9.05E+11	7.69E+11	1.08E+12	9.77E+11	1.26E+12
L <sub>1</sub>	L <sub>2</sub> M <sub>1</sub>	3.81E+15	1.44E+15				
L <sub>1</sub>	L <sub>2</sub> M <sub>2</sub>	9.13E+14	7.96E+14	1.25E+15	8.72E+14		2.76E+14
L <sub>1</sub>	L <sub>2</sub> M <sub>3</sub>	5.62E+14	3.59E+14	7.10E+14	4.45E+14		
L <sub>1</sub>	L <sub>3</sub> M <sub>1</sub>	1.83E+15	9.28E+14				
L <sub>1</sub>	L <sub>3</sub> M <sub>2</sub>	6.32E+14	7.19E+14	8.75E+14	8.10E+14		8.79E+14
L <sub>1</sub>	L <sub>3</sub> M <sub>3</sub>	1.63E+15	6.70E+14	1.99E+15	7.86E+14	1.80E+15	7.59E+14
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	5.03E+13	3.91E+13	5.72E+13	4.26E+13	6.37E+13	4.59E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	5.63E+13	4.84E+13	6.71E+13	5.48E+13	7.71E+13	6.06E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	1.76E+14	1.57E+14	2.08E+14	1.76E+14	2.37E+14	1.93E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	2.00E+10	1.87E+10	3.32E+10	3.30E+10	5.18E+10	5.36E+10
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	1.15E+12	5.87E+09	1.79E+12	1.00E+11	2.54E+12	3.11E+11
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	1.24E+12	3.26E+12	1.45E+12	3.42E+12	1.61E+12	3.48E+12
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	3.52E+12	5.96E+12	4.74E+12	6.78E+12	6.00E+12	7.50E+12
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	6.08E+13	9.47E+12	6.49E+13	1.23E+13	6.83E+13	1.50E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	4.13E+13	2.04E+13	4.84E+13	2.45E+13	5.50E+13	2.85E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	7.52E+12	5.85E+12	8.97E+12	6.66E+12	1.03E+13	7.37E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	9.25E+12	1.86E+12	1.08E+13	2.51E+12	1.22E+13	3.21E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	8.46E+13	2.80E+13	9.68E+13	3.43E+13	1.08E+14	4.04E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	1.17E+13	3.72E+12	1.48E+13	5.09E+12	1.80E+13	6.65E+12
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	1.57E+14	6.85E+13	1.87E+14	8.44E+13	2.13E+14	9.91E+13
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	1.38E+14	5.20E+13	1.66E+14	6.59E+13	1.91E+14	7.94E+13
Initial	Final	Z = 22		Z = 23		Z = 24	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	8.06E+13	4.67E+13	8.33E+13	4.84E+13	8.59E+13	5.01E+13
K	L <sub>1</sub> L <sub>2</sub>	3.25E+13	2.17E+13	3.44E+13	2.27E+13	3.65E+13	2.39E+13
K	L <sub>1</sub> L <sub>3</sub>	2.74E+14	1.87E+14	2.84E+14	1.92E+14	2.92E+14	1.97E+14
K	L <sub>1</sub> M <sub>1</sub>	2.16E+13	1.76E+13	2.35E+13	1.87E+13	2.54E+13	1.98E+13
K	L <sub>1</sub> M <sub>2</sub>	3.01E+13	2.90E+13	3.32E+13	3.12E+13	3.60E+13	3.31E+13
K	L <sub>1</sub> M <sub>3</sub>	9.00E+12	6.94E+12	1.06E+13	7.81E+12	1.25E+13	8.82E+12
K	L <sub>2</sub> L <sub>2</sub>	6.56E+13	4.89E+13	6.62E+13	4.90E+13	6.63E+13	4.87E+13
K	L <sub>2</sub> L <sub>3</sub>	6.21E+14	4.77E+14	6.39E+14	4.86E+14	6.55E+14	4.92E+14
K	L <sub>2</sub> M <sub>1</sub>	1.09E+13	9.50E+12	1.17E+13	9.81E+12	1.24E+13	1.01E+13
K	L <sub>2</sub> M <sub>2</sub>	8.61E+12	9.98E+12	9.37E+12	1.03E+13	1.00E+13	1.06E+13
K	L <sub>2</sub> M <sub>3</sub>	6.35E+13	1.01E+14	7.07E+13	1.05E+14	7.75E+13	1.08E+14
K	L <sub>3</sub> L <sub>3</sub>	4.60E+13	2.49E+13	5.67E+13	3.20E+13	6.86E+13	4.03E+13
K	L <sub>3</sub> M <sub>1</sub>	1.53E+13	1.23E+13	1.67E+13	1.33E+13	1.82E+13	1.43E+13
K	L <sub>3</sub> M <sub>2</sub>	2.60E+13	5.19E+12	3.26E+13	5.98E+12	4.13E+13	6.55E+12
K	L <sub>3</sub> M <sub>3</sub>	4.62E+13	2.59E+13	4.87E+13	3.20E+13	4.90E+13	3.89E+13
K	M <sub>1</sub> M <sub>1</sub>	1.30E+12	1.22E+12	1.48E+12	1.34E+12	1.66E+12	1.46E+12
K	M <sub>1</sub> M <sub>2</sub>	3.80E+11	4.35E+11	4.42E+11	4.81E+11	5.06E+11	5.28E+11
K	M <sub>1</sub> M <sub>3</sub>	3.87E+12	4.52E+12	4.51E+12	4.99E+12	5.15E+12	5.46E+12
K	M <sub>2</sub> M <sub>2</sub>	2.23E+10	1.63E+10	1.27E+12	2.74E+10	1.44E+12	1.60E+12
K	M <sub>2</sub> M <sub>3</sub>	7.97E+12	1.07E+13	9.39E+12	1.18E+13	1.08E+13	1.29E+13
K	M <sub>3</sub> M <sub>3</sub>	1.20E+12	1.45E+12	2.13E+11	1.64E+12	3.27E+11	3.00E+11
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	6.95E+13	4.89E+13	7.49E+13	5.17E+13	7.98E+13	5.43E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	8.64E+13	6.59E+13	9.52E+13	7.08E+13	1.03E+14	7.53E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	2.65E+14	2.09E+14	2.90E+14	2.23E+14	3.13E+14	2.36E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	7.68E+10	8.20E+10	1.74E+12	1.20E+11	1.75E+12	3.28E+12
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	3.39E+12	6.23E+11	4.30E+12	1.02E+12	5.25E+12	1.48E+12
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	1.72E+12	3.46E+12	1.68E+11	3.40E+12	2.50E+11	1.85E+11
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	7.21E+12	8.14E+12	8.37E+12	8.71E+12	9.46E+12	9.19E+12

Table 2 (continued)

Initial	Final	Z = 22		Z = 23		Z = 24	
		RCI	FAC	RCI	FAC	RCI	FAC
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	7.05E+13	1.76E+13	7.20E+13	1.99E+13	7.32E+13	2.20E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	6.11E+13	3.24E+13	6.69E+13	3.62E+13	7.30E+13	3.99E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.15E+13	8.00E+12	1.25E+13	8.55E+12	1.35E+13	9.03E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	1.37E+13	3.94E+12	1.51E+13	4.71E+12	1.66E+13	5.52E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	1.17E+14	4.61E+13	1.26E+14	5.14E+13	1.33E+14	5.64E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	2.15E+13	8.40E+12	2.53E+13	1.04E+13	4.24E+13	2.62E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	2.36E+14	1.13E+14	2.56E+14	1.25E+14	2.73E+14	1.36E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	2.14E+14	9.22E+13	2.35E+14	1.04E+14	2.41E+14	1.02E+14
Initial	Final	Z = 25		Z = 26		Z = 27	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	8.86E+13	5.18E+13	9.11E+13	5.35E+13	9.37E+13	5.52E+13
K	L <sub>1</sub> L <sub>2</sub>	3.89E+13	2.53E+13	2.78E+14	2.69E+13	2.84E+14	1.89E+14
K	L <sub>1</sub> L <sub>3</sub>	3.00E+14	2.01E+14	7.01E+13	2.05E+14	7.38E+13	4.86E+13
K	L <sub>1</sub> M <sub>1</sub>	2.72E+13	2.08E+13	2.90E+13	2.19E+13	3.07E+13	2.29E+13
K	L <sub>1</sub> M <sub>2</sub>	3.83E+13	3.48E+13	4.03E+13	3.61E+13	4.19E+13	3.71E+13
K	L <sub>1</sub> M <sub>3</sub>	1.46E+13	9.99E+12	1.69E+13	1.14E+13	1.95E+13	1.29E+13
K	L <sub>2</sub> L <sub>2</sub>	6.59E+13	4.81E+13	6.52E+13	4.72E+13	6.42E+13	4.61E+13
K	L <sub>2</sub> L <sub>3</sub>	6.69E+14	4.98E+14	6.81E+14	5.02E+14	6.91E+14	5.05E+14
K	L <sub>2</sub> M <sub>1</sub>	1.31E+13	1.04E+13	1.38E+13	1.08E+13	1.44E+13	1.11E+13
K	L <sub>2</sub> M <sub>2</sub>	1.06E+13	1.07E+13	1.11E+13	1.08E+13	1.16E+13	1.09E+13
K	L <sub>2</sub> M <sub>3</sub>	8.37E+13	1.10E+14	8.94E+13	1.12E+14	9.47E+13	1.12E+14
K	L <sub>3</sub> L <sub>3</sub>	8.16E+13	4.93E+13	9.53E+13	5.91E+13	1.10E+14	6.94E+13
K	L <sub>3</sub> M <sub>1</sub>	1.96E+13	1.52E+13	2.09E+13	1.60E+13	2.21E+13	1.69E+13
K	L <sub>3</sub> M <sub>2</sub>	5.36E+13	6.71E+12	7.22E+13	6.27E+12	9.84E+13	5.04E+12
K	L <sub>3</sub> M <sub>3</sub>	4.58E+13	4.65E+13	3.63E+13	5.49E+13	1.90E+13	6.42E+13
K	M <sub>1</sub> M <sub>1</sub>	1.85E+12	1.59E+12	2.03E+12	1.71E+12	2.22E+12	1.83E+12
K	M <sub>1</sub> M <sub>2</sub>	5.70E+11	5.75E+11	6.33E+11	6.23E+11	6.91E+11	6.73E+11
K	M <sub>1</sub> M <sub>3</sub>	5.79E+12	5.91E+12	6.41E+12	6.34E+12	7.03E+12	6.76E+12
K	M <sub>2</sub> M <sub>2</sub>	1.60E+12	1.71E+12	1.75E+12	1.80E+12	1.87E+12	1.88E+12
K	M <sub>2</sub> M <sub>3</sub>	1.22E+13	1.39E+13	1.35E+13	1.48E+13	1.47E+13	1.56E+13
K	M <sub>3</sub> M <sub>3</sub>	4.81E+11	4.36E+11	6.81E+11	6.10E+11	9.32E+11	8.26E+11
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	8.43E+13	5.67E+13	8.81E+13	5.89E+13	9.17E+13	6.09E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	1.10E+14	7.94E+13	1.17E+14	8.33E+13	8.33E+14	8.69E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	3.34E+14	2.48E+14	3.54E+14	2.58E+14	3.72E+14	2.68E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	1.74E+12	3.14E+12	1.69E+12	2.98E+12	1.63E+12	2.81E+12
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	6.23E+12	2.00E+12	7.20E+12	2.53E+12	8.18E+12	3.09E+12
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	3.60E+11	2.62E+11	5.02E+11	3.61E+11	6.80E+11	4.84E+11
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	1.04E+13	9.62E+12	1.13E+13	9.99E+12	1.22E+13	1.03E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	7.37E+13	2.38E+13	7.40E+13	2.53E+13	7.40E+13	2.66E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	7.82E+13	4.35E+13	8.38E+13	4.70E+13	8.94E+13	5.04E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.43E+13	9.44E+12	1.50E+13	9.79E+12	1.57E+13	1.01E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	1.81E+13	6.38E+12	1.96E+13	7.30E+12	2.14E+13	8.29E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	1.40E+14	6.09E+13	1.45E+14	6.50E+13	1.50E+14	6.87E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	4.29E+13	2.68E+13	4.26E+13	2.69E+13	4.14E+13	2.66E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	2.87E+14	1.45E+14	3.01E+14	1.54E+14	3.11E+14	1.61E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	2.62E+14	1.14E+14	2.83E+14	1.27E+14	3.03E+14	1.39E+14
Initial	Final	Z = 28		Z = 29		Z = 30	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	9.62E+13	5.68E+13	9.88E+13	5.85E+13	1.01E+14	6.01E+13
K	L <sub>1</sub> L <sub>2</sub>	2.89E+14	1.92E+14	2.93E+14	1.94E+14	2.96E+14	1.96E+14
K	L <sub>1</sub> L <sub>3</sub>	7.81E+13	5.10E+13	8.29E+13	5.39E+13	8.84E+13	5.72E+13
K	L <sub>1</sub> M <sub>1</sub>	3.24E+13	2.39E+13	3.41E+13	2.48E+13	3.57E+13	2.58E+13
K	L <sub>1</sub> M <sub>2</sub>	4.32E+13	3.78E+13	4.42E+13	3.82E+13	4.49E+13	3.84E+13
K	L <sub>1</sub> M <sub>3</sub>	2.22E+13	1.47E+13	2.52E+13	1.67E+13	2.82E+13	1.88E+13
K	L <sub>2</sub> L <sub>2</sub>	6.28E+13	4.49E+13	6.15E+13	4.36E+13	6.03E+13	4.23E+13
K	L <sub>2</sub> L <sub>3</sub>	6.99E+14	5.07E+14	7.06E+14	5.08E+14	7.13E+14	5.09E+14
K	L <sub>2</sub> M <sub>1</sub>	1.51E+13	1.14E+13	1.57E+13	1.18E+13	1.63E+13	1.21E+13
K	L <sub>2</sub> M <sub>2</sub>	1.19E+13	1.09E+13	1.23E+13	1.09E+13	1.26E+13	1.10E+13
K	L <sub>2</sub> M <sub>3</sub>	9.93E+13	1.13E+14	1.04E+14	1.13E+14	1.08E+14	1.13E+14
K	L <sub>3</sub> L <sub>3</sub>	1.24E+14	7.99E+13	1.39E+14	9.05E+13	1.53E+14	1.01E+14
K	L <sub>3</sub> M <sub>1</sub>	2.35E+13	1.77E+13	2.47E+13	1.84E+13	2.59E+13	1.92E+13
K	L <sub>3</sub> M <sub>2</sub>	2.69E+11	3.06E+12	7.63E+12	9.92E+11	1.84E+13	4.13E+11
K	L <sub>3</sub> M <sub>3</sub>	1.26E+14	7.41E+13	1.27E+14	8.40E+13	1.25E+14	9.22E+13
K	M <sub>1</sub> M <sub>1</sub>	2.40E+12	1.95E+12	2.58E+12	2.06E+12	2.76E+12	2.18E+12
K	M <sub>1</sub> M <sub>2</sub>	8.00E+11	7.25E+11	8.82E+11	7.81E+11	9.71E+11	8.42E+11
K	M <sub>1</sub> M <sub>3</sub>	7.62E+12	7.16E+12	8.21E+12	7.54E+12	8.77E+12	7.91E+12
K	M <sub>2</sub> M <sub>2</sub>	1.98E+12	1.94E+12	2.07E+12	1.98E+12	2.13E+12	2.01E+12
K	M <sub>2</sub> M <sub>3</sub>	1.59E+13	1.64E+13	1.70E+13	1.71E+13	1.80E+13	1.77E+13
K	M <sub>3</sub> M <sub>3</sub>	1.24E+12	1.09E+12	1.59E+12	1.39E+12	2.00E+12	1.73E+12
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	9.55E+13	6.28E+13	9.84E+13	6.46E+13	1.02E+14	6.63E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	1.29E+14	9.02E+13	1.35E+14	9.35E+13	1.41E+14	9.66E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	3.88E+14	2.78E+14	4.04E+14	2.86E+14	4.19E+14	2.94E+14

(continued on next page)

Table 2 (continued)

Initial	Final	Z = 28		Z = 29		Z = 30	
		RCI	FAC	RCI	FAC	RCI	FAC
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	1.55 E+12	2.63 E+12	1.46 E+12	2.44 E+12	1.36 E+12	2.25 E+12
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	9.10 E+12	3.64 E+12	1.00 E+13	4.19 E+12	1.09 E+13	4.72 E+12
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	8.91 E+11	6.32 E+11	1.14 E+12	8.03 E+11	1.41 E+12	9.95 E+11
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	1.29 E+13	1.06 E+13	1.35 E+13	1.08 E+13	1.41 E+13	1.11 E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	7.32 E+13	2.76 E+13	7.25 E+13	2.84 E+13	7.16 E+13	2.89 E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	9.50 E+13	5.38 E+13	1.01 E+14	5.72 E+13	1.06 E+14	6.06 E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.60 E+13	1.04 E+13	1.65 E+13	1.06 E+13	1.68 E+13	1.08 E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	2.33 E+13	9.35 E+12	2.55 E+13	1.05 E+13	2.76 E+13	1.18 E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	1.54 E+14	7.20 E+13	1.58 E+14	7.50 E+13	1.61 E+14	7.76 E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	3.97 E+13	2.58 E+13	3.73 E+13	2.47 E+13	3.47 E+13	2.33 E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	3.20 E+14	1.68 E+14	3.29 E+14	1.74 E+14	3.36 E+14	1.79 E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	3.21 E+14	1.51 E+14	3.42 E+14	1.63 E+14	3.59 E+14	1.75 E+14
Initial	Final	Z = 31		Z = 32		Z = 33	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	1.04 E+14	6.18 E+13	1.06 E+14	6.34 E+13	1.09 E+14	6.51 E+13
K	L <sub>1</sub> L <sub>2</sub>	2.98 E+14	1.97 E+14	2.99 E+14	1.97 E+14	2.99 E+14	1.97 E+14
K	L <sub>1</sub> L <sub>3</sub>	9.46 E+13	6.10 E+13	1.01 E+14	6.52 E+13	1.09 E+14	7.00 E+13
K	L <sub>1</sub> M <sub>1</sub>	3.73 E+13	2.68 E+13	3.89 E+13	2.77 E+13	4.05 E+13	2.86 E+13
K	L <sub>1</sub> M <sub>2</sub>	4.55 E+13	3.84 E+13	4.60 E+13	3.83 E+13	4.64 E+13	3.81 E+13
K	L <sub>1</sub> M <sub>3</sub>	3.12 E+13	2.10 E+13	3.43 E+13	2.33 E+13	3.73 E+13	2.55 E+13
K	L <sub>2</sub> L <sub>2</sub>	5.91 E+13	4.11 E+13	5.79 E+13	4.00 E+13	5.68 E+13	3.90 E+13
K	L <sub>2</sub> L <sub>3</sub>	7.18 E+14	5.10 E+14	7.23 E+14	5.11 E+14	7.28 E+14	5.11 E+14
K	L <sub>2</sub> M <sub>1</sub>	1.69 E+13	1.24 E+13	1.75 E+13	1.28 E+13	1.81 E+13	1.31 E+13
K	L <sub>2</sub> M <sub>2</sub>	1.29 E+13	1.10 E+13	1.32 E+13	1.10 E+13	1.35 E+13	1.11 E+13
K	L <sub>2</sub> M <sub>3</sub>	1.11 E+14	1.13 E+14	1.15 E+14	1.12 E+14	1.18 E+14	1.12 E+14
K	L <sub>3</sub> L <sub>3</sub>	1.68 E+14	1.11 E+14	1.81 E+14	1.21 E+14	1.94 E+14	1.30 E+14
K	L <sub>3</sub> M <sub>1</sub>	2.70 E+13	1.99 E+13	2.81 E+13	2.06 E+13	2.92 E+13	2.12 E+13
K	L <sub>3</sub> M <sub>2</sub>	2.79 E+13	8.71 E+13	3.60 E+13	8.80 E+13	4.30 E+13	8.71 E+13
K	L <sub>3</sub> M <sub>3</sub>	1.24 E+14	1.28 E+13	1.24 E+14	1.89 E+13	1.25 E+14	2.65 E+13
K	M <sub>1</sub> M <sub>1</sub>	2.94 E+12	2.30 E+12	3.12 E+12	2.41 E+12	3.30 E+12	2.53 E+12
K	M <sub>1</sub> M <sub>2</sub>	1.07 E+12	9.09 E+11	1.18 E+12	9.84 E+11	9.58 E+12	8.27 E+12
K	M <sub>1</sub> M <sub>3</sub>	9.32 E+12	8.26 E+12	9.84 E+12	8.59 E+12	2.06 E+12	1.70 E+12
K	M <sub>2</sub> M <sub>2</sub>	2.19 E+12	2.02 E+12	2.22 E+12	2.02 E+12	2.24 E+12	2.01 E+12
K	M <sub>2</sub> M <sub>3</sub>	1.90 E+13	1.82 E+13	1.99 E+13	1.87 E+13	2.07 E+13	1.92 E+13
K	M <sub>3</sub> M <sub>3</sub>	2.46 E+12	2.11 E+12	2.95 E+12	2.51 E+12	3.48 E+12	2.94 E+12
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	1.04 E+14	6.79 E+13	1.07 E+14	6.94 E+13	1.10 E+14	7.09 E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	1.47 E+14	9.96 E+13	1.52 E+14	1.03 E+14	3.05 E+14	2.14 E+14
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	4.32 E+14	3.01 E+14	4.42 E+14	3.08 E+14	3.05 E+14	2.05 E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	1.26 E+12	2.07 E+12	1.16 E+12	1.89 E+12	1.06 E+12	1.72 E+12
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	1.16 E+13	5.24 E+12	1.24 E+13	5.73 E+12	1.31 E+13	6.19 E+12
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	1.72 E+12	1.21 E+12	2.04 E+12	1.43 E+12	2.38 E+12	1.66 E+12
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	1.46 E+13	1.12 E+13	1.51 E+13	1.14 E+13	1.55 E+13	1.15 E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	7.00 E+13	2.92 E+13	6.84 E+13	2.92 E+13	1.53 E+14	8.38 E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	1.12 E+14	6.40 E+13	1.17 E+14	6.75 E+13	3.66 E+13	1.62 E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.71 E+13	1.10 E+13	1.73 E+13	1.11 E+13	1.76 E+13	1.12 E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	3.02 E+13	1.32 E+13	3.29 E+13	1.47 E+13	8.32 E+13	4.78 E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	1.63 E+14	7.99 E+13	1.66 E+14	8.18 E+13	1.19 E+14	5.19 E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	3.19 E+13	2.17 E+13	2.91 E+13	2.00 E+13	2.65 E+13	1.84 E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	3.44 E+14	1.84 E+14	3.50 E+14	1.89 E+14	3.54 E+14	1.93 E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	3.78 E+14	1.87 E+14	3.94 E+14	1.98 E+14	4.11 E+14	2.08 E+14
Initial	Final	Z = 34		Z = 35		Z = 36	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	1.12 E+14	6.68 E+13	1.14 E+14	6.85 E+13	1.17 E+14	7.02 E+13
K	L <sub>1</sub> L <sub>2</sub>	2.99 E+14	1.97 E+14	2.97 E+14	1.96 E+14	2.96 E+14	1.95 E+14
K	L <sub>1</sub> L <sub>3</sub>	1.17 E+14	7.51 E+13	1.26 E+14	8.07 E+13	1.35 E+14	8.66 E+13
K	L <sub>1</sub> M <sub>1</sub>	4.20 E+13	2.96 E+13	4.36 E+13	3.05 E+13	4.51 E+13	3.15 E+13
K	L <sub>1</sub> M <sub>2</sub>	4.69 E+13	3.79 E+13	4.73 E+13	3.78 E+13	4.77 E+13	3.77 E+13
K	L <sub>1</sub> M <sub>3</sub>	4.02 E+13	2.78 E+13	4.31 E+13	2.99 E+13	4.59 E+13	3.19 E+13
K	L <sub>2</sub> L <sub>2</sub>	5.59 E+13	3.80 E+13	5.50 E+13	3.72 E+13	5.45 E+13	3.65 E+13
K	L <sub>2</sub> L <sub>3</sub>	7.32 E+14	5.12 E+14	7.36 E+14	5.12 E+14	7.40 E+14	5.12 E+14
K	L <sub>2</sub> M <sub>1</sub>	1.87 E+13	1.34 E+13	1.93 E+13	1.38 E+13	1.98 E+13	1.41 E+13
K	L <sub>2</sub> M <sub>2</sub>	1.38 E+13	1.11 E+13	1.40 E+13	1.12 E+13	1.44 E+13	1.12 E+13
K	L <sub>2</sub> M <sub>3</sub>	1.20 E+14	1.12 E+14	1.23 E+14	1.12 E+14	1.26 E+14	1.12 E+14
K	L <sub>3</sub> L <sub>3</sub>	2.07 E+14	1.39 E+14	2.19 E+14	1.48 E+14	2.30 E+14	1.55 E+14
K	L <sub>3</sub> M <sub>1</sub>	3.02 E+13	2.19 E+13	3.12 E+13	2.25 E+13	3.22 E+13	2.31 E+13
K	L <sub>3</sub> M <sub>2</sub>	4.93 E+13	8.60 E+13	5.51 E+13	8.52 E+13	6.06 E+13	8.48 E+13
K	L <sub>3</sub> M <sub>3</sub>	1.26 E+14	3.40 E+13	1.27 E+14	4.08 E+13	1.29 E+14	4.69 E+13
K	M <sub>1</sub> M <sub>1</sub>	3.48 E+12	2.65 E+12	3.66 E+12	2.76 E+12	3.83 E+12	2.88 E+12
K	M <sub>1</sub> M <sub>2</sub>	1.00 E+13	8.55 E+12	1.04 E+13	8.81 E+12	1.08 E+13	9.04 E+12
K	M <sub>1</sub> M <sub>3</sub>	2.22 E+12	1.81 E+12	2.41 E+12	1.93 E+12	2.61 E+12	2.07 E+12
K	M <sub>2</sub> M <sub>2</sub>	2.26 E+12	1.99 E+12	2.26 E+12	1.97 E+12	2.28 E+12	1.95 E+12
K	M <sub>2</sub> M <sub>3</sub>	2.15 E+13	1.96 E+13	2.22 E+13	1.99 E+13	2.29 E+13	2.03 E+13

Table 2 (continued)

Initial	Final	Z = 34		Z = 35		Z = 36	
		RCI	FAC	RCI	FAC	RCI	FAC
K	M <sub>3</sub> M <sub>3</sub>	4.02E+12	3.38E+12	4.59E+12	3.83E+12	5.15E+12	4.27E+12
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	1.12E+14	7.22E+13	1.14E+14	7.36E+13	1.16E+14	7.48E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	3.12E+14	2.17E+14	3.17E+14	2.20E+14	3.22E+14	2.23E+14
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	3.13E+14	2.10E+14	3.22E+14	2.16E+14	3.30E+14	2.21E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	9.70E+11	1.56E+12	8.86E+11	1.42E+12	8.11E+11	1.29E+12
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	1.38E+13	6.63E+12	1.44E+13	7.03E+12	1.49E+13	7.42E+12
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	2.73E+12	1.90E+12	3.10E+12	2.14E+12	3.46E+12	2.38E+12
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	1.58E+13	1.17E+13	1.62E+13	1.18E+13	1.65E+13	1.19E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	1.59E+14	8.73E+13	1.65E+14	9.12E+13	1.71E+14	9.51E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	3.41E+13	1.52E+13	3.15E+13	1.43E+13	2.88E+13	1.33E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.78E+13	1.13E+13	1.79E+13	1.14E+13	1.80E+13	1.15E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	8.26E+13	4.81E+13	8.13E+13	4.79E+13	7.99E+13	4.74E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	1.24E+14	5.53E+13	1.29E+14	5.85E+13	1.34E+14	6.19E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	2.39E+13	1.68E+13	2.14E+13	1.53E+13	1.93E+13	1.38E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	3.59E+14	1.96E+14	3.64E+14	2.00E+14	3.70E+14	2.06E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	4.26E+14	2.19E+14	4.41E+14	2.28E+14	4.55E+14	2.39E+14
Initial	Final	Z = 37		Z = 38		Z = 39	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	1.20E+14	7.20E+13	1.22E+14	7.37E+13	1.25E+14	7.55E+13
K	L <sub>1</sub> L <sub>2</sub>	2.94E+14	1.93E+14	2.91E+14	1.91E+14	2.89E+14	1.89E+14
K	L <sub>1</sub> L <sub>3</sub>	1.45E+14	9.27E+13	1.54E+14	9.89E+13	1.64E+14	1.05E+14
K	L <sub>1</sub> M <sub>1</sub>	4.66E+13	3.24E+13	4.81E+13	3.34E+13	4.96E+13	3.43E+13
K	L <sub>1</sub> M <sub>2</sub>	4.81E+13	3.76E+13	4.86E+13	3.76E+13	4.92E+13	3.77E+13
K	L <sub>1</sub> M <sub>3</sub>	4.85E+13	3.39E+13	5.11E+13	3.58E+13	5.35E+13	3.75E+13
K	L <sub>2</sub> L <sub>2</sub>	5.39E+13	3.59E+13	5.31E+13	3.53E+13	5.29E+13	3.49E+13
K	L <sub>2</sub> L <sub>3</sub>	7.43E+14	5.13E+14	7.46E+14	5.13E+14	7.50E+14	5.14E+14
K	L <sub>2</sub> M <sub>1</sub>	2.04E+13	1.45E+13	2.10E+13	1.48E+13	2.16E+13	1.52E+13
K	L <sub>2</sub> M <sub>2</sub>	1.46E+13	1.13E+13	1.48E+13	1.14E+13	1.51E+13	1.14E+13
K	L <sub>2</sub> M <sub>3</sub>	1.28E+14	1.11E+14	1.30E+14	1.11E+14	1.33E+14	1.11E+14
K	L <sub>3</sub> L <sub>3</sub>	2.41E+14	1.63E+14	2.50E+14	1.70E+14	2.59E+14	1.76E+14
K	L <sub>3</sub> M <sub>1</sub>	3.32E+13	2.37E+13	3.42E+13	2.43E+13	3.51E+13	2.49E+13
K	L <sub>3</sub> M <sub>2</sub>	6.57E+13	8.49E+13	7.05E+13	8.52E+13	7.51E+13	8.58E+13
K	L <sub>3</sub> M <sub>3</sub>	1.31E+14	5.23E+13	1.32E+14	5.71E+13	1.34E+14	6.14E+13
K	M <sub>1</sub> M <sub>1</sub>	4.00E+12	2.99E+12	4.19E+12	3.11E+12	4.36E+12	3.23E+12
K	M <sub>1</sub> M <sub>2</sub>	1.12E+13	9.25E+12	1.15E+13	9.44E+12	1.18E+13	9.60E+12
K	M <sub>1</sub> M <sub>3</sub>	2.83E+12	2.23E+12	3.08E+12	2.40E+12	3.36E+12	2.60E+12
K	M <sub>2</sub> M <sub>2</sub>	2.28E+12	1.93E+12	2.27E+12	1.91E+12	2.28E+12	1.89E+12
K	M <sub>2</sub> M <sub>3</sub>	2.36E+13	2.06E+13	2.42E+13	2.09E+13	2.48E+13	2.12E+13
K	M <sub>3</sub> M <sub>3</sub>	5.73E+12	4.72E+12	6.30E+12	5.15E+12	6.86E+12	5.58E+12
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	1.18E+14	7.60E+13	1.20E+14	7.72E+13	1.22E+14	7.84E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	3.26E+14	2.25E+14	3.30E+14	2.27E+14	3.32E+14	2.28E+14
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	3.39E+14	2.26E+14	3.48E+14	2.31E+14	3.57E+14	2.37E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	7.36E+11	1.17E+12	6.72E+11	1.07E+12	6.11E+11	9.75E+11
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	1.55E+13	7.78E+12	1.59E+13	8.11E+12	1.64E+13	8.43E+12
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	3.82E+12	2.62E+12	4.18E+12	2.85E+12	4.52E+12	3.08E+12
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	1.67E+13	1.20E+13	1.70E+13	1.20E+13	1.71E+13	1.20E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	1.78E+14	9.90E+13	1.84E+14	1.03E+14	1.89E+14	1.07E+14
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	2.60E+13	1.21E+13	2.30E+13	1.09E+13	2.03E+13	9.72E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.81E+13	1.15E+13	1.83E+13	1.16E+13	1.84E+13	1.16E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	7.79E+13	4.66E+13	7.63E+13	4.57E+13	7.36E+13	4.45E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	1.39E+14	6.54E+13	1.45E+14	6.90E+13	1.51E+14	7.28E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	1.74E+13	1.25E+13	1.58E+13	1.14E+13	1.42E+13	1.04E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	3.73E+14	2.09E+14	3.78E+14	2.12E+14	3.82E+14	2.15E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	4.68E+14	2.48E+14	4.77E+14	2.56E+14	4.90E+14	2.64E+14
Initial	Final	Z = 40		Z = 41		Z = 42	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	1.28E+14	7.73E+13	1.31E+14	7.92E+13	1.34E+14	8.10E+13
K	L <sub>1</sub> L <sub>2</sub>	2.87E+14	1.88E+14	2.85E+14	1.86E+14	2.83E+14	1.85E+14
K	L <sub>1</sub> L <sub>3</sub>	1.73E+14	1.11E+14	1.83E+14	1.18E+14	1.92E+14	1.23E+14
K	L <sub>1</sub> M <sub>1</sub>	5.12E+13	3.53E+13	5.27E+13	3.62E+13	5.43E+13	3.72E+13
K	L <sub>1</sub> M <sub>2</sub>	4.98E+13	3.78E+13	5.04E+13	3.80E+13	5.12E+13	3.83E+13
K	L <sub>1</sub> M <sub>3</sub>	5.59E+13	3.92E+13	5.82E+13	4.08E+13	6.04E+13	4.24E+13
K	L <sub>2</sub> L <sub>2</sub>	5.23E+13	3.45E+13	5.22E+13	3.42E+13	5.17E+13	3.39E+13
K	L <sub>2</sub> L <sub>3</sub>	7.53E+14	5.15E+14	7.57E+14	5.16E+14	7.59E+14	5.17E+14
K	L <sub>2</sub> M <sub>1</sub>	2.22E+13	1.55E+13	2.27E+13	1.59E+13	2.33E+13	1.62E+13
K	L <sub>2</sub> M <sub>2</sub>	1.53E+13	1.15E+13	1.57E+13	1.16E+13	1.58E+13	1.17E+13
K	L <sub>2</sub> M <sub>3</sub>	1.35E+14	1.11E+14	1.37E+14	1.12E+14	1.39E+14	1.12E+14
K	L <sub>3</sub> L <sub>3</sub>	2.68E+14	1.82E+14	2.76E+14	1.87E+14	2.83E+14	1.92E+14
K	L <sub>3</sub> M <sub>1</sub>	3.60E+13	2.55E+13	3.69E+13	2.61E+13	3.78E+13	2.66E+13
K	L <sub>3</sub> M <sub>2</sub>	7.93E+13	8.65E+13	8.36E+13	8.73E+13	8.74E+13	8.83E+13
K	L <sub>3</sub> M <sub>3</sub>	1.36E+14	6.52E+13	1.37E+14	6.87E+13	1.39E+14	7.19E+13
K	M <sub>1</sub> M <sub>1</sub>	4.55E+12	3.35E+12	4.72E+12	3.47E+12	4.92E+12	3.59E+12

(continued on next page)

Table 2 (continued)

Initial	Final	Z = 40		Z = 41		Z = 42	
		RCI	FAC	RCI	FAC	RCI	FAC
K	M <sub>1</sub> M <sub>2</sub>	1.20E+13	9.74E+12	1.22E+13	9.85E+12	1.24E+13	9.95E+12
K	M <sub>1</sub> M <sub>3</sub>	3.66E+12	2.81E+12	3.99E+12	3.05E+12	4.34E+12	3.30E+12
K	M <sub>2</sub> M <sub>2</sub>	2.27E+12	1.87E+12	2.29E+12	1.86E+12	2.28E+12	1.85E+12
K	M <sub>2</sub> M <sub>3</sub>	2.53E+13	2.14E+13	2.59E+13	2.17E+13	2.63E+13	2.19E+13
K	M <sub>3</sub> M <sub>3</sub>	7.41E+12	5.99E+12	7.94E+12	6.39E+12	8.46E+12	6.77E+12
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	1.24E+14	7.95E+13	1.26E+14	8.06E+13	1.28E+14	8.17E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	3.34E+14	2.29E+14	3.37E+14	2.30E+14	3.37E+14	2.30E+14
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	3.65E+14	2.42E+14	3.75E+14	2.48E+14	3.84E+14	2.54E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	5.58E+11	8.92E+11	5.10E+11	8.18E+11	4.68E+11	7.52E+11
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	1.68E+13	8.72E+12	1.72E+13	8.99E+12	1.76E+13	9.25E+12
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	4.90E+12	3.30E+12	5.22E+12	3.52E+12	5.53E+12	3.73E+12
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	1.74E+13	1.21E+13	1.75E+13	1.21E+13	1.76E+13	1.21E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	1.95E+14	1.10E+14	2.01E+14	1.14E+14	2.06E+14	1.17E+14
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	1.75E+13	8.50E+12	1.49E+13	7.35E+12	1.26E+13	6.27E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.83E+13	1.16E+13	1.83E+13	1.17E+13	1.84E+13	1.17E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	7.06E+13	4.31E+13	6.74E+13	4.15E+13	6.45E+13	3.98E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	1.57E+14	7.66E+13	1.63E+14	8.06E+13	1.70E+14	8.46E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	1.30E+13	9.52E+12	1.18E+13	8.73E+12	1.08E+13	8.04E+12
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	3.85E+14	2.18E+14	3.90E+14	2.21E+14	3.94E+14	2.24E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	4.99E+14	2.71E+14	5.08E+14	2.78E+14	5.20E+14	2.85E+14
Initial	Final	Z = 43		Z = 44		Z = 45	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	1.36E+14	8.29E+13	1.40E+14	8.49E+13	1.42E+14	8.69E+13
K	L <sub>1</sub> L <sub>2</sub>	2.81E+14	1.83E+14	2.80E+14	1.82E+14	2.79E+14	1.82E+14
K	L <sub>1</sub> L <sub>3</sub>	2.00E+14	1.29E+14	2.09E+14	1.35E+14	2.17E+14	1.40E+14
K	L <sub>1</sub> M <sub>1</sub>	5.58E+13	3.82E+13	5.74E+13	3.92E+13	5.90E+13	4.02E+13
K	L <sub>1</sub> M <sub>2</sub>	5.19E+13	3.86E+13	5.27E+13	3.89E+13	5.36E+13	3.94E+13
K	L <sub>1</sub> M <sub>3</sub>	6.25E+13	4.38E+13	6.45E+13	4.52E+13	6.65E+13	4.65E+13
K	L <sub>2</sub> L <sub>2</sub>	5.18E+13	3.37E+13	5.14E+13	3.35E+13	5.16E+13	3.34E+13
K	L <sub>2</sub> L <sub>3</sub>	7.63E+14	5.18E+14	7.66E+14	5.19E+14	7.70E+14	5.20E+14
K	L <sub>2</sub> M <sub>1</sub>	2.39E+13	1.66E+13	2.45E+13	1.70E+13	2.51E+13	1.73E+13
K	L <sub>2</sub> M <sub>2</sub>	1.61E+13	1.18E+13	1.63E+13	1.19E+13	1.66E+13	1.21E+13
K	L <sub>2</sub> M <sub>3</sub>	1.41E+14	1.12E+14	1.42E+14	1.12E+14	1.44E+14	1.13E+14
K	L <sub>3</sub> L <sub>3</sub>	2.90E+14	1.97E+14	2.97E+14	2.01E+14	3.02E+14	2.05E+14
K	L <sub>3</sub> M <sub>1</sub>	3.86E+13	2.72E+13	3.95E+13	2.77E+13	4.03E+13	2.83E+13
K	L <sub>3</sub> M <sub>2</sub>	9.13E+13	8.93E+13	9.48E+13	9.03E+13	9.85E+13	9.13E+13
K	L <sub>3</sub> M <sub>3</sub>	1.40E+14	7.48E+13	1.42E+14	7.75E+13	1.43E+14	7.99E+13
K	M <sub>1</sub> M <sub>1</sub>	5.09E+12	3.71E+12	5.29E+12	3.83E+12	5.46E+12	3.96E+12
K	M <sub>1</sub> M <sub>2</sub>	1.26E+13	1.00E+13	1.27E+13	1.01E+13	1.28E+13	1.01E+13
K	M <sub>1</sub> M <sub>3</sub>	4.73E+12	3.57E+12	5.12E+12	3.86E+12	5.54E+12	4.15E+12
K	M <sub>2</sub> M <sub>2</sub>	2.30E+12	1.84E+12	2.29E+12	1.83E+12	2.32E+12	1.83E+12
K	M <sub>2</sub> M <sub>3</sub>	2.69E+13	2.21E+13	2.73E+13	2.24E+13	2.78E+13	2.26E+13
K	M <sub>3</sub> M <sub>3</sub>	8.97E+12	7.13E+12	9.46E+12	7.48E+12	9.92E+12	7.81E+12
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	1.29E+14	8.28E+13	1.31E+14	8.38E+13	1.33E+14	8.48E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	3.38E+14	2.30E+14	3.39E+14	2.30E+14	3.38E+14	2.30E+14
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	3.93E+14	2.60E+14	4.03E+14	2.66E+14	4.12E+14	2.72E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	4.30E+11	6.93E+11	3.93E+11	6.40E+11	3.63E+11	5.93E+11
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	1.78E+13	9.48E+12	1.82E+13	9.71E+12	1.85E+13	9.91E+12
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	5.86E+12	3.94E+12	6.16E+12	4.14E+12	6.46E+12	4.33E+12
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	1.78E+13	1.22E+13	1.79E+13	1.22E+13	1.80E+13	1.22E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	2.11E+14	1.21E+14	2.17E+14	1.24E+14	2.22E+14	1.26E+14
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	1.04E+13	5.32E+12	8.62E+12	4.50E+12	7.05E+12	3.84E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.85E+13	1.17E+13	1.84E+13	1.17E+13	1.83E+13	1.17E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	6.12E+13	3.81E+13	5.76E+13	3.63E+13	5.46E+13	3.45E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	1.76E+14	8.86E+13	1.82E+14	9.26E+13	1.87E+14	9.66E+13
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	9.95E+12	7.43E+12	9.19E+12	6.88E+12	8.50E+12	6.40E+12
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	3.99E+14	2.27E+14	4.02E+14	2.30E+14	4.07E+14	2.33E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	5.28E+14	2.91E+14	5.36E+14	2.97E+14	5.45E+14	3.03E+14
Initial	Final	Z = 46		Z = 47		Z = 48	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	1.46E+14	8.89E+13	1.49E+14	9.10E+13	1.52E+14	9.31E+13
K	L <sub>1</sub> L <sub>2</sub>	2.79E+14	1.81E+14	2.79E+14	1.81E+14	2.80E+14	1.81E+14
K	L <sub>1</sub> L <sub>3</sub>	2.24E+14	1.45E+14	2.31E+14	1.50E+14	2.38E+14	1.54E+14
K	L <sub>1</sub> M <sub>1</sub>	6.06E+13	4.12E+13	6.22E+13	4.23E+13	6.40E+13	4.33E+13
K	L <sub>1</sub> M <sub>2</sub>	5.46E+13	3.99E+13	5.55E+13	4.04E+13	5.66E+13	4.10E+13
K	L <sub>1</sub> M <sub>3</sub>	6.84E+13	4.78E+13	7.03E+13	4.91E+13	7.21E+13	5.03E+13
K	L <sub>2</sub> L <sub>2</sub>	5.13E+13	3.33E+13	5.16E+13	3.32E+13	5.14E+13	3.32E+13
K	L <sub>2</sub> L <sub>3</sub>	7.73E+14	5.21E+14	7.77E+14	5.23E+14	7.80E+14	5.24E+14
K	L <sub>2</sub> M <sub>1</sub>	2.57E+13	1.77E+13	2.62E+13	1.81E+13	2.69E+13	1.85E+13
K	L <sub>2</sub> M <sub>2</sub>	1.68E+13	1.22E+13	1.71E+13	1.23E+13	1.73E+13	1.24E+13
K	L <sub>2</sub> M <sub>3</sub>	1.46E+14	1.13E+14	1.48E+14	1.13E+14	1.50E+14	1.14E+14
K	L <sub>3</sub> L <sub>3</sub>	3.08E+14	2.08E+14	3.12E+14	2.12E+14	3.17E+14	2.15E+14

Table 2 (continued)

Initial	Final	Z = 46		Z = 47		Z = 48	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>3</sub> M <sub>1</sub>	4.12E+13	2.88E+13	4.19E+13	2.93E+13	4.28E+13	2.98E+13
K	L <sub>3</sub> M <sub>2</sub>	1.02E+14	9.24E+13	1.05E+14	9.34E+13	1.08E+14	9.45E+13
K	L <sub>3</sub> M <sub>3</sub>	1.45E+14	8.22E+13	1.46E+14	8.42E+13	1.47E+14	8.61E+13
K	M <sub>1</sub> M <sub>1</sub>	5.67E+12	4.09E+12	5.85E+12	4.22E+12	6.06E+12	4.35E+12
K	M <sub>1</sub> M <sub>2</sub>	1.30E+13	1.02E+13	1.30E+13	1.02E+13	1.31E+13	1.02E+13
K	M <sub>1</sub> M <sub>3</sub>	5.96E+12	4.46E+12	6.39E+12	4.77E+12	6.83E+12	5.08E+12
K	M <sub>2</sub> M <sub>2</sub>	2.31E+12	1.83E+12	2.35E+12	1.83E+12	2.34E+12	1.83E+12
K	M <sub>2</sub> M <sub>3</sub>	2.82E+13	2.28E+13	2.87E+13	2.30E+13	2.91E+13	2.33E+13
K	M <sub>3</sub> M <sub>3</sub>	1.04E+13	8.13E+12	1.08E+13	8.43E+12	1.12E+13	8.71E+12
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	1.34E+14	8.58E+13	1.35E+14	8.68E+13	1.38E+14	8.78E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	3.38E+14	2.29E+14	3.38E+14	2.29E+14	3.38E+14	2.28E+14
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	4.21E+14	2.78E+14	4.32E+14	2.84E+14	4.39E+14	2.90E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	3.33E+11	5.50E+11	3.06E+11	5.11E+11	2.83E+11	4.76E+11
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	1.88E+13	1.01E+13	1.90E+13	1.03E+13	1.92E+13	1.05E+13
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	6.74E+12	4.52E+12	7.03E+12	4.70E+12	7.31E+12	4.88E+12
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	1.81E+13	1.22E+13	1.82E+13	1.22E+13	1.82E+13	1.23E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	2.25E+14	1.29E+14	2.30E+14	1.31E+14	2.33E+14	1.34E+14
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	5.83E+12	3.32E+12	4.89E+12	2.96E+12	4.22E+12	2.75E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.82E+13	1.17E+13	1.83E+13	1.17E+13	1.83E+13	1.16E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	5.15E+13	3.27E+13	4.84E+13	3.09E+13	4.54E+13	2.92E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	1.94E+14	1.00E+14	2.00E+14	1.04E+14	2.06E+14	1.08E+14
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	7.90E+12	5.97E+12	7.39E+12	5.58E+12	6.88E+12	5.23E+12
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	4.10E+14	2.36E+14	4.15E+14	2.39E+14	4.19E+14	2.42E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	5.52E+14	3.08E+14	5.57E+14	3.14E+14	5.67E+14	3.19E+14
Initial	Final	Z = 49		Z = 50		Z = 51	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	1.55E+14	9.52E+13	1.59E+14	9.74E+13	1.62E+14	9.97E+13
K	L <sub>1</sub> L <sub>2</sub>	2.80E+14	1.82E+14	2.82E+14	1.82E+14	2.84E+14	1.83E+14
K	L <sub>1</sub> L <sub>3</sub>	2.45E+14	1.59E+14	2.51E+14	1.63E+14	2.57E+14	1.67E+14
K	L <sub>1</sub> M <sub>1</sub>	6.56E+13	4.44E+13	6.74E+13	4.55E+13	6.90E+13	4.67E+13
K	L <sub>1</sub> M <sub>2</sub>	5.76E+13	4.17E+13	5.88E+13	4.24E+13	6.00E+13	4.31E+13
K	L <sub>1</sub> M <sub>3</sub>	7.39E+13	5.15E+13	7.57E+13	5.27E+13	7.74E+13	5.38E+13
K	L <sub>2</sub> L <sub>2</sub>	5.17E+13	3.32E+13	5.16E+13	3.32E+13	5.20E+13	3.32E+13
K	L <sub>2</sub> L <sub>3</sub>	7.84E+14	5.26E+14	7.87E+14	5.27E+14	7.91E+14	5.29E+14
K	L <sub>2</sub> M <sub>1</sub>	2.74E+13	1.88E+13	2.81E+13	1.92E+13	2.86E+13	1.96E+13
K	L <sub>2</sub> M <sub>2</sub>	1.76E+13	1.25E+13	1.77E+13	1.26E+13	1.81E+13	1.28E+13
K	L <sub>2</sub> M <sub>3</sub>	1.51E+14	1.14E+14	1.53E+14	1.15E+14	1.55E+14	1.15E+14
K	L <sub>3</sub> L <sub>3</sub>	3.21E+14	2.17E+14	3.25E+14	2.20E+14	3.28E+14	2.22E+14
K	L <sub>3</sub> M <sub>1</sub>	4.35E+13	3.03E+13	4.43E+13	3.08E+13	4.51E+13	3.13E+13
K	L <sub>3</sub> M <sub>2</sub>	1.11E+14	9.55E+13	1.14E+14	9.66E+13	1.17E+14	9.76E+13
K	L <sub>3</sub> M <sub>3</sub>	1.48E+14	8.79E+13	1.49E+14	8.95E+13	1.50E+14	9.11E+13
K	M <sub>1</sub> M <sub>1</sub>	6.24E+12	4.48E+12	6.46E+12	4.62E+12	6.65E+12	4.76E+12
K	M <sub>1</sub> M <sub>2</sub>	1.32E+13	1.03E+13	1.33E+13	1.03E+13	1.34E+13	1.03E+13
K	M <sub>1</sub> M <sub>3</sub>	7.27E+12	5.40E+12	7.70E+12	5.71E+12	8.13E+12	6.01E+12
K	M <sub>2</sub> M <sub>2</sub>	2.38E+12	1.83E+12	2.38E+12	1.84E+12	2.42E+12	1.84E+12
K	M <sub>2</sub> M <sub>3</sub>	2.96E+13	2.35E+13	3.00E+13	2.37E+13	3.05E+13	2.39E+13
K	M <sub>3</sub> M <sub>3</sub>	1.16E+13	8.98E+12	1.20E+13	9.24E+12	1.23E+13	9.48E+12
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	1.38E+14	8.88E+13	1.41E+14	8.98E+13	1.41E+14	9.08E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	3.37E+14	2.28E+14	3.38E+14	2.27E+14	3.38E+14	2.27E+14
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	4.48E+14	2.96E+14	4.58E+14	3.02E+14	4.66E+14	3.08E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	2.61E+11	4.44E+11	2.41E+11	4.16E+11	2.23E+11	3.89E+11
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	1.95E+13	1.06E+13	1.97E+13	1.08E+13	1.98E+13	1.09E+13
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	7.56E+12	5.06E+12	7.81E+12	5.22E+12	8.06E+12	5.39E+12
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	1.83E+13	1.23E+13	1.83E+13	1.23E+13	1.85E+13	1.23E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	2.36E+14	1.36E+14	2.39E+14	1.38E+14	2.42E+14	1.40E+14
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	3.79E+12	2.66E+12	3.59E+12	2.69E+12	3.56E+12	2.82E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.82E+13	1.16E+13	1.82E+13	1.16E+13	1.81E+13	1.16E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	4.28E+13	2.76E+13	4.03E+13	2.61E+13	3.81E+13	2.47E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	2.11E+14	1.12E+14	2.16E+14	1.15E+14	2.21E+14	1.19E+14
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	6.43E+12	4.92E+12	6.05E+12	4.64E+12	5.73E+12	4.37E+12
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	4.23E+14	2.44E+14	4.28E+14	2.47E+14	4.32E+14	2.50E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	5.73E+14	3.24E+14	5.79E+14	3.28E+14	5.86E+14	3.33E+14
Initial	Final	Z = 52		Z = 53		Z = 54	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>1</sub> L <sub>1</sub>	1.66E+14	1.02E+14	1.70E+14	1.04E+14	1.74E+14	1.07E+14
K	L <sub>1</sub> L <sub>2</sub>	2.86E+14	1.85E+14	2.88E+14	1.86E+14	2.91E+14	1.88E+14
K	L <sub>1</sub> L <sub>3</sub>	2.63E+14	1.70E+14	2.68E+14	1.74E+14	2.74E+14	1.78E+14
K	L <sub>1</sub> M <sub>1</sub>	7.09E+13	4.78E+13	7.26E+13	4.90E+13	7.45E+13	5.02E+13
K	L <sub>1</sub> M <sub>2</sub>	6.13E+13	4.39E+13	6.26E+13	4.47E+13	6.40E+13	4.56E+13
K	L <sub>1</sub> M <sub>3</sub>	7.92E+13	5.49E+13	8.09E+13	5.61E+13	8.26E+13	5.72E+13
K	L <sub>2</sub> L <sub>2</sub>	5.19E+13	3.33E+13	5.23E+13	3.34E+13	5.26E+13	3.35E+13
K	L <sub>2</sub> L <sub>3</sub>	7.94E+14	5.30E+14	7.98E+14	5.32E+14	8.02E+14	5.34E+14

(continued on next page)

Table 2 (continued)

Initial	Final	Z = 52		Z = 53		Z = 54	
		RCI	FAC	RCI	FAC	RCI	FAC
K	L <sub>2</sub> M <sub>1</sub>	2.92E+13	2.00E+13	2.98E+13	2.04E+13	3.04E+13	2.07E+13
K	L <sub>2</sub> M <sub>2</sub>	1.82E+13	1.29E+13	1.86E+13	1.30E+13	1.90E+13	1.32E+13
K	L <sub>2</sub> M <sub>3</sub>	1.56E+14	1.16E+14	1.58E+14	1.16E+14	1.60E+14	1.17E+14
K	L <sub>3</sub> L <sub>3</sub>	3.31E+14	2.24E+14	3.34E+14	2.26E+14	3.36E+14	2.27E+14
K	L <sub>3</sub> M <sub>1</sub>	4.59E+13	3.18E+13	4.65E+13	3.23E+13	4.72E+13	3.27E+13
K	L <sub>3</sub> M <sub>2</sub>	1.19E+14	9.86E+13	1.22E+14	9.96E+13	1.24E+14	1.01E+14
K	L <sub>3</sub> M <sub>3</sub>	1.51E+14	9.25E+13	1.52E+14	9.38E+13	1.53E+14	9.50E+13
K	M <sub>1</sub> M <sub>1</sub>	6.88E+12	4.90E+12	7.08E+12	5.05E+12	7.29E+12	5.19E+12
K	M <sub>1</sub> M <sub>2</sub>	1.35E+13	1.04E+13	1.36E+13	1.04E+13	1.38E+13	1.05E+13
K	M <sub>1</sub> M <sub>3</sub>	8.55E+12	6.32E+12	8.96E+12	6.61E+12	9.37E+12	6.90E+12
K	M <sub>2</sub> M <sub>2</sub>	2.42E+12	1.85E+12	2.46E+12	1.86E+12	2.50E+12	1.87E+12
K	M <sub>2</sub> M <sub>3</sub>	3.08E+13	2.41E+13	3.13E+13	2.43E+13	3.18E+13	2.46E+13
K	M <sub>3</sub> M <sub>3</sub>	1.27E+13	9.70E+12	1.30E+13	9.92E+12	1.33E+13	1.01E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>1</sub>	1.43E+14	9.18E+13	1.45E+14	9.28E+13	1.46E+14	9.38E+13
L <sub>1</sub>	M <sub>1</sub> M <sub>2</sub>	3.37E+14	2.26E+14	3.39E+14	2.26E+14	3.39E+14	2.26E+14
L <sub>1</sub>	M <sub>1</sub> M <sub>3</sub>	4.75E+14	3.13E+14	4.83E+14	3.19E+14	4.90E+14	3.24E+14
L <sub>1</sub>	M <sub>2</sub> M <sub>2</sub>	2.06E+11	3.65E+11	1.91E+11	3.43E+11	1.77E+11	3.23E+11
L <sub>1</sub>	M <sub>2</sub> M <sub>3</sub>	2.00E+13	1.10E+13	2.01E+13	1.12E+13	2.03E+13	1.13E+13
L <sub>1</sub>	M <sub>3</sub> M <sub>3</sub>	8.29E+12	5.55E+12	8.54E+12	5.71E+12	8.76E+12	5.87E+12
L <sub>2</sub>	M <sub>1</sub> M <sub>1</sub>	1.84E+13	1.23E+13	1.85E+13	1.23E+13	1.85E+13	1.23E+13
L <sub>2</sub>	M <sub>1</sub> M <sub>2</sub>	2.44E+14	1.42E+14	2.48E+14	1.43E+14	2.50E+14	1.45E+14
L <sub>2</sub>	M <sub>1</sub> M <sub>3</sub>	3.74E+12	3.04E+12	4.03E+12	3.32E+12	4.42E+12	3.66E+12
L <sub>3</sub>	M <sub>1</sub> M <sub>1</sub>	1.80E+13	1.15E+13	1.79E+13	1.15E+13	1.78E+13	1.15E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>2</sub>	3.59E+13	2.33E+13	3.37E+13	2.21E+13	3.20E+13	2.10E+13
L <sub>3</sub>	M <sub>1</sub> M <sub>3</sub>	2.27E+14	1.22E+14	2.31E+14	1.25E+14	2.35E+14	1.28E+14
L <sub>3</sub>	M <sub>2</sub> M <sub>2</sub>	5.38E+12	4.14E+12	5.07E+12	3.92E+12	4.82E+12	3.71E+12
L <sub>3</sub>	M <sub>2</sub> M <sub>3</sub>	4.37E+14	2.53E+14	4.40E+14	2.56E+14	4.45E+14	2.59E+14
L <sub>3</sub>	M <sub>3</sub> M <sub>3</sub>	5.91E+14	3.37E+14	5.99E+14	3.41E+14	6.04E+14	3.46E+14