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ANGLE-DIFFERENTIAL CROSS SECTIONS FOR RADIATIVE RECOMBINATION AND THE PHOTOELECTRIC EFFECT IN THE *K*, *L*, AND *M* SHELLS OF ONE-ELECTRON SYSTEMS CALCULATED WITHIN AN EXACT RELATIVISTIC DESCRIPTION

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An extensive tabulation of angle-differential cross sections for radiative recombination and, consequently, for the photoelectric effect of hydrogen-like ions with representative charge numbers $Z = 18$, 36, 54, 66, 79, 82, and 92 is presented for the *K*, *L*, and *M* shells and electron energies ranging from 1.0 keV to 1.5 MeV. The cross sections, accurate to three digits, are based on fully relativistic calculations including the effects of the finite nuclear size and all multipole orders of the photon field. In order to provide a good overview, the following procedure has been adopted: For the charge numbers 18, 54, and 92, the differential cross sections are presented in figures for all subshells and for representative energies. Furthermore, as a sample of the calculations, we present a complete table for the case of $Z = 79$. The full tabulation for all charge numbers mentioned above is provided in electronic form (http://www.idealibrary.com/links/doi/10.1006/adnd.2001.0868/dat). By simple scaling, the dependence on the projectile energy in MeV/u can be derived for accelerator experiments, and, by using elementary formulas, the differential cross section for the photoelectric effect as a function of the electron emission angle can also be obtained. © 2001 Elsevier Science

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CONTENTS

INTRODUCTION

In a recent publication [1], we presented extensive tables of total cross sections for radiative recombination and the photoelectric effect for one-electron systems with $1 \leq Z \leq 112$, calculated within an exact relativistic description [2, 3]. In the present paper, we wish to supplement these data by the corresponding *angle-differential* cross sections. Because of the appearance of the angle as an additional parameter, we have to confine ourselves to representative charge numbers which span the more interesting part of the periodic table and which correspond to projectiles often used in heavy-ion experiments. To our knowledge, systematic tabulations of differential cross sections for the photoelectric effect of hydrogen-like high-Z systems are not available at present.

With the advent of heavy-ion accelerators and electron beam ion traps (EBIT) that are able to produce bare or hydrogenlike high-Z ions up to U^{92+}, new ways of studying the photoeffect in single-electron systems have been established. This is achieved by studying the inverse reaction, namely radiative recombination (RR) of free electrons with bare ions either in a trap or as projectiles. In radiative recombination, an electron is captured into an empty shell of the bare ion, and a photon is emitted simultaneously. In accelerator experiments, because there are no free-electron targets available with high enough density, one observes radiative electron capture (REC) from low-Z target atoms, in which the loosely bound electrons can be considered quasifree. Indeed, it has been shown recently [4–6] that for high-Z ions, the single-electron photoeffect is most efficiently studied by its inverse reaction, RR, which, to a very good approximation, is experimentally implemented as REC.

We wish to render this paper largely self-contained. Therefore, it is unavoidable that some basic relations contained in [1] are repeated here. For certain details of the numerical calculations and for further references, however, the reader should consult the earlier tabulation [1]. In the following, after indicating the motivation for this tabulation, we briefly outline the method by which the tabulated numbers have been obtained. In the subsequent section, we supply the transformation formulas to be used for the different applications of the tables. Although some expressions are just the inverse of those given in the theoretical section, we state them explicitly for clarity and direct use. When referring to the angle,we state each time whether it is taken with respect to the ion motion or with respect to the (opposite) electron motion.

Motivation and Scope

For many practical applications, it is sufficient to know the total RR cross sections. However, for some usages—for example, for estimating the propagation of radiation in matter (where, of course, many-electron effects play a role)—differential cross sections are needed. Furthermore, because it is experimentally easier to measure angular distributions than absolute cross sections, angular distributions lend themselves to tests of the theory. For example, quantum electrodynamical (QED) corrections to radiative recombination with a bare high-Z nucleus or a heavy helium-like ion [7–9] at high energies might become measurable in differential cross sections.

Not having to deal with many-electron effects, our tabulation emphasizes accuracy. The tabulated cross sections are obtained from completely relativistic calculations using exact Coulomb–Dirac wave functions for the bound and for the continuum states, modified for the finite nuclear size. They also include all multipole orders in the photon field. Our tabulated cross sections are accurate to three digits and should be considered the results of benchmark calculations.

The RR cross sections presented in the table and figures are given as a function of the emission angle θ of the photon with respect to the moving ion for various electron energies T_e, generally between 1.0 keV and 1.5 MeV (in some cases, convergence has been achieved only up to 0.5 or 0.8 MeV). In applying these results to the photoelectric effect, the angle θ has to be replaced by the angle $\pi - \theta$ for the emission of the electron.

The differential cross sections are given in the rest frame of the electron. This removes the strong peaking of the angular distributions for high electron energies at forward angles for the photoelectric effect and for radiative recombination in the emitter frame, assuming that θ is the angle between the electron momentum and the photon momentum [4]. The decompressed angular distributions presented here are more suitable for interpolation and are directly applicable to accelerator experiments, in which the target (as the electron source) is at rest.

The angular distributions in the emitter frame can be obtained by a Lorentz transformation. Furthermore, for accelerator experiments, the corresponding projectile energy per atomic mass unit is obtained by a simple scaling factor.

Theoretical Method

In this section, which may be skipped by the reader who just wants to use the tables, we illustrate how the tabulated cross sections are obtained. In a first step, we calculate the photoelectric cross sections $\sigma_{\rm ph}$ in the atomic frame, denoted as "emitter frame," in which an electron is ejected by the photon. Second, we convert these cross sections into cross sections for radiative recombination $\sigma_{\rm RR}$ using the principle of detailed balance. Finally, a Lorentz transformation to the rest frame of the electron is performed. In practical applications of the tables, depending on the case being considered, some of these steps are inverted in accordance with the simple rules provided in the section "Transformation Formulas."

The differential cross section for ejecting a single electron from a shell n with angular momentum j_n by an unpolarized radiation and using electron detectors insensitive to the spin of the emitted electron is given by [2, 10, 11]

$$\frac{d\sigma_{\rm ph}(\theta')}{d\Omega'} = \frac{\alpha m_e c^2}{4\hbar\omega'} \frac{\lambda\!\!\!^{-}{}_{\rm C}^2}{2(2j_n+1)} \sum_{\mu_n}\sum_{m_s}\sum_{\lambda} |M_{\mathbf{p}',n}(m_s,\lambda,\mu_n)|^2. \tag{1}$$

Here the primed polar angle θ', the frequency ω', and the solid angle Ω' refer to the emitter frame. Furthermore, $\lambda\!\!\!^{-}{}_{\rm C}$ is the electron Compton wavelength divided by 2π and m_e is the electron rest mass, c is the speed of light, and we have averaged over the $(2j_n+1)$ angular momentum projections μ_n in the bound state, over the circular polarizations $\lambda = \pm 1$ of the incoming photon and have summed over the spin components $m_s = \pm\frac{1}{2}$ of the emitted electron. The transition matrix element is

$$M_{\mathbf{p}',n}(m_s,\lambda,\mu_n) = \int \psi^{\dagger}_{\mathbf{p}',m_s}(\mathbf{r})\,\boldsymbol{\alpha}\cdot\hat{\mathbf{u}}'_{\lambda}\,e^{i\mathbf{k}'\cdot\mathbf{r}}\,\psi_{j_n,\mu_n}(\mathbf{r})\,{\rm d}^3r, \tag{2}$$

where $\boldsymbol{\alpha}$ represents the set of Dirac matrices, $\hat{\mathbf{u}}'_{\lambda}$ is the unit vector of photon polarization, and $\mathbf{k}'$ is the photon wave vector with $k' = \omega'/c$ in the emitter frame. The initial bound state and the final state describing the relativistic electron emitted with asymptotic momentum $\mathbf{p}'$ and spin projection m_s are represented by Dirac spinors. The bound-state wave function is characterized by a Dirac quantum number $\kappa_n = \pm(j_n + \frac{1}{2})$ and the angular momentum projection μ_n. The radial wave functions $g_{\kappa_n}(r)$ and $f_{\kappa_n}(r)$ and the orbital angular momenta

l_n and l'_n refer to the upper and lower components, respectively [11]. The continuum function is decomposed into partial waves, characterized by κ, with the corresponding radial functions $g_\kappa(r)$ and $f_\kappa(r)$.

After performing the spinor summations and the angular integrations for each partial wave, one obtains the matrix element in the differential cross section expression (Eq. (1)) in the form [2, 11]

$$M_{\mathbf{p}',n}(m_s,\lambda,\mu_n) = 4\pi\sqrt{2}\sum_{L=0}^{\infty}\sum_{\kappa} i^{L+1-l}\, e^{i\Delta_\kappa} \times \left\langle l,\frac{1}{2},\mu_n+\lambda-m_s,m_s \middle| j,\mu_n+\lambda\right\rangle \times F^{\lambda}_{\mu_n}(L,\kappa) Y_{l,\mu_n+\lambda-m_s}(\theta,0), \quad (3)$$

where the quantities $\langle j_1, j_2, m_1, m_2 \mid j, m\rangle$ are Clebsch–Gordan coefficients, $Y_{l,m}(\theta,\varphi)$ are spherical harmonics, and the phases Δ_κ include finite nuclear size effects. Furthermore,

$$F^{\lambda}_{\mu_n}(L,\kappa) = \left[A^{\lambda}_L(j_n\mu_n j; l'_n l)U_L(\kappa,\kappa_n) - A^{\lambda}_L(j_n\mu_n j; l_n l')V_L(\kappa,\kappa_n)\right] \quad (4)$$

with

$$A^{\lambda}_L(j_n\mu_n j; l_1 l_2) = (2L+1)\sqrt{\frac{2l_1+1}{2l_2+1}}\left\langle l_1,\ \frac{1}{2},\ \mu_n+\frac{\lambda}{2},\ -\frac{\lambda}{2} \middle|\ j_n,\ \mu_n\right\rangle \times \left\langle l_2,\ \frac{1}{2},\ \mu_n+\frac{\lambda}{2},\ \frac{\lambda}{2} \middle|\ j,\ \mu_n+\lambda\right\rangle \times \left\langle l_1,\ L,\ \mu_n+\frac{\lambda}{2},\ 0 \middle|\ l_2,\ \mu_n+\frac{\lambda}{2}\right\rangle \times \langle l_1,\ L,\ 0,\ 0 \mid l_2,\ 0\rangle \quad (5)$$

and the radial integrals

$$U_L(\kappa,\kappa_n) = \int_0^\infty g_\kappa(r) j_L(k'r) f_{\kappa_n}(r) r^2\,\mathrm{d}r$$

and

$$V_L(\kappa,\kappa_n) = \int_0^\infty f_\kappa(r) j_L(k'r) g_{\kappa_n}(r) r^2\,\mathrm{d}r. \quad (6)$$

Here the quantities $j_L(k'r)$ are spherical Bessel functions.

Applying the principle of detailed balance, we may obtain from Eq. (1) the angle-differential cross section for radiative recombination as a function of the angle between the electron and the photon directions [11]. The angular dependence is the same as for the photoelectric effect. However, for convenience of tabulation, we wish to refer the angle θ' to the direction of the atom moving toward the electron, which is the direction *opposite* the electron motion. This amounts to replacing $\theta' \to \pi - \theta'$, so that the state-to-state cross section for radiative recombination takes the form

$$\frac{d\sigma_{\mathrm{RR}}(\theta')}{d\Omega'} = \left(\frac{\hbar\omega'}{m_{\mathrm{e}}c^2}\right)^2 \frac{1}{\beta^2\gamma^2}\frac{d\sigma_{\mathrm{ph}}(\pi-\theta')}{d\Omega'}, \quad (7)$$

where for an electron moving with the speed v_e, we have $\beta = v_e/c$, and the Lorentz factor is $\gamma = 1/\sqrt{1-\beta^2}$. Finally, the angular distribution as a function of the angle θ in the rest frame of the electron is mediated by the Lorentz transformation

$$\frac{d\sigma_{\mathrm{RR}}(\theta)}{d\Omega} = \frac{1}{\gamma^2(1-\beta\cos\theta)^2}\frac{d\sigma_{\mathrm{RR}}(\theta')}{d\Omega'}, \quad (8)$$

where the angles in the two coordinate systems are related by

$$\cos\theta' = \frac{\cos\theta-\beta}{1-\beta\cos\theta}. \quad (9)$$

From the tabulated RR cross sections calculated in this way, one may derive the quantities of interest by the formulas given in the following section.

Transformation Formulas

In the tables and figures we present angle-differential cross sections σ_{RR} per vacancy for radiative recombination (RR) into an empty atomic shell containing $(2j_n+1)$ vacancies as a function of the relative electron energy T_e with respect to the projectile. For convenience, the cross sections are given in the rest system of the electron with the z-direction given by the ion motion. In this system, the cross sections are rather smooth, so that equidistant angular steps are adequate to support the cross section curves. The corresponding cross sections in the emitter frame, i.e., in the atomic coordinate system from which a photon is emitted, are obtained by inverting the transformations (8) and (9),

$$\frac{d\sigma_{\mathrm{RR}}(\theta')}{d\Omega'} = \frac{1}{\gamma^2(1+\beta\cos\theta')^2}\frac{d\sigma_{\mathrm{RR}}(\theta)}{d\Omega}, \quad (10)$$

where the angles are related by

$$\cos\theta = \frac{\cos\theta'+\beta}{1+\beta\cos\theta'}. \quad (11)$$

These tables have several uses. First, they can be directly applied to obtain the cross sections for radiative recombination of electrons at rest with bare projectiles of charge Z_P moving with the speed v_e or the corresponding energy given in MeV/u. For electrons bound in a low-Z target, where $Z_T \ll Z_P$, this cross section is a close approximation [1, 2, 11] to that of radiative electron capture (REC). Second, the tables can be used in conjunction with Eqs. (10) and (11) for radiative recombination of electrons with ions at rest. Third, one may obtain the cross section per electron for the photoelectric effect as a function of the photon energy.

The kinetic energy T_e of the electron is related by energy conservation to the photon energy $\hbar\omega$ in the emitter frame (we here drop the prime used before) and the binding energy $|\epsilon_n|$ of the electron as

$$T_e = \hbar\omega - |\epsilon_n| = (\gamma - 1)\, m_e c^2. \qquad (12)$$

The relevant reduced quantity is

$$\tilde{T}_e = \gamma - 1 = \frac{T_e}{m_e c^2} = \frac{T_e\ (\text{keV})}{510.999\ 06}. \qquad (13)$$

Correspondingly, we also introduce the reduced binding energy

$$\tilde{\epsilon}_n = \frac{|\epsilon_n|}{m_e c^2} = \frac{|\epsilon_n|\ (\text{keV})}{510.999\ 06}. \qquad (14)$$

In our calculations, we assume that the nucleus has an infinite mass, because effects of a finite nuclear mass are in all cases within the numerical uncertainty.

Radiative Recombination with a Projectile

For RR of a projectile with electrons at rest, the projectile energy is usually given in MeV/u. Since the Lorentz factor is the same as in Eq. (13), we have the specific projectile energy

$$T_P\ (\text{MeV/u}) = 1.822\ 888\ 5 \times T_e\ (\text{keV}). \qquad (15)$$

The angle-differential cross sections per vacancy referred to the direction of the projectile motion can be taken directly from the tables.

Radiative Recombination with an Ion at Rest

For RR in the emitter frame, the kinetic energy T_e of the electron as well as the corresponding values of β and γ is as given in the tables. For obtaining the angle-differential cross section, keeping the direction of the (infinitesimally slow) ion motion or, equivalently, the opposite of the electron direction as the z-axis, one has to use Eqs. (10) and (11). For high electron kinetic energies, the cross sections for photon emission will be strongly peaked in the *backward* direction or, equivalently, in the *forword* direction if referred to the direction of incoming electron. The equidistant spacing of angular intervals in the electron rest frame then automatically translates into a dense spacing within the peak region of the photon angular distribution in the emitter frame and a sparse spacing otherwise. This ensures an accurate representation of the cross section curves.

The Photoelectric Effect

The photon energies $\hbar\omega$ can be obtained from Eq. (12) with the quantities T_e given in the main tables and $|\epsilon_n|$ in Table A. For photoionization, because of a different choice

TABLE A

		$\lvert\epsilon_n\rvert$ (eV)								
Z	R_{nucl} (fm)	$1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
18	4.424	4.427E+3	1.108E+3	1.108E+3	1.103E+3	4.919E+2	4.919E+2	4.905E+2	4.905E+2	4.900E+2
36	5.407	1.795E+4	4.507E+3	4.507E+3	4.427E+3	1.994E+3	1.994E+3	1.971E+3	1.971E+3	1.963E+3
54	6.180	4.134E+4	1.044E+4	1.044E+4	1.002E+4	4.593E+3	4.593E+3	4.467E+3	4.467E+3	4.427E+3
66	6.744	6.316E+4	1.604E+4	1.605E+4	1.504E+4	7.016E+3	7.016E+3	6.717E+3	6.717E+3	6.628E+3
79	7.019	9.341E+4	2.392E+4	2.392E+4	2.169E+4	1.037E+4	1.038E+4	9.708E+3	9.708E+3	9.524E+3
82	7.106	1.015E+5	2.605E+4	2.606E+4	2.341E+4	1.127E+4	1.127E+4	1.048E+4	1.048E+4	1.027E+4
92	7.566	1.321E+5	3.418E+4	3.421E+4	2.965E+4	1.466E+4	1.467E+4	1.331E+4	1.331E+4	1.296E+4

Note. Nuclear radii R_{nucl} in fm of the uniform nuclear charge distributions used in the calculations and binding energies $|\epsilon_n|$ in eV of the hydrogenlike levels.

for the z axis, the angle θ', has to be replaced by $\pi - \theta'$, reversing the subsutitution in Eq. (7). The angle-differential cross section for the emission of a photoelectron is derived from the principle of detailed balance as

$$\frac{d\sigma_{\mathrm{ph}}(\theta')}{d\Omega'} = f_n(T_e, |\epsilon_n|)\,\frac{d\sigma_{\mathrm{RR}}(\pi-\theta')}{d\Omega'},\psi \tag{16}$$

where the transformation coefficient depends on the electron kinetic energy T_e and on the binding energy $|\epsilon_n|$ for the subshell n considered in the form

$$f_n(T_e, |\epsilon_n|) = \frac{\tilde{T}_e^2 + 2\tilde{T}_e}{(\tilde{T}_e + \tilde{\epsilon}_n)^2},\psi \tag{17}$$

with the reduced quantities $\tilde{T}_e$ and $\tilde{\epsilon}_n$ being given by Eqs. (13) and (14), respectively.

Numerical Calculations

Angle-differential cross sections have been calculated for the charge numbers $Z = 18$, 36, 54, 66, 79, 82, and 92. Representative plots of the results are given for $Z = 18$, 54, and 92. A complete table is presented in printed form for $Z = 79$. In addition, complete numerical tables for all seven values of Z are available in electronic form as Supplementary Material associated with the on-line version of this paper (http://www.idealibrary.com/links/doi/10.1006/adnd.2001.0868/dat).

The accuracy of the numerical calculations has been assessed in detail in [1]. The present calculations have been performed using radial wave functions and phase shifts derived from the computer code RADIAL based on a slightly modified version of the package published by Salvat et al. [12] and supplemented by Yerokhin [13]. This code can take into account effects of the finite nuclear size. Nuclear radii for a uniform charge distribution [14] are the same as used in the calculations of the total cross section [1] and are included in Table A. For the Gauss–Legendre integration, 4000 radial mesh points have been used.

In the calculation of angle-differential cross sections for each case, the highest partial wave for the continuum state, given by the Dirac quantum number $\kappa_{\max}$, was determined by the condition that the cross section changes by less than one unit in the fourth digit at angles 15°, 30°, 45°, 60°, and 90° if the partial waves between $|\kappa_{\max} - 4|$ and $|\kappa_{\max}|$ are added. The values for $|\kappa_{\max}|$ used in the calculations are listed in Table B for typical choices of Z and T_e.

TABLE B

Z	T_e (keV)	K	$L1$	$L2$	$L3$	$M1$	$M2$	$M3$	$M4$	$M5$
18	100	14	17	14	17	17	17	17	20	20
	500	29	29	29	29	26	29	29	35	38
	800	35	35	41	38					
54	100	14	14	14	17	14	14	17	17	20
	500	23	23	26	26	26	29	29	35	35
	800	35	29	41	35	29	38	32	41	47
92	100	14	17	17	17	14	14	17	20	20
	500	26	26	29	29	20	26	26	35	32
	1000	35	32	41	38	32	44	38	56	47

Note. Values of $|\kappa_{\max}|$ used in the calculations for representative nuclear charges Z and electron energies T_e in keV (blanks indicate that the radial continuum wavefunction can no longer be calculated reliably).

Qualitative Systematics

As an illustration of the tables provided in electronic form, we present in Figure Sets I to III plots of angle-differential cross sections for the charge numbers $Z = 18,\ 54$, and 92. We have chosen representative energies between 1 keV and the maximum energy for which convergence could be achieved.

For all cases of Z and T_e, the angular distributions (referred to the direction of the ion motion) of radiative recombination with the $1s_{1/2}$, $2s_{1/2}$, and $3s_{1/2}$ states have similar shapes. In Figure Sets I and II, we have therefore combined these cases. Moreover, at low energies and low charge numbers $Z \leq 54$, the angular distributions closely follow a $\sin^2\theta$ shape [2, 3] with the maximum of the cross section gradually shifting to forward angles as the energy T_e increases. Nonvanishing cross sections at 0° and 180° for RR into s-states can be unambiguously assigned to magnetic spin-flip transitions [2, 3, 15, 16] because of angular momentum conservation. This argument does not apply to RR into a state with orbital angular momentum $l > 0$ [3]. We observe that the relativistic spin-flip effect for K capture at forward angles still occurs at the lowest electron energy of 1.0 keV, provided the nuclear charge is high enough ($Z = 92$) to generate highly relativistic $1s_{1/2}$ wave functions; see also [16].

Regarding higher angular momentum states, we observe that the angular distributions for the $p_{1/2}$ states and for the $p_{3/2}$ states, respectively, are similar in the L and in the M shell. Their maxima, as well as those of the $d_{3/2}$ and $d_{5/2}$ states, shift to backward angles as the energy T_e increases. Furthermore, the differences in the angular distributions for the $p_{1/2}$ and $p_{3/2}$ as well as the $d_{3/2}$ and $d_{5/2}$ spin doublet states increase both with the energy T_e and with the charge number Z.

From a comparison of cross section curves we observe that the angle-differential cross sections increase rapidly with the nuclear charge, but the shape changes slowly with charge number Z. Therefore, with the seven tabulated charge numbers covering most of the Periodic Table, a suitable interpolation procedure should give good approximations to the *shape* of the angular distributions for other values of Z. The *absolute values* can then be scaled by using the total cross sections [1], which are tabulated for all integer values of Z.

If, for example, the differential cross section is needed for specific values of Z', T_e', and any of the electronic states from $1s_{1/2}$ to $3d_{5/2}$, the differential cross section may be obtained by the following steps: (a) For all tabulated Z values needed for interpolation, normalize the relevant differential cross sections by dividing by the total cross sections (obtained either from [1] or by performing the full angle integration). (b) Use an appropriate (e.g., spline) two-dimensional interpolation procedure to obtain an approximate normalized cross section for Z' and T_e'. (c) Rescale the angular distribution thus obtained by multiplying with the total cross section for Z' provided in the tabulation of [1].

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EXPLANATION OF FIGURES

The Figures present angle-differential cross sections in barn per steradian for radiative recombination given in the rest frame of the electron as a function of the photon emission angle with respect to the ion motion toward the electron (i.e., the *opposite* of the electron motion toward the ion) for various energies T_e of the electron with respect to the projectile.

FIGURE SET I. Angle-Differential Cross Sections for Radiative Recombination, $Z = 18$

FIGURE SET II. Angle-Differential Cross Sections for Radiative Recombination, $Z = 54$

The 12 rows, shown on four pages, display cross section plots as follows:

Row 1	Capture into the $1s_{1/2}(K)$ shell. The dashed line represents the contribution of magnetic spin-flip transitions.
Row 2	Capture into the $2s_{1/2}(L1)$ shell.
Row 3	Capture into the $3s_{1/2}(M1)$ shell.
Rows 4–6	The solid line represents capture into the $2p_{1/2}(L2)$ shell; the dashed line represents capture into the $2p_{3/2}(L3)$ shell.
Rows 7–9	The solid line represents capture into the $3p_{1/2}(M2)$ shell; the dashed line represents capture into the $3p_{3/2}(M3)$ shell.
Rows 10–12	The solid line represents capture into the $3d_{3/2}(M4)$ shell; the dashed line represents capture into the $3d_{5/2}(M5)$ shell.

FIGURE SET III. Angle-Differential Cross Sections for Radiative Recombination, $Z = 92$

The 18 rows, shown on six pages, display cross section plots as follows:

Rows 1–3	Capture into the $1s_{1/2}(K)$ shell. The dashed line represents the contribution of magnetic spin-flip transitions.
Rows 4–6	Capture into the $2s_{1/2}(L1)$ shell.
Rows 7–9	The solid line represents capture into the $2p_{1/2}(L2)$ shell; the dashed line represents capture into the $2p_{3/2}(L3)$ shell.
Rows 10–12	Capture into the $3s_{1/2}(M1)$ shell.
Rows 13–15	The solid line represents capture into the $3p_{1/2}(M2)$ shell; the dashed line represents capture into the $3p_{3/2}(M3)$ shell.
Rows 16–18	The solid line represents capture into the $3d_{3/2}(M4)$ shell; the dashed line represents capture into the $3d_{5/2}(M5)$ shell.

EXPLANATION OF TABLE

TABLE Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

The table for $Z = 79$ is presented as a sample. Tables of the same structure for $Z = 18$, 36, 54, 66, 79, 82, and 92 are provided in electronic form and can be found at http://www.idealibrary.com/links/doi/10.1006/adnd.2001.0868/dat.

Angle The photon emission angle in degrees given in the rest frame of the electron. The angle is measured with respect to the direction of the moving ion.

$d\sigma_{\mathrm{RR}}/d\Omega\psi$ Differential cross section per vacancy for radiative recombination with an empty atomic shell in barn (10^{-24} cm^2) per steradian.

$1s_{1/2}, \ldots\psi$ Spectroscopic notation of subshells into which capture occurs.

T_e Kinetic energy of the incident electron relative to the nucleus in keV. The tables are truncated at energies for which 3-digit accuracy can no longer be achieved.

$\beta,\ \gamma\psi$ Reduced velocity $\beta = v_e/c$ and Lorentz factor $\gamma = (1 - \beta^2)^{-1/2}$ corresponding to the electron kinetic energy T_e. These quantities are needed in Eqs. (8) to (11) for transforming between the rest system of the electron (for which the cross sections are given) and the rest system of the nucleus.

FIGURE I. Angle-Differential Cross Sections for Radiative Recombination, $Z = 18$

See page 194 for Explanation of Figures

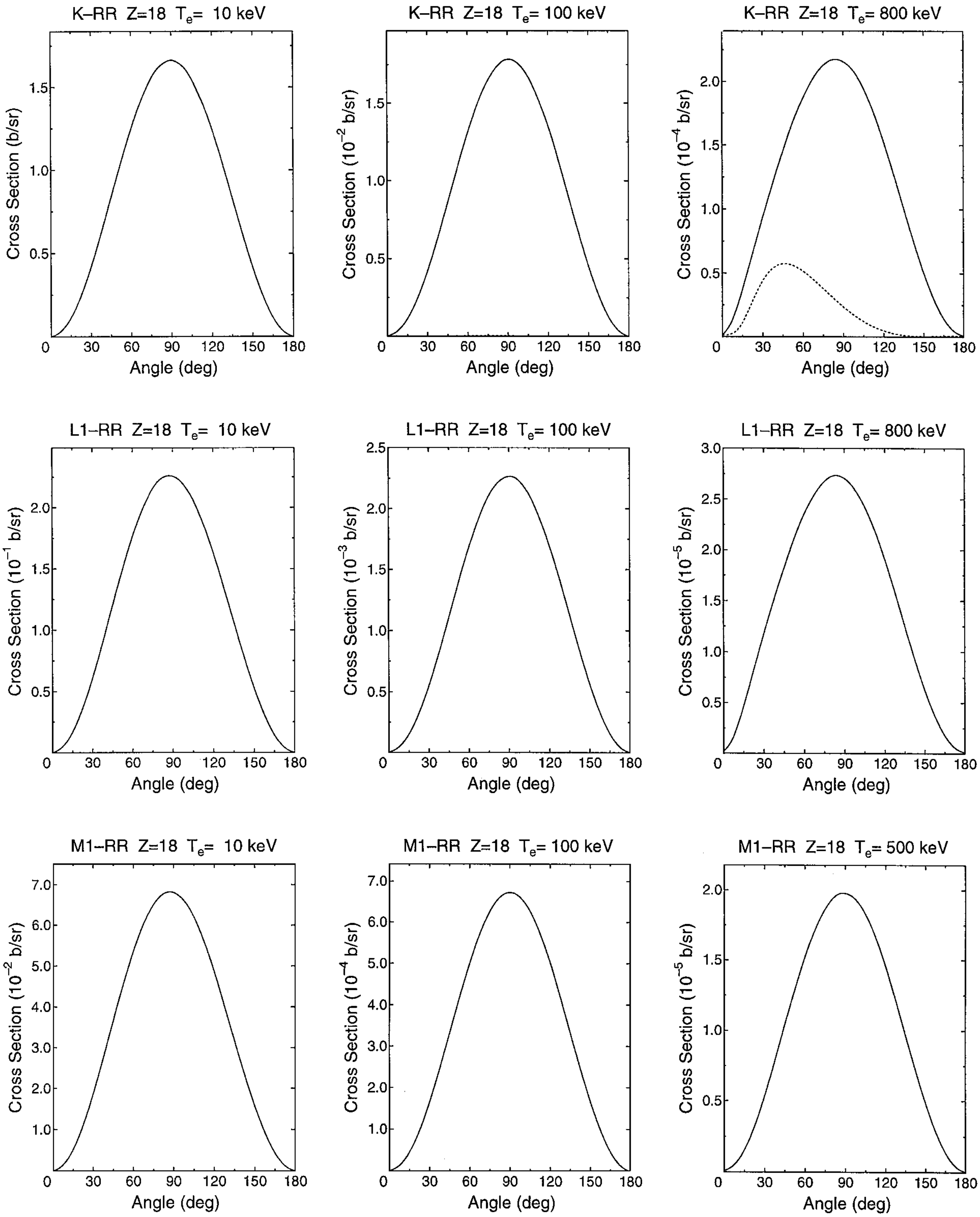

FIGURE I. Angle-Differential Cross Sections for Radiative Recombination, $Z = 18$

See page 194 for Explanation of Figures

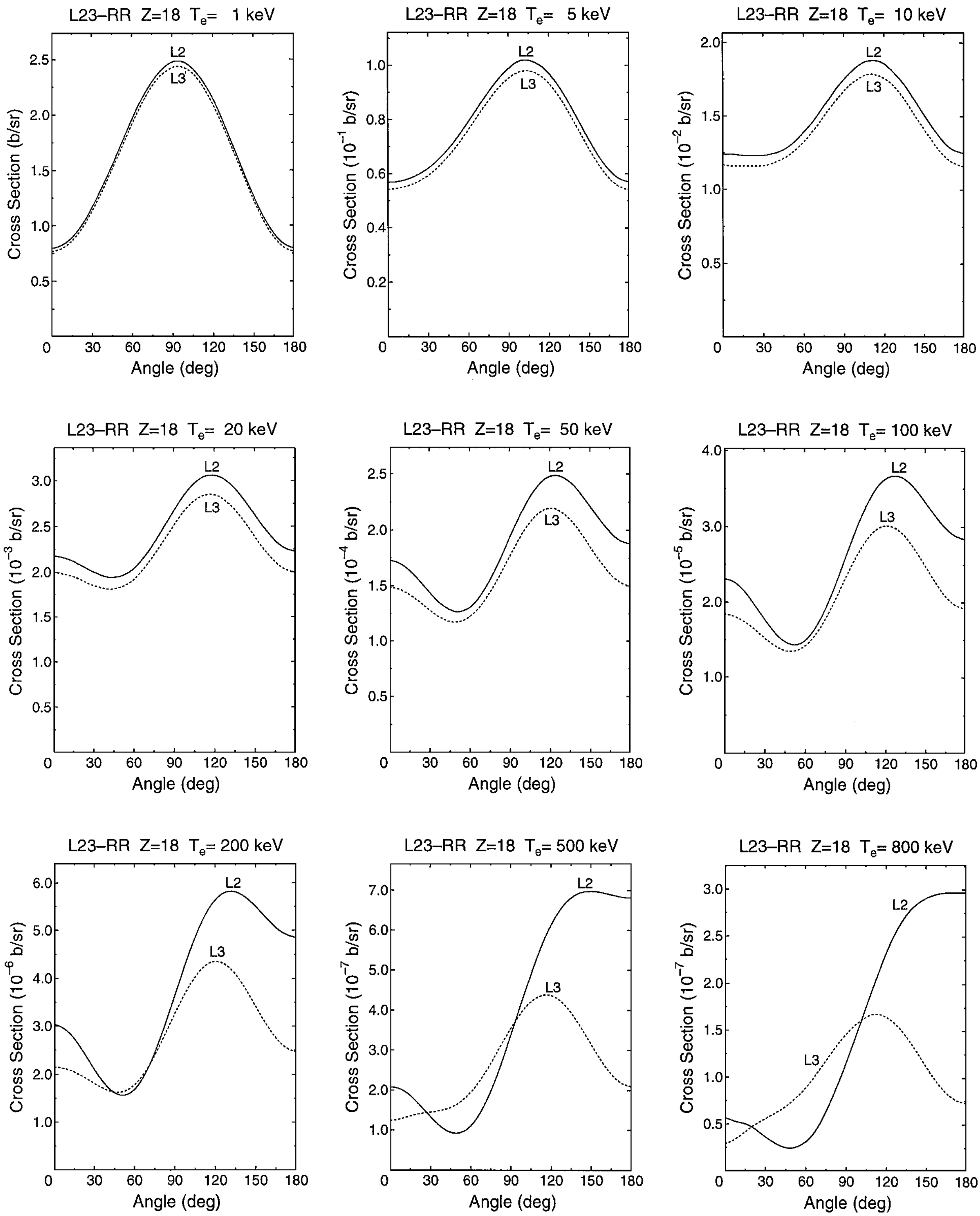

FIGURE I. Angle-Differential Cross Sections for Radiative Recombination, $Z = 18$

See page 194 for Explanation of Figures

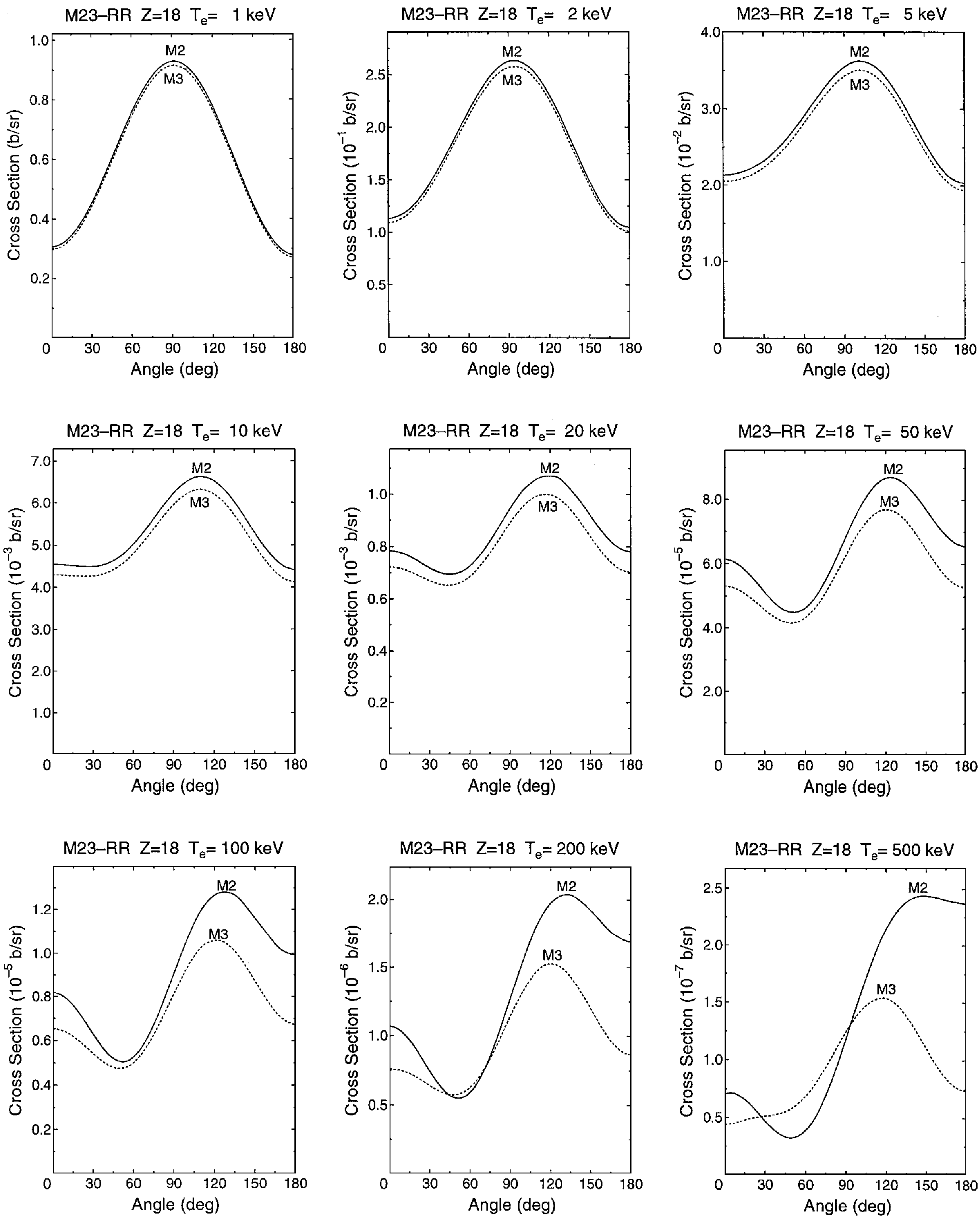

FIGURE I. Angle-Differential Cross Sections for Radiative Recombination, $Z = 18$

See page 194 for Explanation of Figures

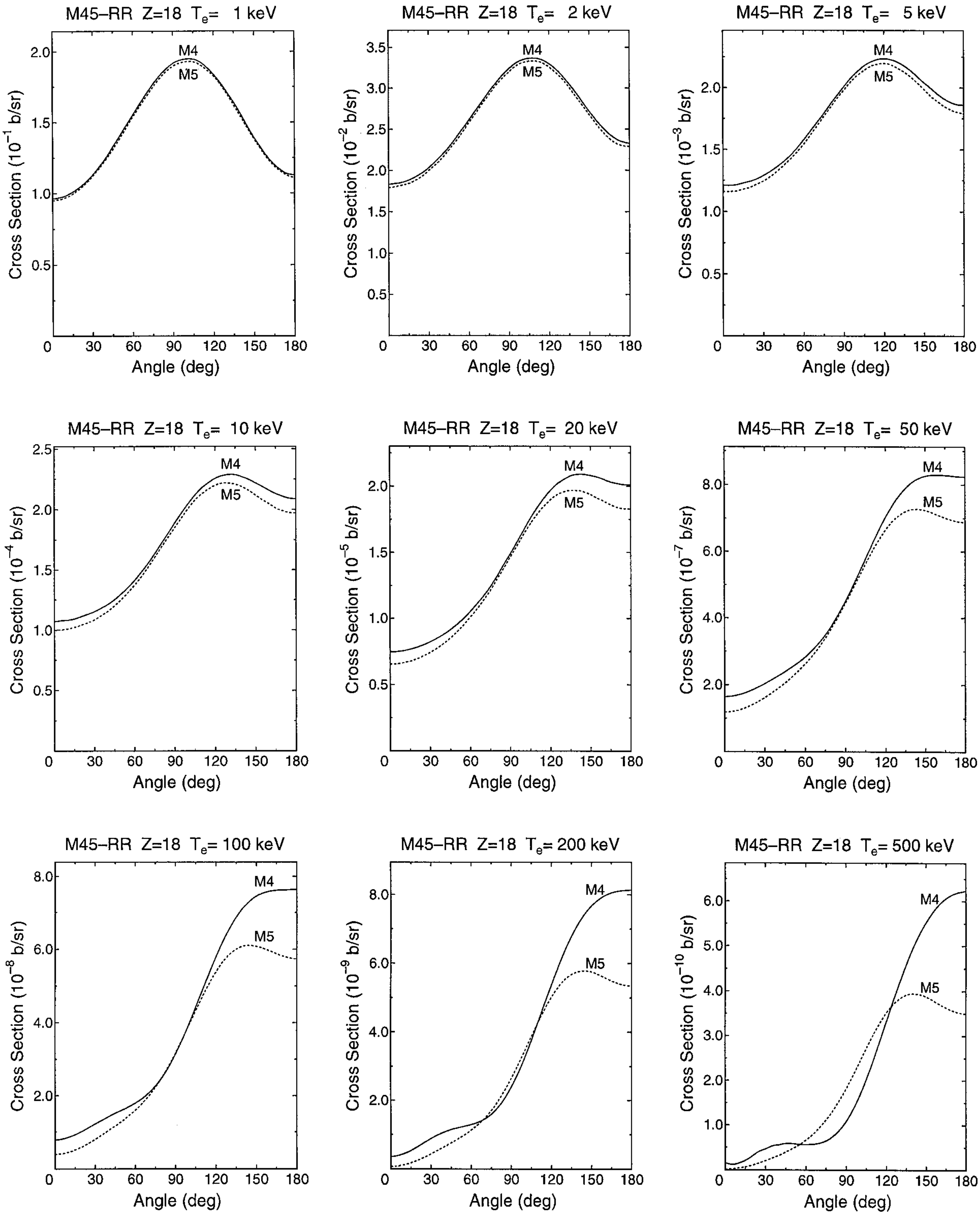

FIGURE II. Angle-Differential Cross Sections for Radiative Recombination, $Z = 54$

See page 194 for Explanation of Figures

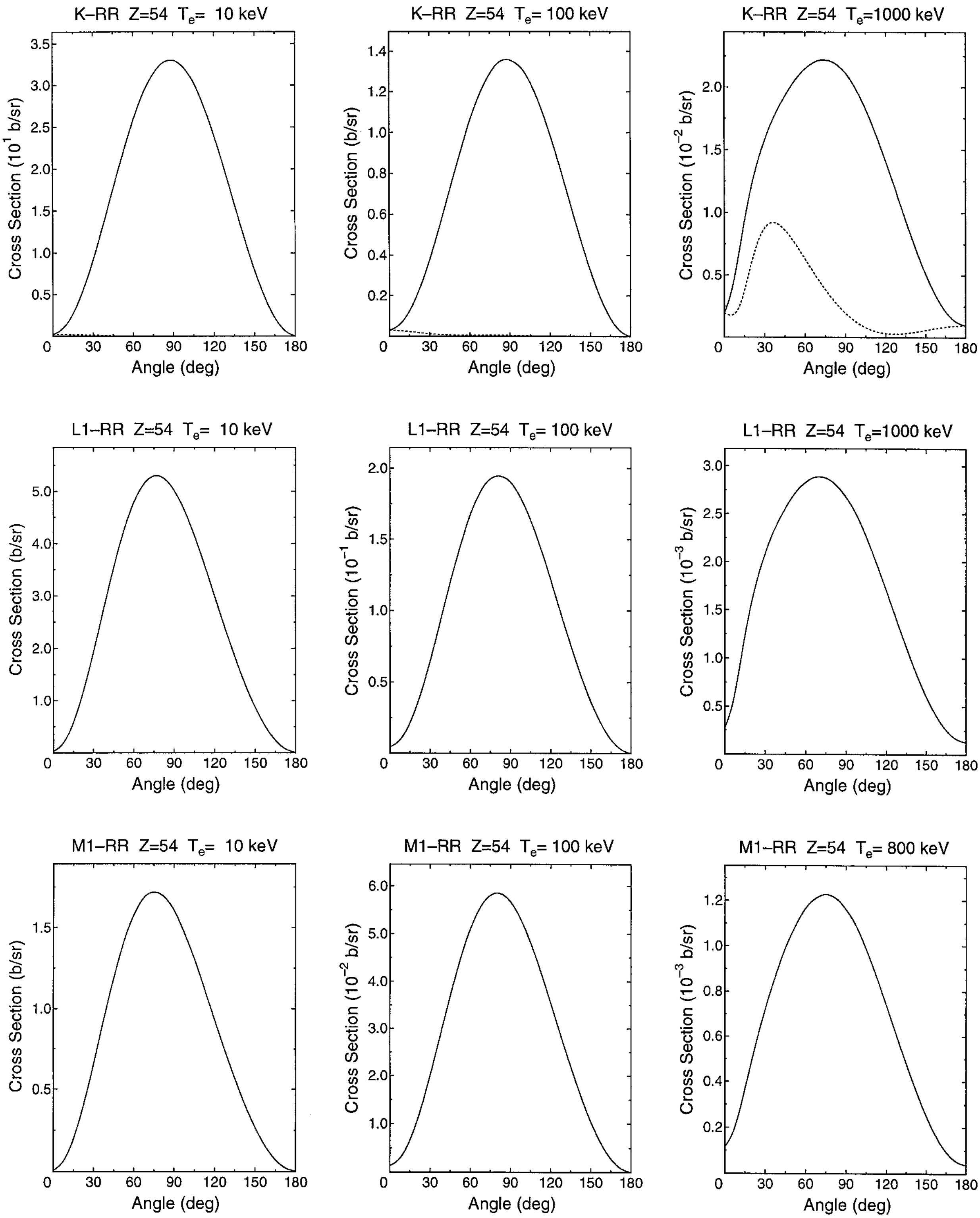

FIGURE II. Angle-Differential Cross Sections for Radiative Recombination, $Z = 54$

See page 194 for Explanation of Figures

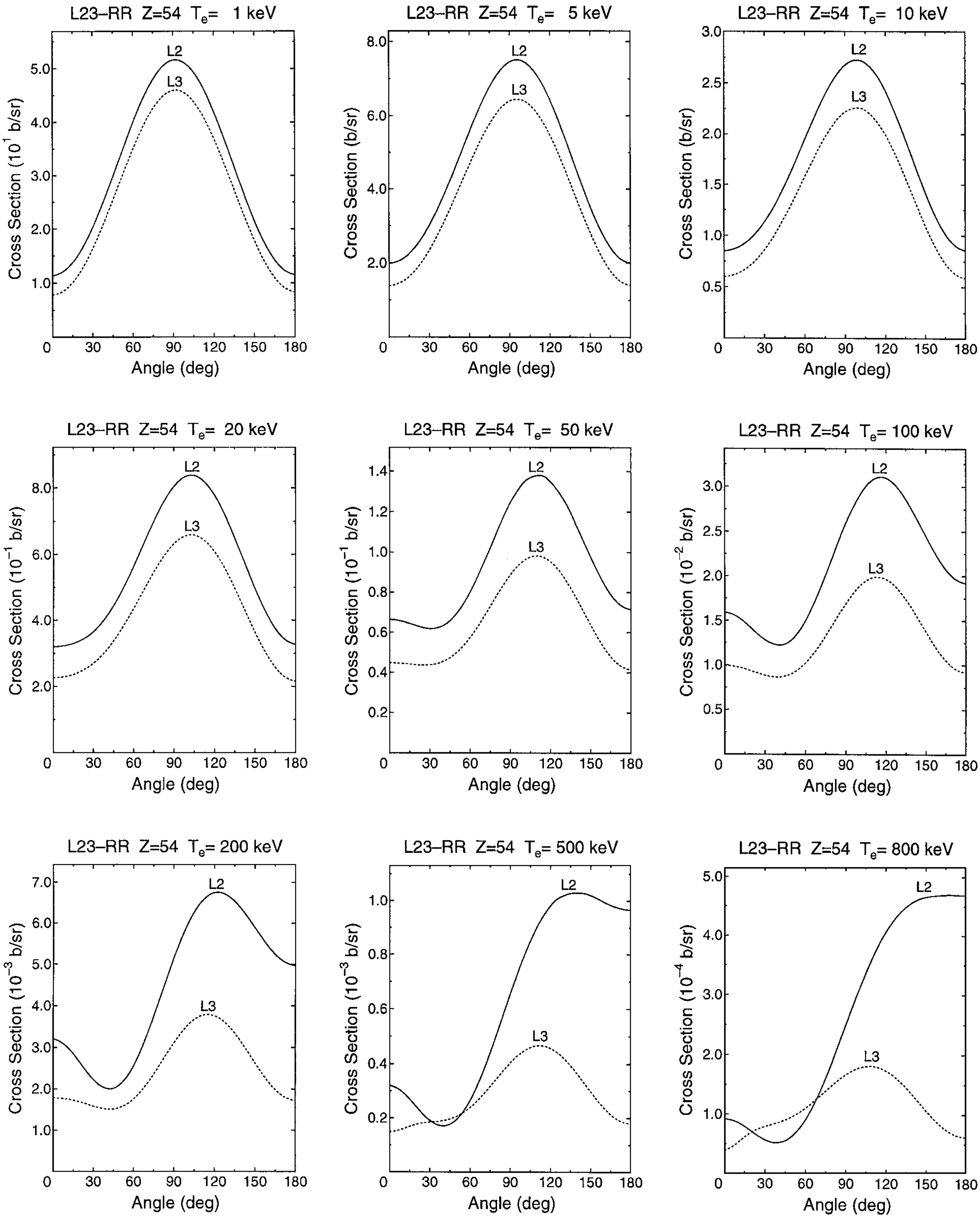

FIGURE II. Angle-Differential Cross Sections for Radiative Recombination, $Z = 54$

See page 194 for Explanation of Figures

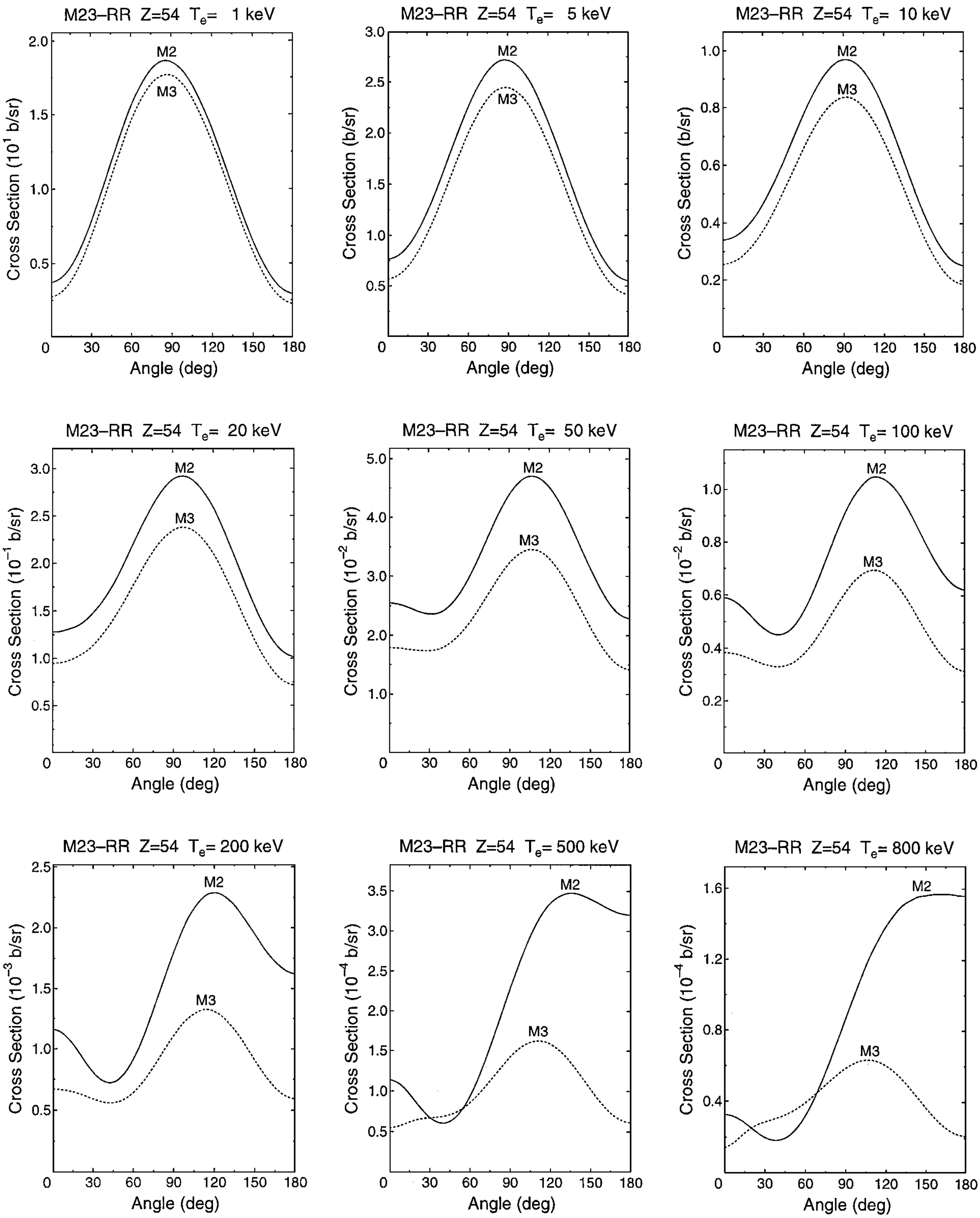

FIGURE II. Angle-Differential Cross Sections for Radiative Recombination, $Z = 54$

See page 194 for Explanation of Figures

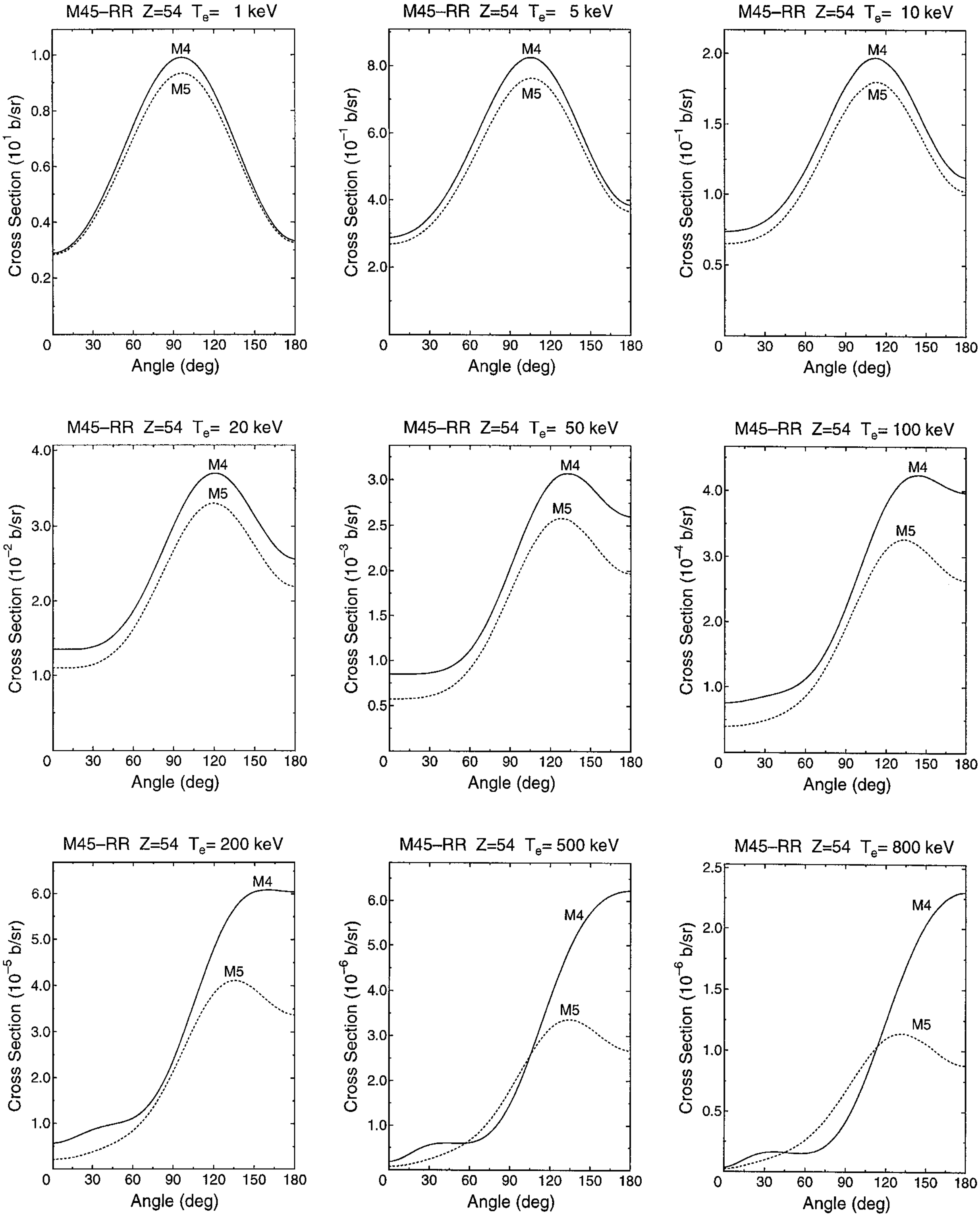

FIGURE III. Angle-Differential Cross Sections for Radiative Recombination, $Z = 92$

See page 194 for Explanation of Figures

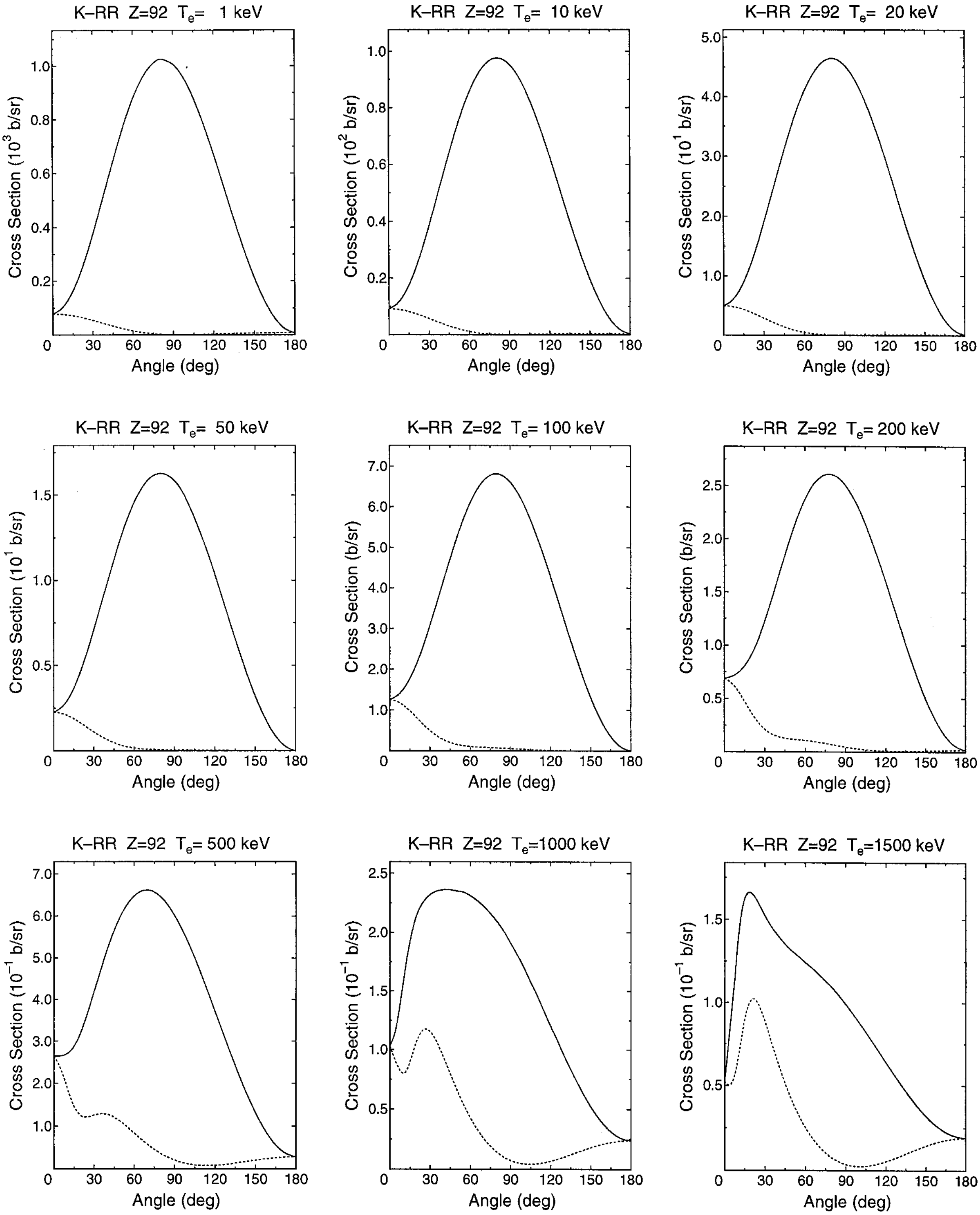

FIGURE III. Angle-Differential Cross Sections for Radiative Recombination, $Z = 92$

See page 194 for Explanation of Figures

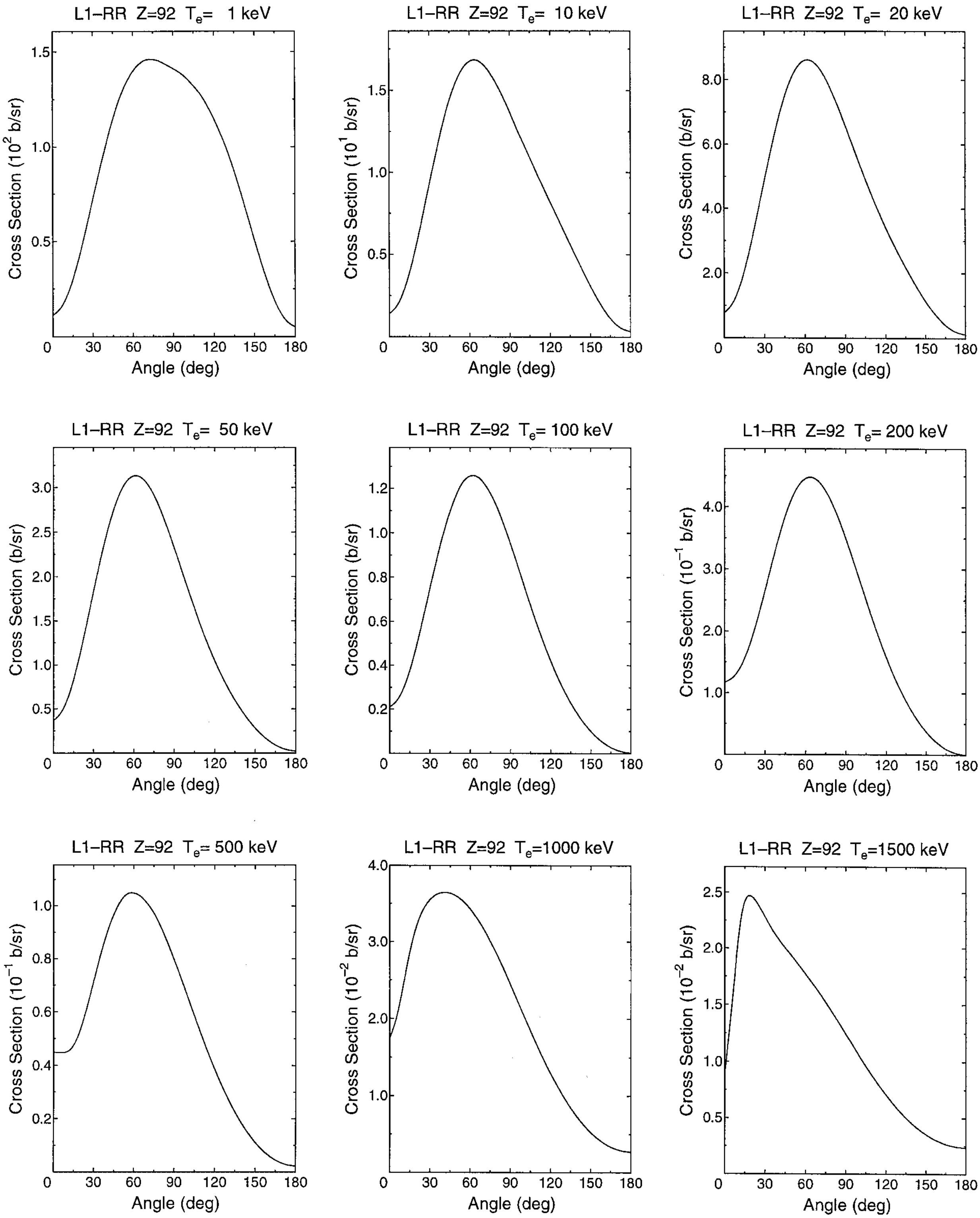

FIGURE III. Angle-Differential Cross Sections for Radiative Recombination, $Z = 92$

See page 194 for Explanation of Figures

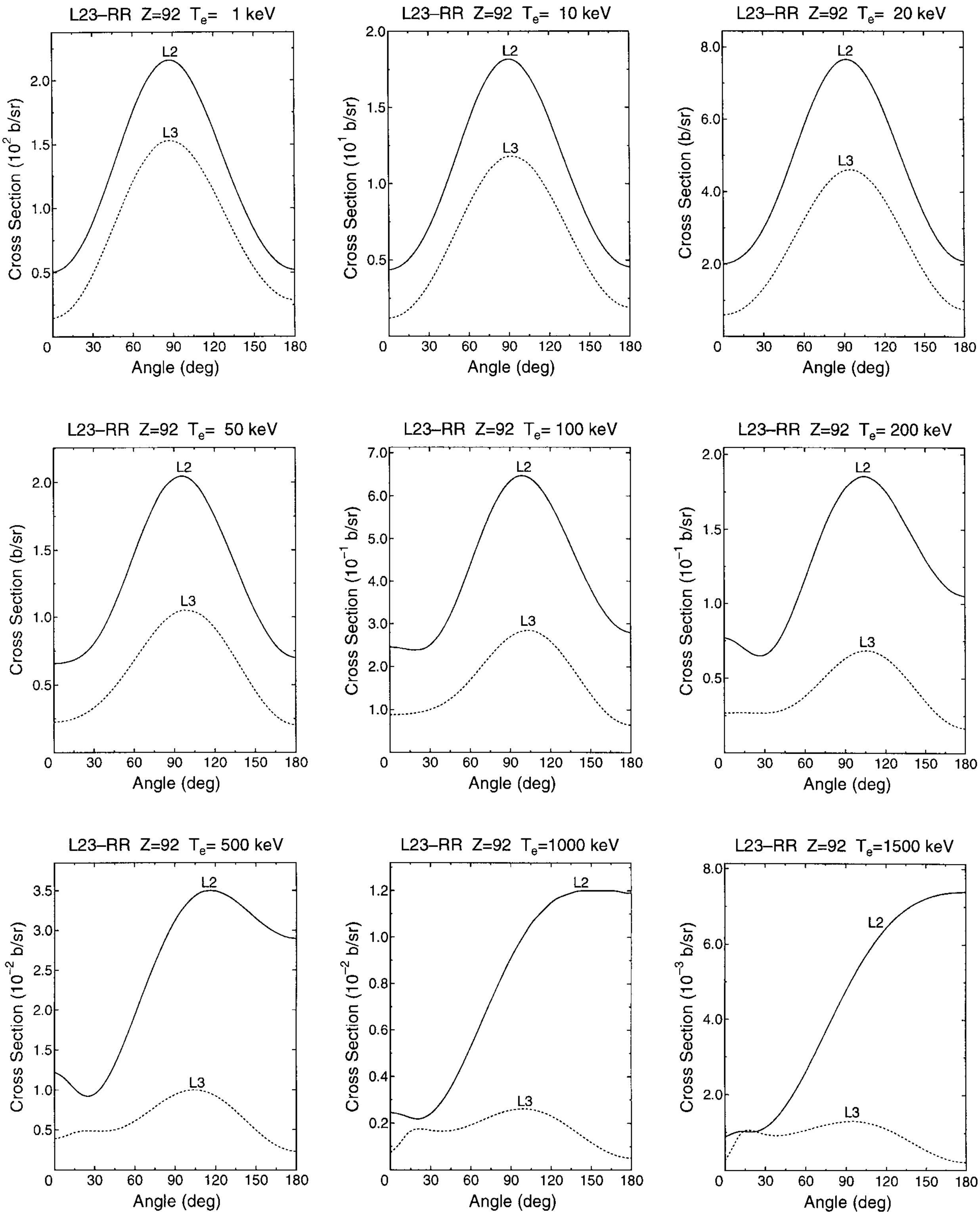

FIGURE III. Angle-Differential Cross Sections for Radiative Recombination, $Z = 92$

See page 194 for Explanation of Figures

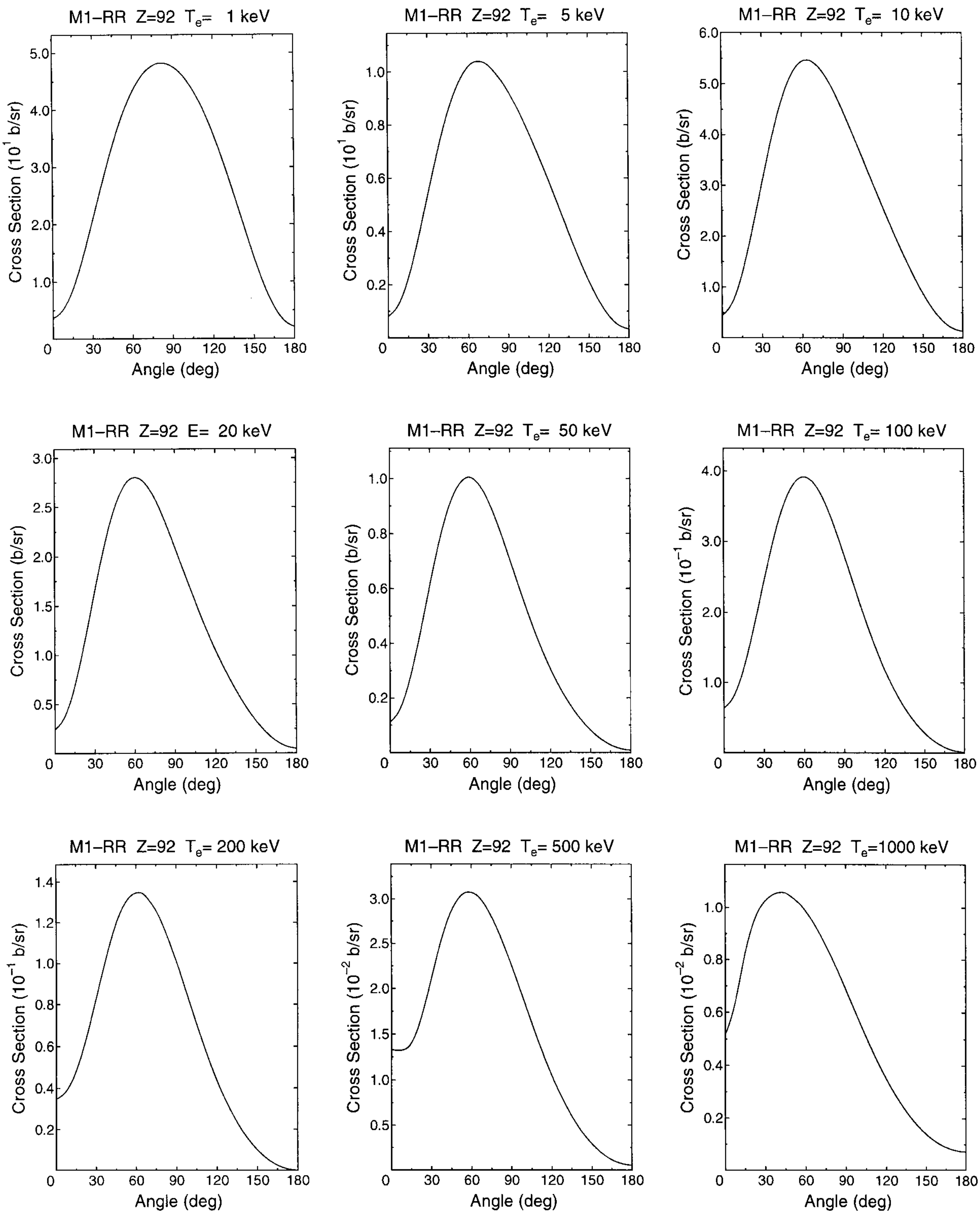

FIGURE III. Angle-Differential Cross Sections for Radiative Recombination, $Z = 92$

See page 194 for Explanation of Figures

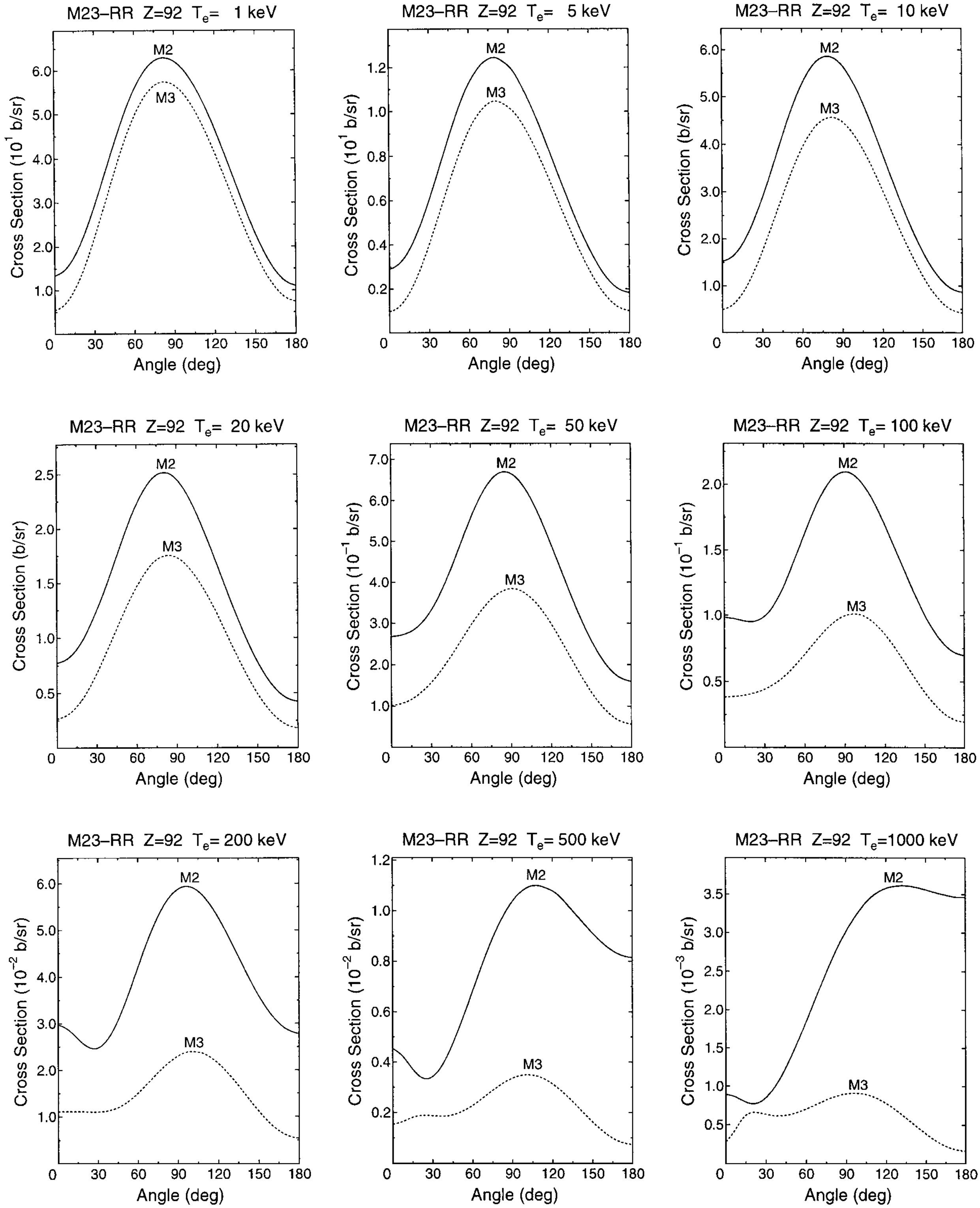

FIGURE III. Angle-Differential Cross Sections for Radiative Recombination, $Z = 92$

See page 194 for Explanation of Figures

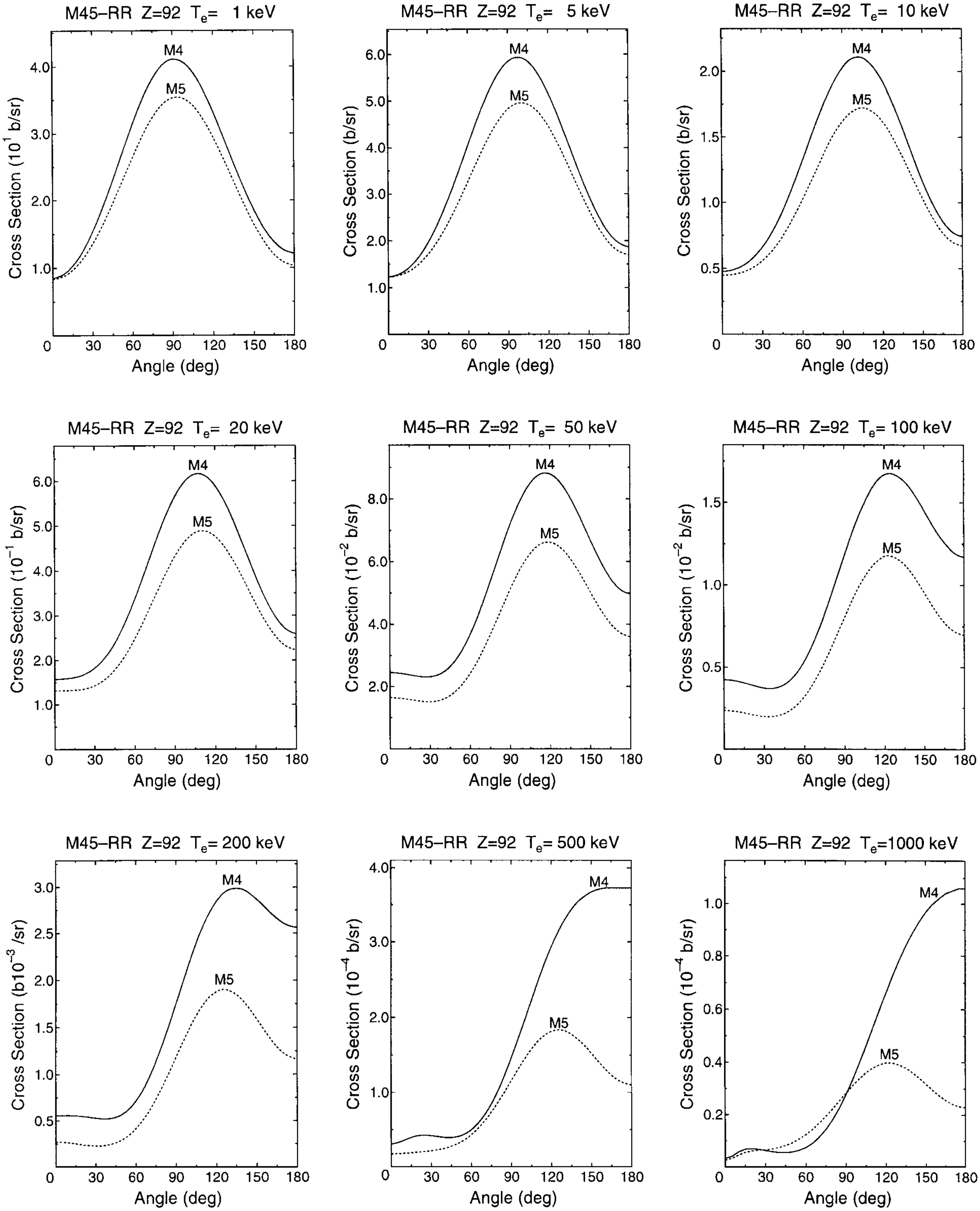

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle (deg)	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr) $1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
	$T_e = 1.0$ keV	$\beta = 0.06247$	$\gamma = 1.002$						
0	2.82E+1	3.89E+0	3.12E+1	1.29E+1	1.24E+0	8.98E+0	4.44E+0	6.39E+0	6.32E+0
5	3.50E+1	5.38E+0	3.19E+1	1.36E+1	1.69E+0	9.32E+0	4.79E+0	6.51E+0	6.41E+0
10	5.52E+1	9.73E+0	3.40E+1	1.56E+1	3.01E+0	1.03E+1	5.81E+0	6.88E+0	6.70E+0
15	8.79E+1	1.67E+1	3.75E+1	1.88E+1	5.12E+0	1.19E+1	7.48E+0	7.47E+0	7.18E+0
20	1.32E+2	2.58E+1	4.24E+1	2.33E+1	7.90E+0	1.41E+1	9.72E+0	8.31E+0	7.86E+0
25	1.86E+2	3.64E+1	4.85E+1	2.89E+1	1.12E+1	1.68E+1	1.24E+1	9.36E+0	8.71E+0
30	2.47E+2	4.81E+1	5.57E+1	3.54E+1	1.48E+1	1.98E+1	1.55E+1	1.06E+1	9.74E+0
35	3.14E+2	6.00E+1	6.39E+1	4.28E+1	1.85E+1	2.31E+1	1.89E+1	1.21E+1	1.09E+1
40	3.84E+2	7.16E+1	7.28E+1	5.08E+1	2.23E+1	2.65E+1	2.24E+1	1.37E+1	1.23E+1
45	4.54E+2	8.24E+1	8.23E+1	5.92E+1	2.58E+1	2.99E+1	2.58E+1	1.54E+1	1.37E+1
50	5.22E+2	9.20E+1	9.20E+1	6.78E+1	2.90E+1	3.32E+1	2.92E+1	1.72E+1	1.52E+1
55	5.86E+2	1.00E+2	1.02E+2	7.62E+1	3.19E+1	3.62E+1	3.23E+1	1.90E+1	1.67E+1
60	6.44E+2	1.06E+2	1.11E+2	8.41E+1	3.42E+1	3.89E+1	3.50E+1	2.08E+1	1.83E+1
65	6.93E+2	1.11E+2	1.19E+2	9.14E+1	3.61E+1	4.12E+1	3.73E+1	2.24E+1	1.98E+1
70	7.33E+2	1.14E+2	1.26E+2	9.77E+1	3.75E+1	4.30E+1	3.92E+1	2.40E+1	2.11E+1
75	7.62E+2	1.15E+2	1.32E+2	1.03E+2	3.83E+1	4.42E+1	4.05E+1	2.53E+1	2.23E+1
80	7.80E+2	1.16E+2	1.37E+2	1.07E+2	3.86E+1	4.49E+1	4.12E+1	2.63E+1	2.33E+1
85	7.86E+2	1.14E+2	1.39E+2	1.09E+2	3.85E+1	4.51E+1	4.14E+1	2.71E+1	2.40E+1
90	7.80E+2	1.13E+2	1.40E+2	1.09E+2	3.79E+1	4.47E+1	4.11E+1	2.75E+1	2.44E+1
95	7.63E+2	1.10E+2	1.39E+2	1.08E+2	3.69E+1	4.38E+1	4.02E+1	2.75E+1	2.46E+1
100	7.35E+2	1.06E+2	1.35E+2	1.06E+2	3.56E+1	4.24E+1	3.89E+1	2.72E+1	2.44E+1
105	6.98E+2	1.02E+2	1.31E+2	1.02E+2	3.38E+1	4.06E+1	3.72E+1	2.66E+1	2.39E+1
110	6.52E+2	9.65E+1	1.24E+2	9.68E+1	3.18E+1	3.85E+1	3.51E+1	2.56E+1	2.31E+1
115	5.99E+2	9.06E+1	1.17E+2	9.06E+1	2.94E+1	3.60E+1	3.26E+1	2.44E+1	2.21E+1
120	5.41E+2	8.39E+1	1.08E+2	8.36E+1	2.69E+1	3.33E+1	3.00E+1	2.30E+1	2.09E+1
125	4.79E+2	7.65E+1	9.93E+1	7.60E+1	2.41E+1	3.04E+1	2.72E+1	2.14E+1	1.95E+1
130	4.15E+2	6.85E+1	8.99E+1	6.82E+1	2.12E+1	2.74E+1	2.42E+1	1.96E+1	1.80E+1
135	3.51E+2	5.98E+1	8.06E+1	6.03E+1	1.82E+1	2.43E+1	2.13E+1	1.79E+1	1.64E+1
140	2.89E+2	5.08E+1	7.15E+1	5.26E+1	1.52E+1	2.13E+1	1.83E+1	1.61E+1	1.49E+1
145	2.29E+2	4.17E+1	6.30E+1	4.53E+1	1.23E+1	1.84E+1	1.55E+1	1.44E+1	1.33E+1
150	1.74E+2	3.27E+1	5.53E+1	3.87E+1	9.59E+0	1.57E+1	1.29E+1	1.29E+1	1.19E+1
155	1.25E+2	2.43E+1	4.84E+1	3.28E+1	7.09E+0	1.33E+1	1.06E+1	1.15E+1	1.07E+1
160	8.27E+1	1.68E+1	4.27E+1	2.79E+1	4.92E+0	1.12E+1	8.54E+0	1.03E+1	9.57E+0
165	4.90E+1	1.05E+1	3.81E+1	2.39E+1	3.14E+0	9.49E+0	6.90E+0	9.35E+0	8.69E+0
170	2.43E+1	5.83E+0	3.48E+1	2.10E+1	1.82E+0	8.24E+0	5.69E+0	8.65E+0	8.05E+0
175	9.18E+0	2.90E+0	3.28E+1	1.93E+1	1.01E+0	7.47E+0	4.96E+0	8.23E+0	7.66E+0
180	4.11E+0	1.91E+0	3.21E+1	1.87E+1	7.36E−1	7.21E+0	4.71E+0	8.08E+0	7.52E+0
	$T_e = 1.5$ keV	$\beta = 0.07645$	$\gamma = 1.003$						
0	1.91E+1	2.66E+0	2.05E+1	8.42E+0	8.48E−1	6.10E+0	2.95E+0	4.02E+0	3.98E+0
5	2.36E+1	3.68E+0	2.09E+1	8.84E+0	1.17E+0	6.32E+0	3.18E+0	4.09E+0	4.03E+0
10	3.71E+1	6.70E+0	2.23E+1	1.01E+1	2.10E+0	6.98E+0	3.85E+0	4.30E+0	4.20E+0
15	5.89E+1	1.15E+1	2.45E+1	1.22E+1	3.59E+0	8.06E+0	4.95E+0	4.65E+0	4.48E+0
20	8.83E+1	1.78E+1	2.77E+1	1.50E+1	5.54E+0	9.51E+0	6.42E+0	5.14E+0	4.87E+0
25	1.24E+2	2.51E+1	3.16E+1	1.86E+1	7.85E+0	1.13E+1	8.21E+0	5.77E+0	5.36E+0
30	1.65E+2	3.31E+1	3.62E+1	2.28E+1	1.04E+1	1.33E+1	1.02E+1	6.52E+0	5.97E+0
35	2.09E+2	4.13E+1	4.16E+1	2.76E+1	1.30E+1	1.55E+1	1.24E+1	7.38E+0	6.67E+0
40	2.56E+2	4.93E+1	4.74E+1	3.28E+1	1.55E+1	1.77E+1	1.47E+1	8.35E+0	7.47E+0
45	3.02E+2	5.67E+1	5.35E+1	3.82E+1	1.79E+1	2.00E+1	1.70E+1	9.40E+0	8.33E+0
50	3.48E+2	6.31E+1	5.99E+1	4.37E+1	2.01E+1	2.21E+1	1.92E+1	1.05E+1	9.25E+0
55	3.90E+2	6.85E+1	6.62E+1	4.92E+1	2.20E+1	2.42E+1	2.12E+1	1.16E+1	1.02E+1
60	4.28E+2	7.26E+1	7.22E+1	5.44E+1	2.35E+1	2.59E+1	2.30E+1	1.27E+1	1.12E+1
65	4.61E+2	7.55E+1	7.77E+1	5.92E+1	2.47E+1	2.74E+1	2.46E+1	1.38E+1	1.21E+1
70	4.87E+2	7.73E+1	8.26E+1	6.34E+1	2.55E+1	2.86E+1	2.57E+1	1.48E+1	1.29E+1
75	5.06E+2	7.79E+1	8.66E+1	6.68E+1	2.59E+1	2.93E+1	2.66E+1	1.57E+1	1.37E+1
80	5.18E+2	7.77E+1	8.95E+1	6.93E+1	2.60E+1	2.98E+1	2.70E+1	1.64E+1	1.44E+1
85	5.22E+2	7.66E+1	9.12E+1	7.08E+1	2.57E+1	2.98E+1	2.71E+1	1.69E+1	1.49E+1
90	5.18E+2	7.49E+1	9.17E+1	7.14E+1	2.52E+1	2.95E+1	2.69E+1	1.72E+1	1.52E+1
95	5.06E+2	7.25E+1	9.10E+1	7.08E+1	2.44E+1	2.88E+1	2.63E+1	1.73E+1	1.53E+1
100	4.88E+2	6.97E+1	8.90E+1	6.93E+1	2.34E+1	2.79E+1	2.54E+1	1.71E+1	1.53E+1
105	4.63E+2	6.65E+1	8.60E+1	6.68E+1	2.21E+1	2.66E+1	2.42E+1	1.68E+1	1.50E+1
110	4.32E+2	6.28E+1	8.19E+1	6.35E+1	2.07E+1	2.51E+1	2.28E+1	1.62E+1	1.46E+1
115	3.97E+2	5.86E+1	7.70E+1	5.95E+1	1.91E+1	2.35E+1	2.11E+1	1.55E+1	1.40E+1
120	3.59E+2	5.41E+1	7.15E+1	5.50E+1	1.73E+1	2.17E+1	1.94E+1	1.46E+1	1.32E+1
125	3.18E+2	4.91E+1	6.56E+1	5.00E+1	1.55E+1	1.97E+1	1.75E+1	1.36E+1	1.24E+1
130	2.75E+2	4.38E+1	5.95E+1	4.49E+1	1.35E+1	1.77E+1	1.56E+1	1.26E+1	1.15E+1
135	2.33E+2	3.81E+1	5.33E+1	3.97E+1	1.16E+1	1.57E+1	1.36E+1	1.14E+1	1.05E+1
140	1.91E+2	3.23E+1	4.73E+1	3.46E+1	9.67E+0	1.38E+1	1.17E+1	1.03E+1	9.52E+0
145	1.52E+2	2.64E+1	4.17E+1	2.98E+1	7.80E+0	1.19E+1	9.91E+0	9.27E+0	8.56E+0
150	1.15E+2	2.07E+1	3.65E+1	2.54E+1	6.06E+0	1.01E+1	8.22E+0	8.27E+0	7.67E+0
155	8.26E+1	1.54E+1	3.20E+1	2.15E+1	4.47E+0	8.55E+0	6.70E+0	7.37E+0	6.86E+0
160	5.48E+1	1.06E+1	2.82E+1	1.82E+1	3.10E+0	7.19E+0	5.40E+0	6.60E+0	6.16E+0
165	3.24E+1	6.67E+0	2.51E+1	1.55E+1	1.98E+0	6.10E+0	4.35E+0	5.98E+0	5.60E+0
170	1.60E+1	3.70E+0	2.29E+1	1.36E+1	1.15E+0	5.29E+0	3.57E+0	5.53E+0	5.18E+0
175	5.99E+0	1.85E+0	2.16E+1	1.24E+1	6.41E−1	4.80E+0	3.10E+0	5.25E+0	4.93E+0
180	2.62E+0	1.22E+0	2.11E+1	1.20E+1	4.70E−1	4.63E+0	2.94E+0	5.16E+0	4.85E+0

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr)								
(deg)	$1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
				$T_e = 2.0$ keV $\beta = 0.08822$ $\gamma = 1.004$					
0	1.45E+1	2.03E+0	1.51E+1	6.21E+0	6.48E−1	4.64E+0	2.22E+0	2.86E+0	2.82E+0
5	1.79E+1	2.82E+0	1.55E+1	6.51E+0	8.98E−1	4.81E+0	2.39E+0	2.91E+0	2.86E+0
10	2.80E+1	5.15E+0	1.65E+1	7.42E+0	1.63E+0	5.30E+0	2.88E+0	3.05E+0	2.97E+0
15	4.44E+1	8.85E+0	1.81E+1	8.92E+0	2.80E+0	6.09E+0	3.68E+0	3.28E+0	3.15E+0
20	6.64E+1	1.37E+1	2.04E+1	1.10E+1	4.33E+0	7.16E+0	4.76E+0	3.61E+0	3.41E+0
25	9.32E+1	1.94E+1	2.32E+1	1.36E+1	6.13E+0	8.47E+0	6.08E+0	4.03E+0	3.74E+0
30	1.24E+2	2.55E+1	2.66E+1	1.66E+1	8.09E+0	9.96E+0	7.57E+0	4.53E+0	4.14E+0
35	1.57E+2	3.18E+1	3.05E+1	2.01E+1	1.01E+1	1.16E+1	9.19E+0	5.12E+0	4.62E+0
40	1.92E+2	3.79E+1	3.47E+1	2.38E+1	1.21E+1	1.33E+1	1.09E+1	5.78E+0	5.15E+0
45	2.27E+2	4.35E+1	3.92E+1	2.78E+1	1.39E+1	1.49E+1	1.26E+1	6.50E+0	5.74E+0
50	2.60E+2	4.84E+1	4.39E+1	3.18E+1	1.56E+1	1.65E+1	1.42E+1	7.27E+0	6.38E+0
55	2.92E+2	5.24E+1	4.85E+1	3.58E+1	1.69E+1	1.80E+1	1.57E+1	8.05E+0	7.04E+0
60	3.20E+2	5.55E+1	5.30E+1	3.97E+1	1.80E+1	1.94E+1	1.70E+1	8.84E+0	7.70E+0
65	3.45E+2	5.76E+1	5.71E+1	4.32E+1	1.89E+1	2.04E+1	1.81E+1	9.60E+0	8.36E+0
70	3.64E+2	5.87E+1	6.07E+1	4.63E+1	1.94E+1	2.13E+1	1.90E+1	1.03E+1	8.98E+0
75	3.78E+2	5.91E+1	6.37E+1	4.88E+1	1.96E+1	2.19E+1	1.96E+1	1.09E+1	9.53E+0
80	3.87E+2	5.86E+1	6.59E+1	5.07E+1	1.96E+1	2.21E+1	1.99E+1	1.15E+1	1.00E+1
85	3.90E+2	5.76E+1	6.73E+1	5.19E+1	1.93E+1	2.22E+1	2.00E+1	1.18E+1	1.04E+1
90	3.87E+2	5.60E+1	6.77E+1	5.24E+1	1.88E+1	2.19E+1	1.98E+1	1.21E+1	1.06E+1
95	3.78E+2	5.41E+1	6.72E+1	5.21E+1	1.82E+1	2.14E+1	1.93E+1	1.22E+1	1.08E+1
100	3.64E+2	5.17E+1	6.53E+1	5.10E+1	1.73E+1	2.06E+1	1.86E+1	1.21E+1	1.08E+1
105	3.45E+2	4.91E+1	6.36E+1	4.92E+1	1.63E+1	1.97E+1	1.77E+1	1.19E+1	1.06E+1
110	3.23E+2	4.61E+1	6.07E+1	4.69E+1	1.52E+1	1.85E+1	1.66E+1	1.16E+1	1.03E+1
115	2.97E+2	4.29E+1	5.71E+1	4.40E+1	1.39E+1	1.73E+1	1.54E+1	1.11E+1	9.94E+0
120	2.68E+2	3.94E+1	5.31E+1	4.06E+1	1.26E+1	1.59E+1	1.41E+1	1.05E+1	9.44E+0
125	2.37E+2	3.57E+1	4.87E+1	3.70E+1	1.12E+1	1.45E+1	1.27E+1	9.78E+0	8.86E+0
130	2.06E+2	3.17E+1	4.42E+1	3.32E+1	9.80E+0	1.30E+1	1.13E+1	9.02E+0	8.22E+0
135	1.74E+2	2.75E+1	3.96E+1	2.94E+1	8.37E+0	1.15E+1	9.89E+0	8.24E+0	7.54E+0
140	1.43E+2	2.32E+1	3.52E+1	2.56E+1	6.96E+0	1.00E+1	8.49E+0	7.45E+0	6.85E+0
145	1.13E+2	1.90E+1	3.10E+1	2.20E+1	5.60E+0	8.66E+0	7.16E+0	6.68E+0	6.17E+0
150	8.60E+1	1.49E+1	2.72E+1	1.87E+1	4.34E+0	7.37E+0	5.93E+0	5.97E+0	5.54E+0
155	6.16E+1	1.10E+1	2.38E+1	1.58E+1	3.20E+0	6.23E+0	4.83E+0	5.32E+0	4.96E+0
160	4.08E+1	7.62E+0	2.09E+1	1.33E+1	2.21E+0	5.24E+0	3.88E+0	4.76E+0	4.46E+0
165	2.41E+1	4.78E+0	1.86E+1	1.14E+1	1.41E+0	4.45E+0	3.12E+0	4.31E+0	4.05E+0
170	1.19E+1	2.65E+0	1.70E+1	9.91E+0	8.24E−1	3.86E+0	2.56E+0	3.98E+0	3.75E+0
175	4.40E+0	1.33E+0	1.60E+1	9.03E+0	4.61E−1	3.51E+0	2.22E+0	3.78E+0	3.57E+0
180	1.89E+0	8.87E−1	1.56E+1	8.74E+0	3.39E−1	3.39E+0	2.10E+0	3.72E+0	3.51E+0
				$T_e = 3.0$ keV $\beta = 0.1079$ $\gamma = 1.006$					
0	9.86E+0	1.40E+0	9.88E+0	4.04E+0	4.44E−1	3.17E+0	1.50E+0	1.74E+0	1.70E+0
5	1.21E+1	1.95E+0	1.01E+1	4.23E+0	6.23E−1	3.28E+0	1.60E+0	1.76E+0	1.72E+0
10	1.89E+1	3.56E+0	1.07E+1	4.79E+0	1.15E+0	3.59E+0	1.91E+0	1.84E+0	1.78E+0
15	2.98E+1	6.14E+0	1.17E+1	5.72E+0	1.98E+0	4.10E+0	2.42E+0	1.96E+0	1.87E+0
20	4.44E+1	9.49E+0	1.31E+1	6.99E+0	3.07E+0	4.79E+0	3.10E+0	2.14E+0	2.00E+0
25	6.23E+1	1.34E+1	1.49E+1	8.59E+0	4.34E+0	5.63E+0	3.94E+0	2.36E+0	2.18E+0
30	8.26E+1	1.77E+1	1.70E+1	1.05E+1	5.72E+0	6.59E+0	4.89E+0	2.64E+0	2.39E+0
35	1.05E+2	2.20E+1	1.95E+1	1.26E+1	7.12E+0	7.63E+0	5.92E+0	2.96E+0	2.65E+0
40	1.28E+2	2.62E+1	2.22E+1	1.50E+1	8.49E+0	8.72E+0	6.99E+0	3.33E+0	2.94E+0
45	1.51E+2	3.00E+1	2.51E+1	1.75E+1	9.74E+0	9.81E+0	8.07E+0	3.74E+0	3.27E+0
50	1.73E+2	3.33E+1	2.80E+1	2.00E+1	1.08E+1	1.09E+1	9.11E+0	4.17E+0	3.63E+0
55	1.94E+2	3.60E+1	3.10E+1	2.26E+1	1.17E+1	1.18E+1	1.01E+1	4.63E+0	4.01E+0
60	2.13E+2	3.80E+1	3.39E+1	2.50E+1	1.24E+1	1.27E+1	1.09E+1	5.09E+0	4.40E+0
65	2.29E+2	3.93E+1	3.66E+1	2.73E+1	1.29E+1	1.34E+1	1.16E+1	5.55E+0	4.79E+0
70	2.41E+2	3.99E+1	3.90E+1	2.93E+1	1.32E+1	1.39E+1	1.22E+1	5.98E+0	5.16E+0
75	2.51E+2	4.00E+1	4.09E+1	3.10E+1	1.33E+1	1.43E+1	1.26E+1	6.37E+0	5.50E+0
80	2.56E+2	3.95E+1	4.24E+1	3.23E+1	1.31E+1	1.45E+1	1.28E+1	6.70E+0	5.81E+0
85	2.58E+2	3.85E+1	4.33E+1	3.31E+1	1.29E+1	1.45E+1	1.28E+1	6.97E+0	6.05E+0
90	2.56E+2	3.72E+1	4.37E+1	3.35E+1	1.25E+1	1.43E+1	1.27E+1	7.15E+0	6.23E+0
95	2.50E+2	3.57E+1	4.35E+1	3.33E+1	1.19E+1	1.39E+1	1.24E+1	7.24E+0	6.34E+0
100	2.41E+2	3.39E+1	4.26E+1	3.27E+1	1.13E+1	1.34E+1	1.19E+1	7.24E+0	6.36E+0
105	2.28E+2	3.19E+1	4.13E+1	3.17E+1	1.06E+1	1.27E+1	1.13E+1	7.15E+0	6.31E+0
110	2.13E+2	2.97E+1	3.94E+1	3.02E+1	9.76E+0	1.20E+1	1.06E+1	6.96E+0	6.17E+0
115	1.96E+2	2.75E+1	3.72E+1	2.84E+1	8.90E+0	1.11E+1	9.82E+0	6.69E+0	5.97E+0
120	1.77E+2	2.50E+1	3.46E+1	2.62E+1	8.01E+0	1.02E+1	8.96E+0	6.35E+0	5.69E+0
125	1.57E+2	2.25E+1	3.18E+1	2.39E+1	7.09E+0	9.27E+0	8.06E+0	5.95E+0	5.36E+0
130	1.36E+2	1.99E+1	2.89E+1	2.15E+1	6.16E+0	8.30E+0	7.15E+0	5.52E+0	5.00E+0
135	1.15E+2	1.72E+1	2.59E+1	1.90E+1	5.23E+0	7.34E+0	6.23E+0	5.05E+0	4.60E+0
140	9.43E+1	1.45E+1	2.30E+1	1.66E+1	4.33E+0	6.40E+0	5.34E+0	4.58E+0	4.19E+0
145	7.48E+1	1.18E+1	2.03E+1	1.43E+1	3.48E+0	5.52E+0	4.49E+0	4.12E+0	3.79E+0
150	5.67E+1	9.19E+0	1.78E+1	1.21E+1	2.69E+0	4.70E+0	3.71E+0	3.68E+0	3.41E+0
155	4.06E+1	6.80E+0	1.56E+1	1.02E+1	1.97E+0	3.97E+0	3.02E+0	3.29E+0	3.06E+0
160	2.69E+1	4.69E+0	1.37E+1	8.56E+0	1.36E+0	3.35E+0	2.42E+0	2.95E+0	2.76E+0
165	1.59E+1	2.95E+0	1.22E+1	7.26E+0	8.72E−1	2.85E+0	1.95E+0	2.67E+0	2.52E+0
170	7.77E+0	1.64E+0	1.11E+1	6.30E+0	5.09E−1	2.48E+0	1.60E+0	2.47E+0	2.33E+0
175	2.84E+0	8.31E−1	1.04E+1	5.72E+0	2.86E−1	2.26E+0	1.38E+0	2.34E+0	2.22E+0
180	1.18E+0	5.57E−1	1.02E+1	5.53E+0	2.12E−1	2.18E+0	1.31E+0	2.30E+0	2.18E+0

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle (deg)	$1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr)								
	T_e = 4.0 keV	β = 0.1244	γ = 1.008						
0	7.52E+0	1.07E+0	7.27E+0	2.98E+0	3.40E−1	2.43E+0	1.14E+0	1.20E+0	1.16E+0
5	9.22E+0	1.50E+0	7.41E+0	3.11E+0	4.81E−1	2.50E+0	1.22E+0	1.21E+0	1.17E+0
10	1.43E+1	2.75E+0	7.84E+0	3.50E+0	8.93E−1	2.72E+0	1.44E+0	1.26E+0	1.20E+0
15	2.24E+1	4.73E+0	8.56E+0	4.15E+0	1.55E+0	3.09E+0	1.79E+0	1.33E+0	1.26E+0
20	3.34E+1	7.32E+0	9.55E+0	5.04E+0	2.40E+0	3.58E+0	2.28E+0	1.44E+0	1.34E+0
25	4.67E+1	1.04E+1	1.08E+1	6.16E+0	3.40E+0	4.18E+0	2.86E+0	1.58E+0	1.44E+0
30	6.19E+1	1.36E+1	1.23E+1	7.49E+0	4.47E+0	4.87E+0	3.54E+0	1.75E+0	1.58E+0
35	7.83E+1	1.70E+1	1.41E+1	9.00E+0	5.56E+0	5.62E+0	4.27E+0	1.95E+0	1.73E+0
40	9.55E+1	2.02E+1	1.60E+1	1.07E+1	6.61E+0	6.41E+0	5.04E+0	2.18E+0	1.92E+0
45	1.13E+2	2.31E+1	1.80E+1	1.24E+1	7.57E+0	7.20E+0	5.81E+0	2.45E+0	2.13E+0
50	1.29E+2	2.56E+1	2.02E+1	1.43E+1	8.39E+0	7.97E+0	6.56E+0	2.73E+0	2.36E+0
55	1.45E+2	2.76E+1	2.24E+1	1.61E+1	9.06E+0	8.68E+0	7.25E+0	3.03E+0	2.60E+0
60	1.59E+2	2.91E+1	2.45E+1	1.78E+1	9.56E+0	9.30E+0	7.86E+0	3.34E+0	2.86E+0
65	1.70E+2	3.00E+1	2.64E+1	1.95E+1	9.88E+0	9.83E+0	8.38E+0	3.65E+0	3.12E+0
70	1.80E+2	3.04E+1	2.82E+1	2.09E+1	1.00E+1	1.02E+1	8.79E+0	3.94E+0	3.37E+0
75	1.87E+2	3.03E+1	2.96E+1	2.22E+1	1.00E+1	1.05E+1	9.07E+0	4.21E+0	3.61E+0
80	1.91E+2	2.98E+1	3.07E+1	2.31E+1	9.90E+0	1.06E+1	9.22E+0	4.45E+0	3.82E+0
85	1.92E+2	2.89E+1	3.14E+1	2.38E+1	9.64E+0	1.06E+1	9.24E+0	4.64E+0	4.00E+0
90	1.90E+2	2.78E+1	3.17E+1	2.41E+1	9.27E+0	1.04E+1	9.13E+0	4.78E+0	4.13E+0
95	1.86E+2	2.65E+1	3.16E+1	2.40E+1	8.82E+0	1.02E+1	8.91E+0	4.86E+0	4.22E+0
100	1.79E+2	2.50E+1	3.11E+1	2.36E+1	8.30E+0	9.78E+0	8.57E+0	4.88E+0	4.26E+0
105	1.70E+2	2.34E+1	3.01E+1	2.29E+1	7.72E+0	9.29E+0	8.14E+0	4.83E+0	4.24E+0
110	1.59E+2	2.17E+1	2.88E+1	2.19E+1	7.10E+0	8.73E+0	7.63E+0	4.73E+0	4.17E+0
115	1.46E+2	1.99E+1	2.72E+1	2.06E+1	6.44E+0	8.10E+0	7.05E+0	4.56E+0	4.04E+0
120	1.32E+2	1.81E+1	2.53E+1	1.91E+1	5.77E+0	7.43E+0	6.43E+0	4.35E+0	3.87E+0
125	1.16E+2	1.61E+1	2.33E+1	1.74E+1	5.08E+0	6.73E+0	5.78E+0	4.09E+0	3.66E+0
130	1.01E+2	1.42E+1	2.12E+1	1.56E+1	4.39E+0	6.02E+0	5.12E+0	3.80E+0	3.42E+0
135	8.53E+1	1.22E+1	1.90E+1	1.39E+1	3.72E+0	5.31E+0	4.46E+0	3.49E+0	3.16E+0
140	7.01E+1	1.02E+1	1.69E+1	1.21E+1	3.07E+0	4.63E+0	3.81E+0	3.17E+0	2.89E+0
145	5.55E+1	8.31E+0	1.49E+1	1.04E+1	2.46E+0	3.99E+0	3.21E+0	2.86E+0	2.62E+0
150	4.21E+1	6.47E+0	1.31E+1	8.81E+0	1.89E+0	3.40E+0	2.65E+0	2.56E+0	2.37E+0
155	3.02E+1	4.78E+0	1.15E+1	7.40E+0	1.39E+0	2.88E+0	2.15E+0	2.29E+0	2.13E+0
160	2.00E+1	3.29E+0	1.01E+1	6.21E+0	9.59E−1	2.44E+0	1.73E+0	2.06E+0	1.93E+0
165	1.18E+1	2.07E+0	8.97E+0	5.24E+0	6.12E−1	2.08E+0	1.39E+0	1.87E+0	1.76E+0
170	5.73E+0	1.15E+0	8.16E+0	4.54E+0	3.58E−1	1.82E+0	1.14E+0	1.73E+0	1.63E+0
175	2.06E+0	5.88E−1	7.67E+0	4.11E+0	2.02E−1	1.66E+0	9.90E−1	1.64E+0	1.56E+0
180	8.30E−1	3.96E−1	7.51E+0	3.97E+0	1.50E−1	1.60E+0	9.38E−1	1.61E+0	1.53E+0
	T_e = 5.0 keV	β = 0.1389	γ = 1.010						
0	6.10E+0	8.75E−1	5.72E+0	2.36E+0	2.77E−1	1.97E+0	9.27E−1	8.87E−1	8.48E−1
5	7.46E+0	1.22E+0	5.83E+0	2.46E+0	3.94E−1	2.02E+0	9.82E−1	8.96E−1	8.55E−1
10	1.15E+1	2.24E+0	6.15E+0	2.75E+0	7.36E−1	2.19E+0	1.15E+0	9.25E−1	8.75E−1
15	1.80E+1	3.87E+0	6.69E+0	3.23E+0	1.28E+0	2.47E+0	1.42E+0	9.73E−1	9.11E−1
20	2.67E+1	5.98E+0	7.43E+0	3.89E+0	1.98E+0	2.84E+0	1.78E+0	1.04E+0	9.62E−1
25	3.73E+1	8.45E+0	8.38E+0	4.73E+0	2.80E+0	3.30E+0	2.22E+0	1.13E+0	1.03E+0
30	4.94E+1	1.11E+1	9.53E+0	5.73E+0	3.69E+0	3.83E+0	2.73E+0	1.25E+0	1.12E+0
35	6.25E+1	1.38E+1	1.08E+1	6.87E+0	4.58E+0	4.41E+0	3.29E+0	1.38E+0	1.22E+0
40	7.61E+1	1.64E+1	1.23E+1	8.12E+0	5.44E+0	5.01E+0	3.87E+0	1.54E+0	1.35E+0
45	8.97E+1	1.88E+1	1.39E+1	9.46E+0	6.21E+0	5.62E+0	4.45E+0	1.72E+0	1.49E+0
50	1.03E+2	2.08E+1	1.55E+1	1.08E+1	6.87E+0	6.21E+0	5.02E+0	1.92E+0	1.65E+0
55	1.15E+2	2.24E+1	1.72E+1	1.22E+1	7.40E+0	6.77E+0	5.56E+0	2.13E+0	1.82E+0
60	1.26E+2	2.36E+1	1.88E+1	1.36E+1	7.78E+0	7.25E+0	6.03E+0	2.35E+0	2.00E+0
65	1.36E+2	2.43E+1	2.04E+1	1.48E+1	8.02E+0	7.66E+0	6.43E+0	2.57E+0	2.19E+0
70	1.43E+2	2.45E+1	2.17E+1	1.60E+1	8.11E+0	7.98E+0	6.75E+0	2.79E+0	2.37E+0
75	1.48E+2	2.44E+1	2.29E+1	1.69E+1	8.08E+0	8.18E+0	6.97E+0	2.99E+0	2.54E+0
80	1.52E+2	2.39E+1	2.38E+1	1.77E+1	7.93E+0	8.28E+0	7.09E+0	3.17E+0	2.70E+0
85	1.52E+2	2.32E+1	2.44E+1	1.82E+1	7.68E+0	8.27E+0	7.10E+0	3.32E+0	2.84E+0
90	1.51E+2	2.22E+1	2.46E+1	1.85E+1	7.36E+0	8.15E+0	7.02E+0	3.43E+0	2.95E+0
95	1.48E+2	2.10E+1	2.45E+1	1.85E+1	6.96E+0	7.93E+0	6.85E+0	3.50E+0	3.02E+0
100	1.42E+2	1.97E+1	2.41E+1	1.82E+1	6.52E+0	7.63E+0	6.59E+0	3.52E+0	3.06E+0
105	1.35E+2	1.84E+1	2.34E+1	1.76E+1	6.04E+0	7.24E+0	6.26E+0	3.50E+0	3.05E+0
110	1.26E+2	1.70E+1	2.24E+1	1.69E+1	5.52E+0	6.80E+0	5.86E+0	3.44E+0	3.01E+0
115	1.16E+2	1.55E+1	2.12E+1	1.59E+1	4.99E+0	6.30E+0	5.42E+0	3.33E+0	2.93E+0
120	1.04E+2	1.40E+1	1.98E+1	1.48E+1	4.45E+0	5.77E+0	4.94E+0	3.18E+0	2.82E+0
125	9.24E+1	1.24E+1	1.82E+1	1.35E+1	3.91E+0	5.23E+0	4.44E+0	3.00E+0	2.67E+0
130	8.00E+1	1.09E+1	1.66E+1	1.21E+1	3.37E+0	4.67E+0	3.92E+0	2.80E+0	2.51E+0
135	6.77E+1	9.32E+0	1.49E+1	1.08E+1	2.84E+0	4.13E+0	3.42E+0	2.58E+0	2.32E+0
140	5.56E+1	7.78E+0	1.33E+1	9.39E+0	2.34E+0	3.60E+0	2.92E+0	2.35E+0	2.13E+0
145	4.40E+1	6.30E+0	1.17E+1	8.07E+0	1.87E+0	3.10E+0	2.46E+0	2.12E+0	1.94E+0
150	3.34E+1	4.89E+0	1.03E+1	6.84E+0	1.44E+0	2.65E+0	2.03E+0	1.91E+0	1.75E+0
155	2.39E+1	3.61E+0	9.01E+0	5.75E+0	1.05E+0	2.24E+0	1.65E+0	1.71E+0	1.58E+0
160	1.58E+1	2.48E+0	7.92E+0	4.81E+0	7.25E−1	1.90E+0	1.33E+0	1.54E+0	1.43E+0
165	9.29E+0	1.56E+0	7.05E+0	4.06E+0	4.63E−1	1.63E+0	1.07E+0	1.40E+0	1.31E+0
170	4.52E+0	8.71E−1	6.42E+0	3.51E+0	2.71E−1	1.43E+0	8.81E−1	1.30E+0	1.22E+0
175	1.61E+0	4.46E−1	6.03E+0	3.17E+0	1.53E−1	1.31E+0	7.65E−1	1.23E+0	1.16E+0
180	6.27E−1	3.02E−1	5.90E+0	3.06E+0	1.14E−1	1.26E+0	7.27E−1	1.21E+0	1.15E+0

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle (deg)	$1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
				Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr)					
			$T_e = 6.0$ keV	$\beta = 0.1519$	$\gamma = 1.012$				
0	5.15E+0	7.42E−1	4.70E+0	1.95E+0	2.35E−1	1.66E+0	7.83E−1	6.86E−1	6.47E−1
5	6.27E+0	1.04E+0	4.78E+0	2.02E+0	3.35E−1	1.70E+0	8.26E−1	6.92E−1	6.52E−1
10	9.61E+0	1.90E+0	5.03E+0	2.25E+0	6.27E−1	1.83E+0	9.55E−1	7.12E−1	6.65E−1
15	1.50E+1	3.27E+0	5.45E+0	2.62E+0	1.09E+0	2.05E+0	1.16E+0	7.45E−1	6.89E−1
20	2.23E+1	5.07E+0	6.04E+0	3.14E+0	1.69E+0	2.35E+0	1.45E+0	7.92E−1	7.23E−1
25	3.11E+1	7.16E+0	6.78E+0	3.80E+0	2.39E+0	2.71E+0	1.80E+0	8.55E−1	7.70E−1
30	4.11E+1	9.41E+0	7.69E+0	4.58E+0	3.15E+0	3.13E+0	2.19E+0	9.35E−1	8.29E−1
35	5.19E+1	1.17E+1	8.73E+0	5.47E+0	3.90E+0	3.59E+0	2.63E+0	1.03E+0	9.03E−1
40	6.32E+1	1.39E+1	9.90E+0	6.46E+0	4.63E+0	4.07E+0	3.09E+0	1.15E+0	9.91E−1
45	7.45E+1	1.59E+1	1.12E+1	7.51E+0	5.28E+0	4.56E+0	3.56E+0	1.28E+0	1.09E+0
50	8.54E+1	1.76E+1	1.25E+1	8.61E+0	5.83E+0	5.04E+0	4.01E+0	1.42E+0	1.21E+0
55	9.55E+1	1.89E+1	1.38E+1	9.71E+0	6.26E+0	5.48E+0	4.43E+0	1.58E+0	1.33E+0
60	1.05E+2	1.99E+1	1.51E+1	1.08E+1	6.57E+0	5.88E+0	4.81E+0	1.74E+0	1.47E+0
65	1.12E+2	2.04E+1	1.64E+1	1.18E+1	6.75E+0	6.21E+0	5.13E+0	1.91E+0	1.61E+0
70	1.18E+2	2.06E+1	1.75E+1	1.27E+1	6.80E+0	6.47E+0	5.39E+0	2.07E+0	1.75E+0
75	1.23E+2	2.04E+1	1.84E+1	1.35E+1	6.75E+0	6.64E+0	5.57E+0	2.23E+0	1.88E+0
80	1.25E+2	2.00E+1	1.92E+1	1.41E+1	6.60E+0	6.72E+0	5.67E+0	2.36E+0	2.00E+0
85	1.26E+2	1.93E+1	1.97E+1	1.46E+1	6.37E+0	6.72E+0	5.69E+0	2.48E+0	2.11E+0
90	1.25E+2	1.84E+1	1.99E+1	1.48E+1	6.08E+0	6.62E+0	5.63E+0	2.57E+0	2.20E+0
95	1.22E+2	1.74E+1	1.99E+1	1.48E+1	5.73E+0	6.45E+0	5.49E+0	2.64E+0	2.26E+0
100	1.17E+2	1.63E+1	1.96E+1	1.46E+1	5.34E+0	6.20E+0	5.29E+0	2.66E+0	2.30E+0
105	1.11E+2	1.51E+1	1.90E+1	1.42E+1	4.93E+0	5.88E+0	5.02E+0	2.66E+0	2.30E+0
110	1.04E+2	1.38E+1	1.82E+1	1.36E+1	4.49E+0	5.52E+0	4.70E+0	2.61E+0	2.28E+0
115	9.55E+1	1.26E+1	1.72E+1	1.28E+1	4.04E+0	5.12E+0	4.35E+0	2.54E+0	2.22E+0
120	8.62E+1	1.13E+1	1.61E+1	1.19E+1	3.59E+0	4.69E+0	3.96E+0	2.43E+0	2.14E+0
125	7.64E+1	1.00E+1	1.48E+1	1.09E+1	3.14E+0	4.24E+0	3.56E+0	2.30E+0	2.04E+0
130	6.62E+1	8.72E+0	1.35E+1	9.82E+0	2.70E+0	3.79E+0	3.15E+0	2.15E+0	1.92E+0
135	5.59E+1	7.45E+0	1.22E+1	8.71E+0	2.27E+0	3.35E+0	2.74E+0	1.99E+0	1.78E+0
140	4.59E+1	6.20E+0	1.09E+1	7.60E+0	1.87E+0	2.92E+0	2.35E+0	1.82E+0	1.64E+0
145	3.64E+1	5.00E+0	9.59E+0	6.53E+0	1.49E+0	2.52E+0	1.97E+0	1.65E+0	1.50E+0
150	2.76E+1	3.88E+0	8.42E+0	5.54E+0	1.14E+0	2.15E+0	1.63E+0	1.48E+0	1.36E+0
155	1.98E+1	2.85E+0	7.38E+0	4.65E+0	8.35E−1	1.83E+0	1.33E+0	1.33E+0	1.23E+0
160	1.31E+1	1.96E+0	6.49E+0	3.89E+0	5.75E−1	1.55E+0	1.07E+0	1.20E+0	1.11E+0
165	7.66E+0	1.23E+0	5.78E+0	3.28E+0	3.66E−1	1.33E+0	8.64E−1	1.09E+0	1.02E+0
170	3.71E+0	6.89E−1	5.27E+0	2.83E+0	2.14E−1	1.17E+0	7.13E−1	1.01E+0	9.51E−1
175	1.30E+0	3.54E−1	4.95E+0	2.56E+0	1.22E−1	1.08E+0	6.21E−1	9.66E−1	9.08E−1
180	4.94E−1	2.41E−1	4.84E+0	2.46E+0	9.04E−2	1.04E+0	5.91E−1	9.49E−1	8.94E−1
			$T_e = 8.0$ keV	$\beta = 0.1749$	$\gamma = 1.016$				
0	3.94E+0	5.73E−1	3.43E+0	1.44E+0	1.81E−1	1.26E+0	6.00E−1	4.47E−1	4.11E−1
5	4.78E+0	7.99E−1	3.48E+0	1.49E+0	2.58E−1	1.29E+0	6.29E−1	4.50E−1	4.13E−1
10	7.26E+0	1.46E+0	3.65E+0	1.64E+0	4.86E−1	1.37E+0	7.13E−1	4.60E−1	4.20E−1
15	1.13E+1	2.51E+0	3.93E+0	1.88E+0	8.46E−1	1.52E+0	8.50E−1	4.76E−1	4.31E−1
20	1.67E+1	3.88E+0	4.32E+0	2.22E+0	1.31E+0	1.72E+0	1.04E+0	5.01E−1	4.48E−1
25	2.32E+1	5.48E+0	4.82E+0	2.66E+0	1.85E+0	1.96E+0	1.27E+0	5.34E−1	4.72E−1
30	3.06E+1	7.21E+0	5.43E+0	3.18E+0	2.43E+0	2.24E+0	1.53E+0	5.76E−1	5.03E−1
35	3.87E+1	8.95E+0	6.14E+0	3.77E+0	3.02E+0	2.56E+0	1.82E+0	6.30E−1	5.43E−1
40	4.70E+1	1.06E+1	6.94E+0	4.43E+0	3.57E+0	2.89E+0	2.13E+0	6.94E−1	5.91E−1
45	5.53E+1	1.21E+1	7.81E+0	5.15E+0	4.06E+0	3.23E+0	2.45E+0	7.69E−1	6.49E−1
50	6.34E+1	1.34E+1	8.73E+0	5.89E+0	4.47E+0	3.56E+0	2.75E+0	8.54E−1	7.16E−1
55	7.08E+1	1.44E+1	9.67E+0	6.65E+0	4.79E+0	3.88E+0	3.05E+0	9.47E−1	7.91E−1
60	7.75E+1	1.51E+1	1.06E+1	7.39E+0	5.00E+0	4.16E+0	3.31E+0	1.05E+0	8.72E−1
65	8.31E+1	1.55E+1	1.15E+1	8.10E+0	5.12E+0	4.40E+0	3.54E+0	1.15E+0	9.58E−1
70	8.76E+1	1.56E+1	1.23E+1	8.75E+0	5.14E+0	4.59E+0	3.72E+0	1.25E+0	1.04E+0
75	9.08E+1	1.54E+1	1.29E+1	9.30E+0	5.07E+0	4.71E+0	3.85E+0	1.35E+0	1.13E+0
80	9.27E+1	1.50E+1	1.35E+1	9.75E+0	4.93E+0	4.78E+0	3.92E+0	1.44E+0	1.21E+0
85	9.32E+1	1.44E+1	1.39E+1	1.01E+1	4.73E+0	4.78E+0	3.94E+0	1.52E+0	1.28E+0
90	9.23E+1	1.37E+1	1.41E+1	1.03E+1	4.48E+0	4.72E+0	3.91E+0	1.59E+0	1.34E+0
95	9.02E+1	1.29E+1	1.41E+1	1.03E+1	4.20E+0	4.59E+0	3.82E+0	1.64E+0	1.39E+0
100	8.68E+1	1.19E+1	1.39E+1	1.02E+1	3.89E+0	4.42E+0	3.68E+0	1.66E+0	1.42E+0
105	8.23E+1	1.10E+1	1.35E+1	9.91E+0	3.56E+0	4.20E+0	3.50E+0	1.67E+0	1.43E+0
110	7.68E+1	1.00E+1	1.30E+1	9.52E+0	3.23E+0	3.94E+0	3.28E+0	1.65E+0	1.42E+0
115	7.05E+1	9.03E+0	1.23E+1	9.00E+0	2.89E+0	3.65E+0	3.04E+0	1.61E+0	1.40E+0
120	6.37E+1	8.05E+0	1.15E+1	8.38E+0	2.55E+0	3.35E+0	2.77E+0	1.55E+0	1.35E+0
125	5.64E+1	7.08E+0	1.06E+1	7.68E+0	2.22E+0	3.03E+0	2.49E+0	1.48E+0	1.30E+0
130	4.88E+1	6.13E+0	9.71E+0	6.94E+0	1.89E+0	2.71E+0	2.20E+0	1.39E+0	1.22E+0
135	4.13E+1	5.20E+0	8.76E+0	6.16E+0	1.59E+0	2.40E+0	1.92E+0	1.29E+0	1.14E+0
140	3.39E+1	4.30E+0	7.82E+0	5.39E+0	1.30E+0	2.09E+0	1.64E+0	1.18E+0	1.06E+0
145	2.68E+1	3.45E+0	6.93E+0	4.64E+0	1.03E+0	1.81E+0	1.39E+0	1.08E+0	9.68E−1
150	2.04E+1	2.67E+0	6.09E+0	3.93E+0	7.87E−1	1.55E+0	1.15E+0	9.74E−1	8.81E−1
155	1.46E+1	1.96E+0	5.35E+0	3.30E+0	5.75E−1	1.32E+0	9.38E−1	8.79E−1	8.01E−1
160	9.61E+0	1.34E+0	4.72E+0	2.76E+0	3.95E−1	1.13E+0	7.60E−1	7.96E−1	7.30E−1
165	5.63E+0	8.41E−1	4.21E+0	2.32E+0	2.52E−1	9.77E−1	6.17E−1	7.28E−1	6.71E−1
170	2.71E+0	4.71E−1	3.83E+0	2.00E+0	1.47E−1	8.65E−1	5.12E−1	6.77E−1	6.27E−1
175	9.31E−1	2.43E−1	3.61E+0	1.81E+0	8.35E−2	7.96E−1	4.49E−1	6.46E−1	6.00E−1
180	3.34E−1	1.67E−1	3.53E+0	1.74E+0	6.22E−2	7.74E−1	4.27E−1	6.35E−1	5.91E−1

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle (deg)	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr) $1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
				T_e = 10.0 keV	β = 0.1950	γ = 1.020			
0	3.21E+0	4.70E−1	2.67E+0	1.14E+0	1.48E−1	1.01E+0	4.87E−1	3.13E−1	2.81E−1
5	3.87E+0	6.53E−1	2.71E+0	1.17E+0	2.11E−1	1.03E+0	5.06E−1	3.15E−1	2.82E−1
10	5.84E+0	1.19E+0	2.83E+0	1.28E+0	3.97E−1	1.09E+0	5.65E−1	3.20E−1	2.85E−1
15	9.03E+0	2.04E+0	3.03E+0	1.45E+0	6.90E−1	1.19E+0	6.62E−1	3.29E−1	2.91E−1
20	1.33E+1	3.15E+0	3.30E+0	1.69E+0	1.07E+0	1.33E+0	7.93E−1	3.43E−1	3.00E−1
25	1.85E+1	4.44E+0	3.66E+0	2.00E+0	1.51E+0	1.51E+0	9.55E−1	3.61E−1	3.13E−1
30	2.44E+1	5.83E+0	4.10E+0	2.37E+0	1.98E+0	1.71E+0	1.14E+0	3.86E−1	3.31E−1
35	3.07E+1	7.24E+0	4.62E+0	2.79E+0	2.45E+0	1.94E+0	1.35E+0	4.18E−1	3.55E−1
40	3.73E+1	8.58E+0	5.21E+0	3.27E+0	2.90E+0	2.18E+0	1.57E+0	4.57E−1	3.84E−1
45	4.38E+1	9.79E+0	5.85E+0	3.79E+0	3.29E+0	2.44E+0	1.80E+0	5.04E−1	4.20E−1
50	5.02E+1	1.08E+1	6.53E+0	4.33E+0	3.62E+0	2.68E+0	2.02E+0	5.58E−1	4.63E−1
55	5.60E+1	1.16E+1	7.23E+0	4.88E+0	3.86E+0	2.92E+0	2.24E+0	6.19E−1	5.11E−1
60	6.13E+1	1.21E+1	7.93E+0	5.43E+0	4.03E+0	3.13E+0	2.43E+0	6.85E−1	5.64E−1
65	6.57E+1	1.24E+1	8.60E+0	5.96E+0	4.11E+0	3.32E+0	2.60E+0	7.54E−1	6.21E−1
70	6.92E+1	1.25E+1	9.20E+0	6.44E+0	4.11E+0	3.46E+0	2.74E+0	8.24E−1	6.80E−1
75	7.17E+1	1.23E+1	9.73E+0	6.86E+0	4.04E+0	3.56E+0	2.84E+0	8.93E−1	7.38E−1
80	7.32E+1	1.20E+1	1.02E+1	7.21E+0	3.91E+0	3.62E+0	2.90E+0	9.58E−1	7.94E−1
85	7.35E+1	1.15E+1	1.04E+1	7.46E+0	3.74E+0	3.62E+0	2.92E+0	1.02E+0	8.46E−1
90	7.28E+1	1.08E+1	1.06E+1	7.61E+0	3.53E+0	3.58E+0	2.90E+0	1.06E+0	8.90E−1
95	7.11E+1	1.01E+1	1.06E+1	7.65E+0	3.29E+0	3.49E+0	2.84E+0	1.10E+0	9.25E−1
100	6.84E+1	9.38E+0	1.05E+1	7.58E+0	3.03E+0	3.37E+0	2.74E+0	1.12E+0	9.50E−1
105	6.48E+1	8.59E+0	1.03E+1	7.41E+0	2.76E+0	3.20E+0	2.61E+0	1.13E+0	9.62E−1
110	6.05E+1	7.78E+0	9.87E+0	7.13E+0	2.49E+0	3.01E+0	2.45E+0	1.13E+0	9.62E−1
115	5.56E+1	6.97E+0	9.38E+0	6.75E+0	2.21E+0	2.79E+0	2.27E+0	1.10E+0	9.49E−1
120	5.02E+1	6.18E+0	8.79E+0	6.30E+0	1.94E+0	2.56E+0	2.07E+0	1.07E+0	9.24E−1
125	4.44E+1	5.40E+0	8.14E+0	5.79E+0	1.68E+0	2.32E+0	1.87E+0	1.02E+0	8.88E−1
130	3.85E+1	4.64E+0	7.44E+0	5.24E+0	1.43E+0	2.08E+0	1.65E+0	9.63E−1	8.42E−1
135	3.25E+1	3.92E+0	6.73E+0	4.66E+0	1.19E+0	1.84E+0	1.44E+0	8.98E−1	7.90E−1
140	2.67E+1	3.23E+0	6.02E+0	4.08E+0	9.73E−1	1.61E+0	1.24E+0	8.28E−1	7.33E−1
145	2.11E+1	2.58E+0	5.34E+0	3.51E+0	7.69E−1	1.40E+0	1.05E+0	7.57E−1	6.74E−1
150	1.60E+1	1.98E+0	4.71E+0	2.99E+0	5.87E−1	1.20E+0	8.70E−1	6.88E−1	6.16E−1
155	1.14E+1	1.45E+0	4.14E+0	2.51E+0	4.27E−1	1.03E+0	7.13E−1	6.24E−1	5.62E−1
160	7.55E+0	9.91E−1	3.66E+0	2.10E+0	2.93E−1	8.83E−1	5.80E−1	5.67E−1	5.14E−1
165	4.41E+0	6.21E−1	3.27E+0	1.77E+0	1.86E−1	7.67E−1	4.74E−1	5.21E−1	4.74E−1
170	2.11E+0	3.48E−1	2.98E+0	1.52E+0	1.09E−1	6.82E−1	3.96E−1	4.86E−1	4.44E−1
175	7.13E−1	1.80E−1	2.81E+0	1.37E+0	6.18E−2	6.31E−1	3.49E−1	4.64E−1	4.26E−1
180	2.42E−1	1.24E−1	2.75E+0	1.32E+0	4.60E−2	6.14E−1	3.33E−1	4.57E−1	4.19E−1
				T_e = 15.0 keV	β = 0.2371	γ = 1.029			
0	2.22E+0	3.29E−1	1.68E+0	7.38E−1	1.03E−1	6.60E−1	3.26E−1	1.54E−1	1.31E−1
5	2.65E+0	4.52E−1	1.70E+0	7.55E−1	1.46E−1	6.70E−1	3.36E−1	1.55E−1	1.31E−1
10	3.93E+0	8.10E−1	1.76E+0	8.05E−1	2.71E−1	7.00E−1	3.64E−1	1.56E−1	1.32E−1
15	6.00E+0	1.38E+0	1.85E+0	8.90E−1	4.69E−1	7.51E−1	4.11E−1	1.58E−1	1.33E−1
20	8.77E+0	2.12E+0	1.99E+0	1.01E+0	7.24E−1	8.20E−1	4.75E−1	1.62E−1	1.35E−1
25	1.21E+1	2.98E+0	2.18E+0	1.16E+0	1.02E+0	9.09E−1	5.54E−1	1.67E−1	1.39E−1
30	1.59E+1	3.91E+0	2.41E+0	1.35E+0	1.33E+0	1.01E+0	6.48E−1	1.75E−1	1.44E−1
35	2.00E+1	4.84E+0	2.68E+0	1.57E+0	1.65E+0	1.13E+0	7.53E−1	1.86E−1	1.52E−1
40	2.43E+1	5.73E+0	3.00E+0	1.82E+0	1.94E+0	1.26E+0	8.66E−1	2.00E−1	1.63E−1
45	2.85E+1	6.53E+0	3.36E+0	2.09E+0	2.20E+0	1.40E+0	9.84E−1	2.19E−1	1.76E−1
50	3.25E+1	7.20E+0	3.74E+0	2.38E+0	2.41E+0	1.54E+0	1.10E+0	2.40E−1	1.93E−1
55	3.63E+1	7.71E+0	4.14E+0	2.68E+0	2.57E+0	1.68E+0	1.22E+0	2.66E−1	2.13E−1
60	3.96E+1	8.06E+0	4.54E+0	2.98E+0	2.67E+0	1.80E+0	1.33E+0	2.95E−1	2.36E−1
65	4.24E+1	8.24E+0	4.93E+0	3.28E+0	2.71E+0	1.91E+0	1.42E+0	3.26E−1	2.62E−1
70	4.47E+1	8.25E+0	5.29E+0	3.55E+0	2.69E+0	2.00E+0	1.50E+0	3.58E−1	2.89E−1
75	4.62E+1	8.12E+0	5.61E+0	3.80E+0	2.64E+0	2.07E+0	1.56E+0	3.91E−1	3.17E−1
80	4.71E+1	7.85E+0	5.87E+0	4.00E+0	2.54E+0	2.11E+0	1.61E+0	4.23E−1	3.44E−1
85	4.73E+1	7.49E+0	6.07E+0	4.16E+0	2.41E+0	2.12E+0	1.63E+0	4.53E−1	3.70E−1
90	4.69E+1	7.04E+0	6.18E+0	4.27E+0	2.25E+0	2.10E+0	1.62E+0	4.79E−1	3.94E−1
95	4.57E+1	6.54E+0	6.22E+0	4.31E+0	2.08E+0	2.06E+0	1.60E+0	5.01E−1	4.13E−1
100	4.40E+1	6.00E+0	6.17E+0	4.29E+0	1.90E+0	1.99E+0	1.55E+0	5.16E−1	4.29E−1
105	4.17E+1	5.44E+0	6.04E+0	4.21E+0	1.72E+0	1.90E+0	1.48E+0	5.25E−1	4.39E−1
110	3.89E+1	4.88E+0	5.84E+0	4.07E+0	1.53E+0	1.79E+0	1.40E+0	5.27E−1	4.43E−1
115	3.57E+1	4.33E+0	5.57E+0	3.87E+0	1.35E+0	1.67E+0	1.30E+0	5.22E−1	4.41E−1
120	3.22E+1	3.80E+0	5.25E+0	3.63E+0	1.18E+0	1.54E+0	1.19E+0	5.10E−1	4.33E−1
125	2.85E+1	3.28E+0	4.88E+0	3.35E+0	1.01E+0	1.40E+0	1.08E+0	4.92E−1	4.20E−1
130	2.47E+1	2.79E+0	4.48E+0	3.04E+0	8.52E−1	1.26E+0	9.59E−1	4.68E−1	4.02E−1
135	2.09E+1	2.33E+0	4.07E+0	2.72E+0	7.05E−1	1.12E+0	8.41E−1	4.41E−1	3.80E−1
140	1.71E+1	1.90E+0	3.66E+0	2.39E+0	5.70E−1	9.85E−1	7.26E−1	4.10E−1	3.55E−1
145	1.36E+1	1.50E+0	3.26E+0	2.07E+0	4.48E−1	8.59E−1	6.17E−1	3.79E−1	3.29E−1
150	1.03E+1	1.14E+0	2.89E+0	1.76E+0	3.39E−1	7.45E−1	5.16E−1	3.47E−1	3.03E−1
155	7.34E+0	8.29E−1	2.55E+0	1.49E+0	2.46E−1	6.45E−1	4.27E−1	3.18E−1	2.78E−1
160	4.83E+0	5.64E−1	2.27E+0	1.25E+0	1.68E−1	5.59E−1	3.52E−1	2.92E−1	2.56E−1
165	2.81E+0	3.52E−1	2.04E+0	1.05E+0	1.06E−1	4.92E−1	2.91E−1	2.70E−1	2.38E−1
170	1.33E+0	1.96E−1	1.87E+0	9.10E−1	6.18E−2	4.42E−1	2.47E−1	2.53E−1	2.24E−1
175	4.30E−1	1.02E−1	1.76E+0	8.22E−1	3.48E−2	4.12E−1	2.20E−1	2.43E−1	2.15E−1
180	1.27E−1	7.00E−2	1.73E+0	7.93E−1	2.58E−2	4.02E−1	2.11E−1	2.40E−1	2.12E−1

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr)								
(deg)	$1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
			T_e = 20.0 keV	β = 0.2719	γ = 1.039				
0	1.71E+0	2.57E−1	1.19E+0	5.35E−1	7.98E−2	4.78E−1	2.40E−1	8.83E−2	7.13E−2
5	2.03E+0	3.47E−1	1.20E+0	5.44E−1	1.11E−1	4.83E−1	2.45E−1	8.83E−2	7.13E−2
10	2.96E+0	6.11E−1	1.23E+0	5.73E−1	2.04E−1	4.99E−1	2.60E−1	8.85E−2	7.13E−2
15	4.47E+0	1.03E+0	1.29E+0	6.20E−1	3.49E−1	5.27E−1	2.86E−1	8.89E−2	7.14E−2
20	6.49E+0	1.58E+0	1.37E+0	6.88E−1	5.38E−1	5.66E−1	3.22E−1	8.98E−2	7.19E−2
25	8.93E+0	2.21E+0	1.48E+0	7.77E−1	7.55E−1	6.16E−1	3.67E−1	9.16E−2	7.30E−2
30	1.17E+1	2.89E+0	1.61E+0	8.86E−1	9.86E−1	6.78E−1	4.20E−1	9.46E−2	7.50E−2
35	1.47E+1	3.58E+0	1.78E+0	1.01E+0	1.22E+0	7.49E−1	4.81E−1	9.91E−2	7.82E−2
40	1.77E+1	4.23E+0	1.98E+0	1.16E+0	1.43E+0	8.29E−1	5.47E−1	1.06E−1	8.30E−2
45	2.08E+1	4.82E+0	2.20E+0	1.33E+0	1.62E+0	9.14E−1	6.17E−1	1.14E−1	8.94E−2
50	2.37E+1	5.31E+0	2.44E+0	1.50E+0	1.77E+0	1.00E+0	6.89E−1	1.25E−1	9.77E−2
55	2.64E+1	5.68E+0	2.70E+0	1.69E+0	1.88E+0	1.09E+0	7.60E−1	1.38E−1	1.08E−1
60	2.88E+1	5.93E+0	2.97E+0	1.88E+0	1.95E+0	1.17E+0	8.28E−1	1.53E−1	1.20E−1
65	3.08E+1	6.06E+0	3.23E+0	2.07E+0	1.98E+0	1.25E+0	8.90E−1	1.69E−1	1.33E−1
70	3.24E+1	6.06E+0	3.47E+0	2.25E+0	1.97E+0	1.31E+0	9.43E−1	1.87E−1	1.48E−1
75	3.36E+1	5.96E+0	3.69E+0	2.41E+0	1.92E+0	1.36E+0	9.86E−1	2.06E−1	1.64E−1
80	3.42E+1	5.75E+0	3.87E+0	2.55E+0	1.84E+0	1.39E+0	1.02E+0	2.24E−1	1.79E−1
85	3.43E+1	5.47E+0	4.01E+0	2.66E+0	1.74E+0	1.41E+0	1.03E+0	2.42E−1	1.94E−1
90	3.40E+1	5.13E+0	4.10E+0	2.73E+0	1.62E+0	1.40E+0	1.04E+0	2.58E−1	2.09E−1
95	3.32E+1	4.75E+0	4.14E+0	2.77E+0	1.49E+0	1.38E+0	1.02E+0	2.72E−1	2.21E−1
100	3.19E+1	4.34E+0	4.12E+0	2.77E+0	1.36E+0	1.34E+0	9.98E−1	2.82E−1	2.31E−1
105	3.02E+1	3.92E+0	4.05E+0	2.73E+0	1.22E+0	1.28E+0	9.60E−1	2.89E−1	2.38E−1
110	2.82E+1	3.49E+0	3.93E+0	2.65E+0	1.08E+0	1.21E+0	9.10E−1	2.93E−1	2.42E−1
115	2.59E+1	3.08E+0	3.76E+0	2.53E+0	9.47E−1	1.14E+0	8.50E−1	2.92E−1	2.43E−1
120	2.33E+1	2.68E+0	3.55E+0	2.38E+0	8.19E−1	1.05E+0	7.83E−1	2.87E−1	2.40E−1
125	2.07E+1	2.29E+0	3.31E+0	2.21E+0	6.98E−1	9.59E−1	7.11E−1	2.79E−1	2.34E−1
130	1.79E+1	1.94E+0	3.06E+0	2.01E+0	5.85E−1	8.66E−1	6.36E−1	2.68E−1	2.26E−1
135	1.51E+1	1.60E+0	2.79E+0	1.80E+0	4.82E−1	7.74E−1	5.60E−1	2.54E−1	2.15E−1
140	1.24E+1	1.30E+0	2.51E+0	1.59E+0	3.87E−1	6.85E−1	4.86E−1	2.38E−1	2.02E−1
145	9.81E+0	1.02E+0	2.25E+0	1.38E+0	3.03E−1	6.01E−1	4.15E−1	2.21E−1	1.88E−1
150	7.43E+0	7.70E−1	2.00E+0	1.18E+0	2.28E−1	5.25E−1	3.50E−1	2.05E−1	1.74E−1
155	5.30E+0	5.55E−1	1.78E+0	1.00E+0	1.65E−1	4.58E−1	2.92E−1	1.89E−1	1.61E−1
160	3.48E+0	3.76E−1	1.59E+0	8.43E−1	1.12E−1	4.01E−1	2.43E−1	1.74E−1	1.49E−1
165	2.02E+0	2.33E−1	1.43E+0	7.15E−1	7.04E−2	3.55E−1	2.03E−1	1.62E−1	1.38E−1
170	9.49E−1	1.29E−1	1.32E+0	6.20E−1	4.06E−2	3.22E−1	1.74E−1	1.53E−1	1.31E−1
175	2.96E−1	6.63E−2	1.25E+0	5.62E−1	2.27E−2	3.02E−1	1.57E−1	1.47E−1	1.26E−1
180	7.61E−2	4.52E−2	1.23E+0	5.43E−1	1.67E−2	2.96E−1	1.51E−1	1.46E−1	1.24E−1
			T_e = 30.0 keV	β = 0.3284	γ = 1.059				
0	1.19E+0	1.82E−1	7.14E−1	3.29E−1	5.60E−2	2.90E−1	1.48E−1	3.67E−2	2.73E−2
5	1.39E+0	2.38E−1	7.17E−1	3.32E−1	7.57E−2	2.92E−1	1.49E−1	3.66E−2	2.73E−2
10	1.98E+0	4.04E−1	7.28E−1	3.43E−1	1.33E−1	2.97E−1	1.55E−1	3.65E−2	2.71E−2
15	2.93E+0	6.68E−1	7.47E−1	3.62E−1	2.24E−1	3.07E−1	1.65E−1	3.63E−2	2.69E−2
20	4.19E+0	1.01E+0	7.78E−1	3.89E−1	3.42E−1	3.21E−1	1.79E−1	3.61E−2	2.68E−2
25	5.72E+0	1.41E+0	8.21E−1	4.25E−1	4.77E−1	3.41E−1	1.96E−1	3.62E−2	2.68E−2
30	7.45E+0	1.84E+0	8.80E−1	4.70E−1	6.21E−1	3.66E−1	2.18E−1	3.67E−2	2.72E−2
35	9.30E+0	2.27E+0	9.55E−1	5.26E−1	7.63E−1	3.97E−1	2.43E−1	3.77E−2	2.79E−2
40	1.12E+1	2.68E+0	1.05E+0	5.91E−1	8.96E−1	4.33E−1	2.71E−1	3.94E−2	2.93E−2
45	1.31E+1	3.04E+0	1.16E+0	6.65E−1	1.01E+0	4.74E−1	3.02E−1	4.20E−2	3.13E−2
50	1.49E+1	3.35E+0	1.28E+0	7.48E−1	1.11E+0	5.18E−1	3.35E−1	4.56E−2	3.41E−2
55	1.66E+1	3.58E+0	1.41E+0	8.37E−1	1.18E+0	5.63E−1	3.68E−1	5.01E−2	3.77E−2
60	1.81E+1	3.74E+0	1.55E+0	9.29E−1	1.22E+0	6.08E−1	4.01E−1	5.57E−2	4.21E−2
65	1.93E+1	3.82E+0	1.69E+0	1.02E+0	1.23E+0	6.50E−1	4.32E−1	6.21E−2	4.73E−2
70	2.03E+1	3.82E+0	1.83E+0	1.11E+0	1.22E+0	6.86E−1	4.60E−1	6.92E−2	5.31E−2
75	2.10E+1	3.75E+0	1.95E+0	1.20E+0	1.19E+0	7.17E−1	4.84E−1	7.68E−2	5.94E−2
80	2.14E+1	3.62E+0	2.06E+0	1.28E+0	1.14E+0	7.38E−1	5.03E−1	8.47E−2	6.60E−2
85	2.15E+1	3.44E+0	2.14E+0	1.34E+0	1.07E+0	7.51E−1	5.15E−1	9.24E−2	7.26E−2
90	2.12E+1	3.22E+0	2.20E+0	1.38E+0	9.98E−1	7.54E−1	5.21E−1	9.98E−2	7.89E−2
95	2.07E+1	2.97E+0	2.23E+0	1.41E+0	9.15E−1	7.47E−1	5.19E−1	1.06E−1	8.46E−2
100	1.99E+1	2.70E+0	2.24E+0	1.42E+0	8.27E−1	7.31E−1	5.11E−1	1.12E−1	8.96E−2
105	1.89E+1	2.43E+0	2.21E+0	1.41E+0	7.39E−1	7.06E−1	4.95E−1	1.16E−1	9.35E−2
110	1.76E+1	2.15E+0	2.15E+0	1.38E+0	6.52E−1	6.73E−1	4.73E−1	1.19E−1	9.61E−2
115	1.62E+1	1.88E+0	2.07E+0	1.32E+0	5.67E−1	6.34E−1	4.46E−1	1.20E−1	9.75E−2
120	1.46E+1	1.63E+0	1.97E+0	1.25E+0	4.87E−1	5.90E−1	4.14E−1	1.19E−1	9.74E−2
125	1.29E+1	1.38E+0	1.85E+0	1.17E+0	4.12E−1	5.44E−1	3.79E−1	1.17E−1	9.59E−2
130	1.12E+1	1.16E+0	1.72E+0	1.07E+0	3.43E−1	4.95E−1	3.42E−1	1.14E−1	9.32E−2
135	9.43E+0	9.47E−1	1.58E+0	9.65E−1	2.80E−1	4.46E−1	3.04E−1	1.09E−1	8.94E−2
140	7.73E+0	7.58E−1	1.43E+0	8.56E−1	2.23E−1	3.99E−1	2.66E−1	1.03E−1	8.48E−2
145	6.12E+0	5.90E−1	1.29E+0	7.48E−1	1.73E−1	3.54E−1	2.29E−1	9.73E−2	7.96E−2
150	4.62E+0	4.42E−1	1.16E+0	6.45E−1	1.30E−1	3.12E−1	1.96E−1	9.09E−2	7.43E−2
155	3.30E+0	3.16E−1	1.04E+0	5.50E−1	9.28E−2	2.76E−1	1.65E−1	8.47E−2	6.90E−2
160	2.16E+0	2.11E−1	9.36E−1	4.68E−1	6.25E−2	2.45E−1	1.39E−1	7.91E−2	6.42E−2
165	1.25E+0	1.29E−1	8.52E−1	4.00E−1	3.89E−2	2.20E−1	1.18E−1	7.44E−2	6.01E−2
170	5.77E−1	7.04E−2	7.90E−1	3.50E−1	2.20E−2	2.02E−1	1.03E−1	7.07E−2	5.70E−2
175	1.69E−1	3.48E−2	7.52E−1	3.19E−1	1.19E−2	1.91E−1	9.38E−2	6.85E−2	5.50E−2
180	3.22E−2	2.30E−2	7.39E−1	3.08E−1	8.49E−3	1.87E−1	9.07E−2	6.77E−2	5.44E−2

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle (deg)	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr) $1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
				T_e = 40.0 keV	β = 0.3741	γ = 1.078			
0	9.28E−1	1.43E−1	4.83E−1	2.25E−1	4.37E−2	1.96E−1	1.00E−1	1.84E−2	1.28E−2
5	1.07E+0	1.82E−1	4.84E−1	2.27E−1	5.73E−2	1.97E−1	1.01E−1	1.83E−2	1.28E−2
10	1.48E+0	2.98E−1	4.88E−1	2.31E−1	9.71E−2	1.98E−1	1.03E−1	1.82E−2	1.27E−2
15	2.15E+0	4.82E−1	4.94E−1	2.40E−1	1.60E−1	2.02E−1	1.08E−1	1.80E−2	1.25E−2
20	3.04E+0	7.20E−1	5.06E−1	2.52E−1	2.41E−1	2.07E−1	1.14E−1	1.78E−2	1.24E−2
25	4.12E+0	9.97E−1	5.26E−1	2.69E−1	3.34E−1	2.16E−1	1.22E−1	1.77E−2	1.23E−2
30	5.33E+0	1.30E+0	5.55E−1	2.91E−1	4.34E−1	2.28E−1	1.32E−1	1.77E−2	1.23E−2
35	6.63E+0	1.60E+0	5.94E−1	3.19E−1	5.32E−1	2.43E−1	1.44E−1	1.80E−2	1.26E−2
40	7.97E+0	1.88E+0	6.45E−1	3.53E−1	6.24E−1	2.63E−1	1.58E−1	1.86E−2	1.31E−2
45	9.31E+0	2.14E+0	7.08E−1	3.93E−1	7.05E−1	2.86E−1	1.74E−1	1.96E−2	1.39E−2
50	1.06E+1	2.35E+0	7.80E−1	4.38E−1	7.70E−1	3.12E−1	1.92E−1	2.11E−2	1.52E−2
55	1.18E+1	2.52E+0	8.61E−1	4.87E−1	8.18E−1	3.39E−1	2.10E−1	2.32E−2	1.68E−2
60	1.28E+1	2.63E+0	9.47E−1	5.41E−1	8.47E−1	3.66E−1	2.29E−1	2.58E−2	1.89E−2
65	1.37E+1	2.68E+0	1.03E+0	5.95E−1	8.57E−1	3.93E−1	2.48E−1	2.88E−2	2.14E−2
70	1.44E+1	2.69E+0	1.12E+0	6.50E−1	8.51E−1	4.17E−1	2.65E−1	3.24E−2	2.43E−2
75	1.48E+1	2.64E+0	1.20E+0	7.02E−1	8.29E−1	4.38E−1	2.80E−1	3.62E−2	2.74E−2
80	1.51E+1	2.55E+0	1.27E+0	7.50E−1	7.93E−1	4.54E−1	2.93E−1	4.03E−2	3.08E−2
85	1.52E+1	2.42E+0	1.33E+0	7.90E−1	7.48E−1	4.65E−1	3.02E−1	4.44E−2	3.42E−2
90	1.50E+1	2.27E+0	1.37E+0	8.22E−1	6.94E−1	4.70E−1	3.07E−1	4.84E−2	3.76E−2
95	1.46E+1	2.09E+0	1.40E+0	8.42E−1	6.36E−1	4.68E−1	3.08E−1	5.21E−2	4.07E−2
100	1.41E+1	1.90E+0	1.40E+0	8.52E−1	5.74E−1	4.61E−1	3.05E−1	5.53E−2	4.35E−2
105	1.33E+1	1.71E+0	1.39E+0	8.48E−1	5.12E−1	4.48E−1	2.98E−1	5.79E−2	4.58E−2
110	1.24E+1	1.51E+0	1.36E+0	8.32E−1	4.51E−1	4.30E−1	2.87E−1	5.98E−2	4.75E−2
115	1.14E+1	1.32E+0	1.32E+0	8.04E−1	3.91E−1	4.07E−1	2.72E−1	6.09E−2	4.86E−2
120	1.03E+1	1.13E+0	1.26E+0	7.65E−1	3.35E−1	3.82E−1	2.54E−1	6.12E−2	4.89E−2
125	9.09E+0	9.61E−1	1.19E+0	7.16E−1	2.82E−1	3.53E−1	2.34E−1	6.06E−2	4.85E−2
130	7.87E+0	7.99E−1	1.11E+0	6.60E−1	2.34E−1	3.24E−1	2.13E−1	5.93E−2	4.74E−2
135	6.64E+0	6.52E−1	1.02E+0	5.98E−1	1.90E−1	2.94E−1	1.90E−1	5.73E−2	4.57E−2
140	5.45E+0	5.19E−1	9.36E−1	5.34E−1	1.51E−1	2.65E−1	1.68E−1	5.48E−2	4.36E−2
145	4.31E+0	4.01E−1	8.50E−1	4.69E−1	1.17E−1	2.37E−1	1.46E−1	5.20E−2	4.12E−2
150	3.25E+0	2.99E−1	7.69E−1	4.06E−1	8.67E−2	2.11E−1	1.25E−1	4.90E−2	3.86E−2
155	2.32E+0	2.12E−1	6.94E−1	3.49E−1	6.16E−2	1.88E−1	1.07E−1	4.60E−2	3.60E−2
160	1.52E+0	1.40E−1	6.29E−1	2.98E−1	4.12E−2	1.69E−1	9.11E−2	4.33E−2	3.36E−2
165	8.71E−1	8.49E−2	5.77E−1	2.57E−1	2.53E−2	1.53E−1	7.82E−2	4.10E−2	3.16E−2
170	3.99E−1	4.52E−2	5.38E−1	2.26E−1	1.40E−2	1.42E−1	6.88E−2	3.92E−2	3.00E−2
175	1.12E−1	2.13E−2	5.14E−1	2.07E−1	7.23E−3	1.35E−1	6.31E−2	3.81E−2	2.90E−2
180	1.48E−2	1.33E−2	5.06E−1	2.01E−1	4.97E−3	1.32E−1	6.11E−2	3.77E−2	2.87E−2
				T_e = 50.0 keV	β = 0.4127	γ = 1.098			
0	7.64E−1	1.18E−1	3.51E−1	1.64E−1	3.62E−2	1.41E−1	7.21E−2	1.04E−2	6.84E−3
5	8.69E−1	1.48E−1	3.51E−1	1.65E−1	4.61E−2	1.42E−1	7.25E−2	1.03E−2	6.81E−3
10	1.18E+0	2.33E−1	3.51E−1	1.67E−1	7.53E−2	1.42E−1	7.36E−2	1.02E−2	6.74E−3
15	1.68E+0	3.69E−1	3.52E−1	1.71E−1	1.21E−1	1.43E−1	7.56E−2	1.01E−2	6.64E−3
20	2.35E+0	5.46E−1	3.56E−1	1.77E−1	1.81E−1	1.44E−1	7.85E−2	9.94E−3	6.53E−3
25	3.16E+0	7.51E−1	3.65E−1	1.86E−1	2.49E−1	1.48E−1	8.24E−2	9.81E−3	6.45E−3
30	4.07E+0	9.71E−1	3.80E−1	1.97E−1	3.22E−1	1.54E−1	8.77E−2	9.75E−3	6.44E−3
35	5.05E+0	1.19E+0	4.03E−1	2.13E−1	3.95E−1	1.63E−1	9.42E−2	9.83E−3	6.53E−3
40	6.05E+0	1.41E+0	4.33E−1	2.32E−1	4.63E−1	1.74E−1	1.02E−1	1.01E−2	6.77E−3
45	7.05E+0	1.60E+0	4.73E−1	2.55E−1	5.22E−1	1.89E−1	1.11E−1	1.06E−2	7.20E−3
50	8.01E+0	1.76E+0	5.20E−1	2.82E−1	5.71E−1	2.05E−1	1.22E−1	1.13E−2	7.84E−3
55	8.90E+0	1.88E+0	5.73E−1	3.13E−1	6.06E−1	2.23E−1	1.33E−1	1.24E−2	8.73E−3
60	9.68E+0	1.97E+0	6.31E−1	3.47E−1	6.28E−1	2.42E−1	1.45E−1	1.38E−2	9.87E−3
65	1.03E+1	2.01E+0	6.91E−1	3.82E−1	6.37E−1	2.61E−1	1.57E−1	1.55E−2	1.13E−2
70	1.09E+1	2.01E+0	7.51E−1	4.18E−1	6.32E−1	2.78E−1	1.68E−1	1.75E−2	1.29E−2
75	1.12E+1	1.98E+0	8.07E−1	4.53E−1	6.17E−1	2.93E−1	1.79E−1	1.97E−2	1.47E−2
80	1.14E+1	1.91E+0	8.57E−1	4.85E−1	5.91E−1	3.05E−1	1.88E−1	2.20E−2	1.66E−2
85	1.15E+1	1.82E+0	8.99E−1	5.13E−1	5.57E−1	3.14E−1	1.95E−1	2.45E−2	1.86E−2
90	1.13E+1	1.71E+0	9.31E−1	5.36E−1	5.18E−1	3.19E−1	1.99E−1	2.69E−2	2.06E−2
95	1.10E+1	1.58E+0	9.52E−1	5.52E−1	4.74E−1	3.20E−1	2.01E−1	2.92E−2	2.25E−2
100	1.06E+1	1.43E+0	9.60E−1	5.60E−1	4.29E−1	3.16E−1	2.00E−1	3.12E−2	2.43E−2
105	1.01E+1	1.29E+0	9.56E−1	5.60E−1	3.82E−1	3.09E−1	1.97E−1	3.29E−2	2.57E−2
110	9.38E+0	1.14E+0	9.40E−1	5.52E−1	3.36E−1	2.98E−1	1.90E−1	3.43E−2	2.68E−2
115	8.61E+0	9.93E−1	9.13E−1	5.35E−1	2.91E−1	2.84E−1	1.82E−1	3.51E−2	2.76E−2
120	7.76E+0	8.53E−1	8.75E−1	5.11E−1	2.49E−1	2.67E−1	1.71E−1	3.55E−2	2.79E−2
125	6.86E+0	7.21E−1	8.29E−1	4.80E−1	2.10E−1	2.49E−1	1.58E−1	3.54E−2	2.78E−2
130	5.94E+0	5.99E−1	7.77E−1	4.44E−1	1.73E−1	2.30E−1	1.44E−1	3.49E−2	2.74E−2
135	5.01E+0	4.87E−1	7.21E−1	4.04E−1	1.41E−1	2.10E−1	1.30E−1	3.40E−2	2.65E−2
140	4.11E+0	3.86E−1	6.63E−1	3.62E−1	1.11E−1	1.90E−1	1.15E−1	3.27E−2	2.54E−2
145	3.25E+0	2.98E−1	6.05E−1	3.20E−1	8.56E−2	1.71E−1	1.01E−1	3.12E−2	2.41E−2
150	2.45E+0	2.21E−1	5.50E−1	2.78E−1	6.35E−2	1.54E−1	8.70E−2	2.96E−2	2.26E−2
155	1.74E+0	1.56E−1	5.00E−1	2.40E−1	4.49E−2	1.38E−1	7.47E−2	2.80E−2	2.12E−2
160	1.14E+0	1.03E−1	4.56E−1	2.06E−1	2.98E−2	1.24E−1	6.41E−2	2.65E−2	1.98E−2
165	6.53E−1	6.12E−2	4.20E−1	1.79E−1	1.81E−2	1.14E−1	5.54E−2	2.52E−2	1.86E−2
170	2.97E−1	3.18E−2	3.94E−1	1.58E−1	9.76E−3	1.06E−1	4.91E−2	2.42E−2	1.78E−2
175	7.99E−2	1.41E−2	3.78E−1	1.45E−1	4.78E−3	1.01E−1	4.52E−2	2.36E−2	1.72E−2
180	6.84E−3	8.27E−3	3.72E−1	1.41E−1	3.13E−3	9.94E−2	4.39E−2	2.34E−2	1.70E−2

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr)								
(deg)	$1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
	T_e = 60.0 keV	β = 0.4462	γ = 1.117						
0	6.53E−1	1.02E−1	2.67E−1	1.24E−1	3.10E−2	1.07E−1	5.41E−2	6.33E−3	3.97E−3
5	7.35E−1	1.24E−1	2.66E−1	1.25E−1	3.86E−2	1.07E−1	5.43E−2	6.30E−3	3.96E−3
10	9.77E−1	1.90E−1	2.65E−1	1.26E−1	6.09E−2	1.06E−1	5.48E−2	6.24E−3	3.91E−3
15	1.37E+0	2.95E−1	2.64E−1	1.28E−1	9.60E−2	1.06E−1	5.57E−2	6.15E−3	3.84E−3
20	1.89E+0	4.31E−1	2.64E−1	1.31E−1	1.42E−1	1.06E−1	5.71E−2	6.04E−3	3.77E−3
25	2.52E+0	5.89E−1	2.67E−1	1.35E−1	1.94E−1	1.07E−1	5.92E−2	5.95E−3	3.72E−3
30	3.24E+0	7.59E−1	2.75E−1	1.42E−1	2.50E−1	1.10E−1	6.20E−2	5.89E−3	3.70E−3
35	4.00E+0	9.31E−1	2.89E−1	1.51E−1	3.05E−1	1.15E−1	6.58E−2	5.91E−3	3.74E−3
40	4.79E+0	1.10E+0	3.09E−1	1.62E−1	3.58E−1	1.23E−1	7.05E−2	6.03E−3	3.88E−3
45	5.58E+0	1.24E+0	3.35E−1	1.77E−1	4.04E−1	1.32E−1	7.62E−2	6.29E−3	4.12E−3
50	6.33E+0	1.37E+0	3.68E−1	1.95E−1	4.41E−1	1.44E−1	8.28E−2	6.72E−3	4.50E−3
55	7.03E+0	1.47E+0	4.06E−1	2.15E−1	4.69E−1	1.57E−1	9.03E−2	7.34E−3	5.02E−3
60	7.65E+0	1.53E+0	4.47E−1	2.38E−1	4.87E−1	1.70E−1	9.83E−2	8.17E−3	5.71E−3
65	8.17E+0	1.57E+0	4.91E−1	2.62E−1	4.94E−1	1.84E−1	1.06E−1	9.19E−3	6.55E−3
70	8.58E+0	1.57E+0	5.35E−1	2.87E−1	4.91E−1	1.97E−1	1.15E−1	1.04E−2	7.54E−3
75	8.86E+0	1.55E+0	5.76E−1	3.12E−1	4.79E−1	2.08E−1	1.22E−1	1.18E−2	8.67E−3
80	9.02E+0	1.50E+0	6.14E−1	3.35E−1	4.60E−1	2.18E−1	1.29E−1	1.33E−2	9.89E−3
85	9.05E+0	1.43E+0	6.46E−1	3.56E−1	4.34E−1	2.25E−1	1.34E−1	1.48E−2	1.12E−2
90	8.95E+0	1.34E+0	6.71E−1	3.73E−1	4.04E−1	2.30E−1	1.38E−1	1.64E−2	1.24E−2
95	8.72E+0	1.24E+0	6.88E−1	3.85E−1	3.71E−1	2.31E−1	1.40E−1	1.79E−2	1.37E−2
100	8.38E+0	1.13E+0	6.97E−1	3.92E−1	3.35E−1	2.30E−1	1.40E−1	1.93E−2	1.48E−2
105	7.94E+0	1.01E+0	6.96E−1	3.94E−1	2.99E−1	2.25E−1	1.38E−1	2.05E−2	1.58E−2
110	7.40E+0	8.97E−1	6.86E−1	3.89E−1	2.63E−1	2.18E−1	1.34E−1	2.14E−2	1.66E−2
115	6.79E+0	7.83E−1	6.69E−1	3.79E−1	2.28E−1	2.09E−1	1.29E−1	2.21E−2	1.71E−2
120	6.12E+0	6.72E−1	6.43E−1	3.63E−1	1.95E−1	1.98E−1	1.22E−1	2.25E−2	1.74E−2
125	5.41E+0	5.68E−1	6.12E−1	3.42E−1	1.64E−1	1.85E−1	1.13E−1	2.26E−2	1.74E−2
130	4.68E+0	4.71E−1	5.76E−1	3.17E−1	1.35E−1	1.71E−1	1.04E−1	2.23E−2	1.72E−2
135	3.95E+0	3.83E−1	5.36E−1	2.90E−1	1.10E−1	1.57E−1	9.35E−2	2.19E−2	1.67E−2
140	3.24E+0	3.03E−1	4.95E−1	2.60E−1	8.66E−2	1.43E−1	8.33E−2	2.12E−2	1.61E−2
145	2.56E+0	2.33E−1	4.54E−1	2.30E−1	6.65E−2	1.30E−1	7.32E−2	2.03E−2	1.53E−2
150	1.93E+0	1.72E−1	4.15E−1	2.01E−1	4.92E−2	1.17E−1	6.36E−2	1.94E−2	1.44E−2
155	1.37E+0	1.21E−1	3.79E−1	1.74E−1	3.46E−2	1.06E−1	5.49E−2	1.84E−2	1.35E−2
160	8.96E−1	7.92E−2	3.47E−1	1.51E−1	2.28E−2	9.62E−2	4.73E−2	1.75E−2	1.27E−2
165	5.13E−1	4.68E−2	3.22E−1	1.31E−1	1.37E−2	8.84E−2	4.12E−2	1.67E−2	1.19E−2
170	2.32E−1	2.37E−2	3.03E−1	1.16E−1	7.21E−3	8.26E−2	3.66E−2	1.61E−2	1.14E−2
175	6.05E−2	9.93E−3	2.91E−1	1.07E−1	3.34E−3	7.91E−2	3.39E−2	1.58E−2	1.10E−2
180	2.92E−3	5.32E−3	2.87E−1	1.04E−1	2.05E−3	7.80E−2	3.29E−2	1.56E−2	1.09E−2
	T_e = 80.0 keV	β = 0.5024	γ = 1.157						
0	5.09E−1	7.99E−2	1.68E−1	7.79E−2	2.42E−2	6.66E−2	3.32E−2	2.79E−3	1.61E−3
5	5.63E−1	9.43E−2	1.68E−1	7.79E−2	2.90E−2	6.62E−2	3.32E−2	2.78E−3	1.60E−3
10	7.22E−1	1.36E−1	1.65E−1	7.80E−2	4.31E−2	6.54E−2	3.33E−2	2.75E−3	1.58E−3
15	9.80E−1	2.03E−1	1.63E−1	7.82E−2	6.54E−2	6.42E−2	3.34E−2	2.71E−3	1.55E−3
20	1.32E+0	2.91E−1	1.60E−1	7.89E−2	9.42E−2	6.32E−2	3.37E−2	2.67E−3	1.52E−3
25	1.74E+0	3.93E−1	1.59E−1	8.01E−2	1.28E−1	6.28E−2	3.42E−2	2.62E−3	1.50E−3
30	2.22E+0	5.03E−1	1.61E−1	8.23E−2	1.63E−1	6.34E−2	3.51E−2	2.59E−3	1.49E−3
35	2.73E+0	6.14E−1	1.66E−1	8.57E−2	1.99E−1	6.53E−2	3.65E−2	2.58E−3	1.51E−3
40	3.26E+0	7.22E−1	1.76E−1	9.07E−2	2.33E−1	6.88E−2	3.84E−2	2.62E−3	1.56E−3
45	3.79E+0	8.19E−1	1.90E−1	9.74E−2	2.63E−1	7.37E−2	4.09E−2	2.71E−3	1.66E−3
50	4.30E+0	9.03E−1	2.08E−1	1.06E−1	2.87E−1	8.00E−2	4.41E−2	2.88E−3	1.82E−3
55	4.78E+0	9.69E−1	2.30E−1	1.16E−1	3.06E−1	8.73E−2	4.78E−2	3.14E−3	2.05E−3
60	5.19E+0	1.01E+0	2.54E−1	1.28E−1	3.18E−1	9.54E−2	5.19E−2	3.49E−3	2.35E−3
65	5.55E+0	1.04E+0	2.80E−1	1.41E−1	3.24E−1	1.04E−1	5.64E−2	3.94E−3	2.73E−3
70	5.82E+0	1.05E+0	3.06E−1	1.55E−1	3.23E−1	1.12E−1	6.10E−2	4.49E−3	3.18E−3
75	6.02E+0	1.03E+0	3.32E−1	1.69E−1	3.16E−1	1.19E−1	6.55E−2	5.13E−3	3.70E−3
80	6.12E+0	1.00E+0	3.56E−1	1.83E−1	3.04E−1	1.26E−1	6.95E−2	5.83E−3	4.27E−3
85	6.14E+0	9.57E−1	3.76E−1	1.95E−1	2.88E−1	1.31E−1	7.30E−2	6.58E−3	4.88E−3
90	6.07E+0	9.00E−1	3.93E−1	2.06E−1	2.69E−1	1.34E−1	7.57E−2	7.35E−3	5.50E−3
95	5.92E+0	8.34E−1	4.05E−1	2.14E−1	2.47E−1	1.36E−1	7.74E−2	8.11E−3	6.11E−3
100	5.68E+0	7.61E−1	4.12E−1	2.19E−1	2.24E−1	1.36E−1	7.81E−2	8.83E−3	6.68E−3
105	5.38E+0	6.85E−1	4.14E−1	2.21E−1	2.00E−1	1.35E−1	7.76E−2	9.47E−3	7.19E−3
110	5.02E+0	6.07E−1	4.10E−1	2.19E−1	1.76E−1	1.31E−1	7.60E−2	1.00E−2	7.60E−3
115	4.60E+0	5.31E−1	4.02E−1	2.15E−1	1.53E−1	1.27E−1	7.33E−2	1.04E−2	7.91E−3
120	4.15E+0	4.56E−1	3.89E−1	2.07E−1	1.31E−1	1.21E−1	6.96E−2	1.07E−2	8.10E−3
125	3.67E+0	3.86E−1	3.72E−1	1.96E−1	1.10E−1	1.14E−1	6.51E−2	1.08E−2	8.15E−3
130	3.17E+0	3.20E−1	3.52E−1	1.82E−1	9.09E−2	1.06E−1	6.01E−2	1.08E−2	8.09E−3
135	2.67E+0	2.60E−1	3.30E−1	1.67E−1	7.35E−2	9.83E−2	5.46E−2	1.07E−2	7.91E−3
140	2.19E+0	2.05E−1	3.07E−1	1.51E−1	5.80E−2	9.03E−2	4.89E−2	1.04E−2	7.63E−3
145	1.73E+0	1.57E−1	2.84E−1	1.34E−1	4.44E−2	8.25E−2	4.32E−2	1.01E−2	7.28E−3
150	1.31E+0	1.16E−1	2.62E−1	1.18E−1	3.27E−2	7.52E−2	3.78E−2	9.73E−3	6.88E−3
155	9.28E−1	8.10E−2	2.41E−1	1.03E−1	2.29E−2	6.86E−2	3.28E−2	9.33E−3	6.47E−3
160	6.05E−1	5.26E−2	2.23E−1	8.92E−2	1.49E−2	6.29E−2	2.85E−2	8.94E−3	6.09E−3
165	3.45E−1	3.05E−2	2.08E−1	7.80E−2	8.78E−3	5.83E−2	2.50E−2	8.60E−3	5.75E−3
170	1.55E−1	1.48E−2	1.97E−1	6.96E−2	4.41E−3	5.49E−2	2.24E−2	8.34E−3	5.49E−3
175	3.92E−2	5.43E−3	1.90E−1	6.44E−2	1.80E−3	5.29E−2	2.07E−2	8.17E−3	5.32E−3
180	2.26E−4	2.31E−3	1.88E−1	6.27E−2	9.35E−4	5.22E−2	2.02E−2	8.12E−3	5.27E−3

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle (deg)	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr) $1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
	T_e = 100.0 keV	β = 0.5482	γ = 1.196						
0	4.20E−1	6.62E−2	1.15E−1	5.25E−2	2.00E−2	4.50E−2	2.20E−2	1.43E−3	7.73E−4
5	4.57E−1	7.60E−2	1.15E−1	5.25E−2	2.33E−2	4.47E−2	2.20E−2	1.42E−3	7.69E−4
10	5.68E−1	1.05E−1	1.12E−1	5.23E−2	3.28E−2	4.38E−2	2.20E−2	1.41E−3	7.60E−4
15	7.49E−1	1.51E−1	1.09E−1	5.22E−2	4.79E−2	4.26E−2	2.19E−2	1.40E−3	7.46E−4
20	9.94E−1	2.11E−1	1.06E−1	5.21E−2	6.76E−2	4.14E−2	2.19E−2	1.38E−3	7.32E−4
25	1.29E+0	2.81E−1	1.04E−1	5.23E−2	9.05E−2	4.05E−2	2.19E−2	1.36E−3	7.21E−4
30	1.63E+0	3.58E−1	1.04E−1	5.30E−2	1.15E−1	4.03E−2	2.22E−2	1.34E−3	7.18E−4
35	2.00E+0	4.37E−1	1.06E−1	5.44E−2	1.40E−1	4.11E−2	2.27E−2	1.34E−3	7.28E−4
40	2.39E+0	5.13E−1	1.11E−1	5.67E−2	1.64E−1	4.29E−2	2.36E−2	1.35E−3	7.57E−4
45	2.77E+0	5.82E−1	1.20E−1	6.02E−2	1.85E−1	4.59E−2	2.48E−2	1.40E−3	8.11E−4
50	3.15E+0	6.42E−1	1.31E−1	6.49E−2	2.03E−1	4.98E−2	2.66E−2	1.48E−3	8.95E−4
55	3.49E+0	6.90E−1	1.45E−1	7.08E−2	2.16E−1	5.46E−2	2.87E−2	1.60E−3	1.01E−3
60	3.80E+0	7.24E−1	1.61E−1	7.79E−2	2.25E−1	5.99E−2	3.12E−2	1.78E−3	1.17E−3
65	4.06E+0	7.44E−1	1.78E−1	8.60E−2	2.30E−1	6.55E−2	3.39E−2	2.02E−3	1.37E−3
70	4.26E+0	7.50E−1	1.96E−1	9.46E−2	2.30E−1	7.11E−2	3.68E−2	2.31E−3	1.61E−3
75	4.40E+0	7.42E−1	2.13E−1	1.04E−1	2.25E−1	7.63E−2	3.97E−2	2.65E−3	1.89E−3
80	4.48E+0	7.22E−1	2.30E−1	1.12E−1	2.17E−1	8.09E−2	4.24E−2	3.03E−3	2.20E−3
85	4.49E+0	6.91E−1	2.44E−1	1.20E−1	2.06E−1	8.46E−2	4.48E−2	3.45E−3	2.54E−3
90	4.44E+0	6.51E−1	2.56E−1	1.28E−1	1.93E−1	8.74E−2	4.68E−2	3.89E−3	2.88E−3
95	4.32E+0	6.04E−1	2.65E−1	1.33E−1	1.78E−1	8.91E−2	4.81E−2	4.32E−3	3.23E−3
100	4.15E+0	5.53E−1	2.70E−1	1.37E−1	1.62E−1	8.96E−2	4.88E−2	4.74E−3	3.55E−3
105	3.93E+0	4.98E−1	2.72E−1	1.39E−1	1.45E−1	8.90E−2	4.87E−2	5.13E−3	3.85E−3
110	3.66E+0	4.43E−1	2.71E−1	1.38E−1	1.28E−1	8.73E−2	4.80E−2	5.46E−3	4.09E−3
115	3.36E+0	3.88E−1	2.67E−1	1.36E−1	1.11E−1	8.46E−2	4.65E−2	5.74E−3	4.28E−3
120	3.02E+0	3.34E−1	2.59E−1	1.31E−1	9.51E−2	8.11E−2	4.44E−2	5.93E−3	4.41E−3
125	2.67E+0	2.82E−1	2.49E−1	1.25E−1	8.01E−2	7.69E−2	4.17E−2	6.05E−3	4.46E−3
130	2.31E+0	2.34E−1	2.37E−1	1.17E−1	6.62E−2	7.22E−2	3.86E−2	6.09E−3	4.44E−3
135	1.95E+0	1.90E−1	2.24E−1	1.07E−1	5.35E−2	6.73E−2	3.52E−2	6.06E−3	4.35E−3
140	1.60E+0	1.50E−1	2.09E−1	9.71E−2	4.22E−2	6.22E−2	3.17E−2	5.96E−3	4.21E−3
145	1.26E+0	1.15E−1	1.95E−1	8.67E−2	3.23E−2	5.73E−2	2.81E−2	5.81E−3	4.03E−3
150	9.51E−1	8.48E−2	1.81E−1	7.64E−2	2.37E−2	5.26E−2	2.47E−2	5.63E−3	3.82E−3
155	6.75E−1	5.90E−2	1.68E−1	6.67E−2	1.65E−2	4.83E−2	2.15E−2	5.43E−3	3.60E−3
160	4.40E−1	3.81E−2	1.56E−1	5.81E−2	1.07E−2	4.47E−2	1.88E−2	5.24E−3	3.39E−3
165	2.51E−1	2.18E−2	1.47E−1	5.10E−2	6.18E−3	4.17E−2	1.65E−2	5.07E−3	3.21E−3
170	1.13E−1	1.02E−2	1.39E−1	4.56E−2	2.98E−3	3.95E−2	1.48E−2	4.93E−3	3.06E−3
175	2.85E−2	3.29E−3	1.35E−1	4.23E−2	1.07E−3	3.81E−2	1.38E−2	4.85E−3	2.97E−3
180	1.75E−4	9.84E−4	1.34E−1	4.12E−2	4.32E−4	3.77E−2	1.34E−2	4.82E−3	2.94E−3
	T_e = 150.0 keV	β = 0.6343	γ = 1.294						
0	2.93E−1	4.64E−2	5.50E−2	2.40E−2	1.40E−2	2.10E−2	9.81E−3	3.98E−4	1.93E−4
5	3.10E−1	5.08E−2	5.44E−2	2.40E−2	1.54E−2	2.08E−2	9.79E−3	3.99E−4	1.92E−4
10	3.63E−1	6.40E−2	5.27E−2	2.39E−2	1.97E−2	2.01E−2	9.73E−3	4.00E−4	1.90E−4
15	4.51E−1	8.53E−2	5.03E−2	2.36E−2	2.66E−2	1.92E−2	9.63E−3	4.02E−4	1.88E−4
20	5.74E−1	1.14E−1	4.77E−2	2.34E−2	3.58E−2	1.82E−2	9.51E−3	4.02E−4	1.85E−4
25	7.27E−1	1.48E−1	4.56E−2	2.31E−2	4.67E−2	1.73E−2	9.39E−3	4.02E−4	1.85E−4
30	9.07E−1	1.86E−1	4.45E−2	2.30E−2	5.87E−2	1.68E−2	9.31E−3	4.01E−4	1.86E−4
35	1.11E+0	2.26E−1	4.47E−2	2.31E−2	7.11E−2	1.69E−2	9.33E−3	4.01E−4	1.92E−4
40	1.32E+0	2.65E−1	4.65E−2	2.36E−2	8.32E−2	1.75E−2	9.48E−3	4.05E−4	2.03E−4
45	1.53E+0	3.02E−1	4.99E−2	2.45E−2	9.42E−2	1.87E−2	9.82E−3	4.15E−4	2.20E−4
50	1.73E+0	3.34E−1	5.49E−2	2.61E−2	1.04E−1	2.04E−2	1.04E−2	4.35E−4	2.46E−4
55	1.93E+0	3.60E−1	6.12E−2	2.82E−2	1.11E−1	2.26E−2	1.11E−2	4.69E−4	2.83E−4
60	2.09E+0	3.79E−1	6.85E−2	3.10E−2	1.16E−1	2.51E−2	1.21E−2	5.19E−4	3.31E−4
65	2.24E+0	3.91E−1	7.65E−2	3.42E−2	1.19E−1	2.78E−2	1.32E−2	5.87E−4	3.93E−4
70	2.35E+0	3.96E−1	8.49E−2	3.78E−2	1.20E−1	3.05E−2	1.44E−2	6.76E−4	4.69E−4
75	2.42E+0	3.93E−1	9.32E−2	4.16E−2	1.18E−1	3.30E−2	1.57E−2	7.83E−4	5.58E−4
80	2.46E+0	3.84E−1	1.01E−1	4.54E−2	1.14E−1	3.54E−2	1.69E−2	9.08E−4	6.59E−4
85	2.47E+0	3.69E−1	1.08E−1	4.91E−2	1.09E−1	3.74E−2	1.81E−2	1.05E−3	7.70E−4
90	2.43E+0	3.49E−1	1.14E−1	5.23E−2	1.03E−1	3.91E−2	1.90E−2	1.20E−3	8.86E−4
95	2.37E+0	3.26E−1	1.19E−1	5.50E−2	9.49E−2	4.02E−2	1.98E−2	1.35E−3	1.00E−3
100	2.27E+0	2.99E−1	1.23E−1	5.69E−2	8.66E−2	4.08E−2	2.02E−2	1.51E−3	1.12E−3
105	2.15E+0	2.71E−1	1.25E−1	5.80E−2	7.79E−2	4.09E−2	2.04E−2	1.65E−3	1.22E−3
110	2.00E+0	2.42E−1	1.25E−1	5.82E−2	6.91E−2	4.05E−2	2.02E−2	1.79E−3	1.31E−3
115	1.83E+0	2.12E−1	1.24E−1	5.74E−2	6.03E−2	3.97E−2	1.97E−2	1.90E−3	1.38E−3
120	1.65E+0	1.83E−1	1.22E−1	5.57E−2	5.18E−2	3.84E−2	1.90E−2	2.00E−3	1.43E−3
125	1.46E+0	1.56E−1	1.18E−1	5.32E−2	4.38E−2	3.69E−2	1.79E−2	2.06E−3	1.46E−3
130	1.26E+0	1.29E−1	1.13E−1	5.00E−2	3.63E−2	3.50E−2	1.67E−2	2.11E−3	1.46E−3
135	1.06E+0	1.05E−1	1.08E−1	4.61E−2	2.94E−2	3.30E−2	1.53E−2	2.12E−3	1.44E−3
140	8.69E−1	8.35E−2	1.02E−1	4.19E−2	2.32E−2	3.09E−2	1.38E−2	2.12E−3	1.40E−3
145	6.86E−1	6.40E−2	9.64E−2	3.76E−2	1.77E−2	2.89E−2	1.23E−2	2.09E−3	1.35E−3
150	5.18E−1	4.70E−2	9.05E−2	3.32E−2	1.30E−2	2.69E−2	1.09E−2	2.05E−3	1.28E−3
155	3.69E−1	3.26E−2	8.51E−2	2.91E−2	9.02E−3	2.50E−2	9.53E−3	2.00E−3	1.21E−3
160	2.41E−1	2.09E−2	8.02E−2	2.54E−2	5.77E−3	2.35E−2	8.34E−3	1.95E−3	1.14E−3
165	1.39E−1	1.17E−2	7.62E−2	2.24E−2	3.25E−3	2.22E−2	7.36E−3	1.91E−3	1.08E−3
170	6.37E−2	5.24E−3	7.32E−2	2.01E−2	1.46E−3	2.12E−2	6.63E−3	1.87E−3	1.03E−3
175	1.80E−2	1.34E−3	7.14E−2	1.87E−2	3.94E−4	2.06E−2	6.18E−3	1.85E−3	1.00E−3
180	2.63E−3	4.17E−5	7.08E−2	1.82E−2	3.83E−5	2.04E−2	6.02E−3	1.84E−3	9.92E−4

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr)								
(deg)	$1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
				T_e = 200.0 keV β = 0.6953 γ = 1.391					
0	2.24E−1	3.55E−2	3.12E−2	1.31E−2	1.07E−2	1.18E−2	5.27E−3	1.55E−4	7.11E−5
5	2.33E−1	3.78E−2	3.08E−2	1.31E−2	1.14E−2	1.16E−2	5.26E−3	1.56E−4	7.09E−5
10	2.61E−1	4.46E−2	2.95E−2	1.31E−2	1.36E−2	1.11E−2	5.24E−3	1.59E−4	7.04E−5
15	3.11E−1	5.61E−2	2.78E−2	1.30E−2	1.73E−2	1.04E−2	5.19E−3	1.63E−4	6.99E−5
20	3.83E−1	7.20E−2	2.60E−2	1.28E−2	2.23E−2	9.72E−3	5.12E−3	1.66E−4	6.99E−5
25	4.77E−1	9.18E−2	2.44E−2	1.26E−2	2.86E−2	9.12E−3	5.03E−3	1.69E−4	7.07E−5
30	5.90E−1	1.15E−1	2.35E−2	1.25E−2	3.57E−2	8.75E−3	4.95E−3	1.70E−4	7.27E−5
35	7.18E−1	1.39E−1	2.34E−2	1.24E−2	4.31E−2	8.71E−3	4.91E−3	1.71E−4	7.62E−5
40	8.54E−1	1.63E−1	2.43E−2	1.25E−2	5.05E−2	9.02E−3	4.94E−3	1.73E−4	8.18E−5
45	9.91E−1	1.86E−1	2.62E−2	1.29E−2	5.74E−2	9.69E−3	5.07E−3	1.76E−4	9.01E−5
50	1.12E+0	2.06E−1	2.90E−2	1.36E−2	6.33E−2	1.07E−2	5.32E−3	1.83E−4	1.02E−4
55	1.25E+0	2.23E−1	3.26E−2	1.47E−2	6.81E−2	1.19E−2	5.69E−3	1.96E−4	1.18E−4
60	1.35E+0	2.35E−1	3.69E−2	1.61E−2	7.14E−2	1.34E−2	6.19E−3	2.16E−4	1.39E−4
65	1.44E+0	2.43E−1	4.15E−2	1.78E−2	7.34E−2	1.49E−2	6.78E−3	2.44E−4	1.66E−4
70	1.51E+0	2.47E−1	4.63E−2	1.97E−2	7.39E−2	1.65E−2	7.43E−3	2.81E−4	2.00E−4
75	1.56E+0	2.45E−1	5.12E−2	2.18E−2	7.31E−2	1.81E−2	8.13E−3	3.28E−4	2.40E−4
80	1.58E+0	2.40E−1	5.58E−2	2.38E−2	7.10E−2	1.95E−2	8.81E−3	3.84E−4	2.85E−4
85	1.58E+0	2.31E−1	6.01E−2	2.58E−2	6.79E−2	2.07E−2	9.44E−3	4.48E−4	3.35E−4
90	1.55E+0	2.19E−1	6.38E−2	2.76E−2	6.40E−2	2.18E−2	9.99E−3	5.17E−4	3.88E−4
95	1.51E+0	2.05E−1	6.68E−2	2.91E−2	5.94E−2	2.26E−2	1.04E−2	5.91E−4	4.42E−4
100	1.45E+0	1.89E−1	6.91E−2	3.02E−2	5.44E−2	2.31E−2	1.07E−2	6.65E−4	4.95E−4
105	1.37E+0	1.71E−1	7.06E−2	3.09E−2	4.91E−2	2.33E−2	1.08E−2	7.38E−4	5.44E−4
110	1.27E+0	1.53E−1	7.13E−2	3.10E−2	4.36E−2	2.32E−2	1.08E−2	8.06E−4	5.87E−4
115	1.16E+0	1.35E−1	7.11E−2	3.07E−2	3.82E−2	2.29E−2	1.06E−2	8.67E−4	6.22E−4
120	1.05E+0	1.17E−1	7.02E−2	2.99E−2	3.29E−2	2.24E−2	1.02E−2	9.19E−4	6.47E−4
125	9.23E−1	9.95E−2	6.86E−2	2.85E−2	2.79E−2	2.16E−2	9.66E−3	9.60E−4	6.61E−4
130	7.98E−1	8.30E−2	6.65E−2	2.68E−2	2.32E−2	2.07E−2	9.02E−3	9.89E−4	6.64E−4
135	6.73E−1	6.77E−2	6.39E−2	2.48E−2	1.88E−2	1.97E−2	8.29E−3	1.01E−3	6.56E−4
140	5.51E−1	5.38E−2	6.10E−2	2.26E−2	1.49E−2	1.86E−2	7.50E−3	1.01E−3	6.39E−4
145	4.36E−1	4.13E−2	5.80E−2	2.02E−2	1.14E−2	1.76E−2	6.70E−3	1.01E−3	6.14E−4
150	3.30E−1	3.04E−2	5.50E−2	1.79E−2	8.37E−3	1.65E−2	5.91E−3	1.00E−3	5.85E−4
155	2.36E−1	2.11E−2	5.22E−2	1.57E−2	5.80E−3	1.56E−2	5.18E−3	9.88E−4	5.53E−4
160	1.55E−1	1.36E−2	4.97E−2	1.37E−2	3.71E−3	1.47E−2	4.53E−3	9.71E−4	5.22E−4
165	9.08E−2	7.65E−3	4.76E−2	1.21E−2	2.08E−3	1.40E−2	4.00E−3	9.56E−4	4.94E−4
170	4.36E−2	3.43E−3	4.61E−2	1.08E−2	9.27E−4	1.35E−2	3.60E−3	9.43E−4	4.72E−4
175	1.48E−2	8.96E−4	4.51E−2	1.01E−2	2.34E−4	1.32E−2	3.35E−3	9.34E−4	4.59E−4
180	5.18E−3	5.29E−5	4.48E−2	9.82E−3	3.42E−6	1.31E−2	3.27E−3	9.31E−4	4.54E−4
				T_e = 300.0 keV β = 0.7765 γ = 1.587					
0	1.49E−1	2.36E−2	1.33E−2	5.26E−3	7.06E−3	4.94E−3	2.06E−3	3.97E−5	1.82E−5
5	1.52E−1	2.43E−2	1.31E−2	5.28E−3	7.28E−3	4.84E−3	2.07E−3	4.06E−5	1.82E−5
10	1.63E−1	2.66E−2	1.24E−2	5.34E−3	8.00E−3	4.57E−3	2.09E−3	4.30E−5	1.82E−5
15	1.84E−1	3.10E−2	1.14E−2	5.38E−3	9.39E−3	4.20E−3	2.10E−3	4.60E−5	1.84E−5
20	2.20E−1	3.79E−2	1.04E−2	5.38E−3	1.15E−2	3.82E−3	2.10E−3	4.90E−5	1.90E−5
25	2.69E−1	4.73E−2	9.60E−3	5.34E−3	1.44E−2	3.52E−3	2.08E−3	5.12E−5	1.99E−5
30	3.30E−1	5.85E−2	9.14E−3	5.27E−3	1.78E−2	3.34E−3	2.04E−3	5.25E−5	2.12E−5
35	3.99E−1	7.07E−2	9.13E−3	5.23E−3	2.16E−2	3.33E−3	2.02E−3	5.30E−5	2.30E−5
40	4.72E−1	8.30E−2	9.58E−3	5.26E−3	2.53E−2	3.49E−3	2.02E−3	5.32E−5	2.53E−5
45	5.44E−1	9.45E−2	1.05E−2	5.39E−3	2.87E−2	3.82E−3	2.06E−3	5.36E−5	2.83E−5
50	6.12E−1	1.05E−1	1.18E−2	5.66E−3	3.16E−2	4.28E−3	2.16E−3	5.50E−5	3.24E−5
55	6.74E−1	1.13E−1	1.34E−2	6.08E−3	3.40E−2	4.86E−3	2.31E−3	5.80E−5	3.78E−5
60	7.26E−1	1.19E−1	1.54E−2	6.65E−3	3.57E−2	5.53E−3	2.50E−3	6.33E−5	4.49E−5
65	7.68E−1	1.23E−1	1.75E−2	7.34E−3	3.66E−2	6.24E−3	2.74E−3	7.14E−5	5.39E−5
70	7.99E−1	1.24E−1	1.97E−2	8.12E−3	3.69E−2	6.98E−3	3.02E−3	8.27E−5	6.49E−5
75	8.18E−1	1.24E−1	2.19E−2	8.96E−3	3.65E−2	7.70E−3	3.30E−3	9.74E−5	7.80E−5
80	8.25E−1	1.21E−1	2.41E−2	9.81E−3	3.55E−2	8.38E−3	3.59E−3	1.15E−4	9.31E−5
85	8.21E−1	1.17E−1	2.61E−2	1.06E−2	3.40E−2	9.00E−3	3.85E−3	1.37E−4	1.10E−4
90	8.05E−1	1.11E−1	2.79E−2	1.14E−2	3.21E−2	9.53E−3	4.08E−3	1.61E−4	1.28E−4
95	7.79E−1	1.04E−1	2.95E−2	1.20E−2	2.99E−2	9.96E−3	4.27E−3	1.86E−4	1.46E−4
100	7.44E−1	9.58E−2	3.07E−2	1.24E−2	2.74E−2	1.03E−2	4.39E−3	2.13E−4	1.64E−4
105	7.01E−1	8.72E−2	3.16E−2	1.27E−2	2.48E−2	1.05E−2	4.45E−3	2.41E−4	1.81E−4
110	6.50E−1	7.82E−2	3.22E−2	1.28E−2	2.22E−2	1.05E−2	4.44E−3	2.67E−4	1.95E−4
115	5.95E−1	6.91E−2	3.24E−2	1.26E−2	1.95E−2	1.05E−2	4.35E−3	2.91E−4	2.07E−4
120	5.34E−1	6.01E−2	3.23E−2	1.23E−2	1.69E−2	1.04E−2	4.20E−3	3.13E−4	2.16E−4
125	4.72E−1	5.14E−2	3.20E−2	1.17E−2	1.44E−2	1.02E−2	3.99E−3	3.32E−4	2.21E−4
130	4.08E−1	4.31E−2	3.13E−2	1.10E−2	1.20E−2	9.87E−3	3.73E−3	3.47E−4	2.22E−4
135	3.44E−1	3.53E−2	3.05E−2	1.02E−2	9.79E−3	9.52E−3	3.42E−3	3.59E−4	2.20E−4
140	2.83E−1	2.82E−2	2.96E−2	9.27E−3	7.79E−3	9.14E−3	3.10E−3	3.66E−4	2.15E−4
145	2.25E−1	2.18E−2	2.85E−2	8.29E−3	6.00E−3	8.75E−3	2.76E−3	3.71E−4	2.06E−4
150	1.71E−1	1.62E−2	2.75E−2	7.32E−3	4.44E−3	8.36E−3	2.43E−3	3.73E−4	1.96E−4
155	1.24E−1	1.14E−2	2.64E−2	6.40E−3	3.12E−3	8.00E−3	2.13E−3	3.72E−4	1.86E−4
160	8.37E−2	7.50E−3	2.55E−2	5.58E−3	2.03E−3	7.68E−3	1.85E−3	3.71E−4	1.75E−4
165	5.14E−2	4.42E−3	2.47E−2	4.89E−3	1.19E−3	7.42E−3	1.63E−3	3.68E−4	1.66E−4
170	2.77E−2	2.22E−3	2.42E−2	4.37E−3	5.86E−4	7.22E−3	1.46E−3	3.66E−4	1.58E−4
175	1.33E−2	9.02E−4	2.38E−2	4.05E−3	2.24E−4	7.10E−3	1.35E−3	3.65E−4	1.54E−4
180	8.49E−3	4.62E−4	2.37E−2	3.95E−3	1.04E−4	7.06E−3	1.32E−3	3.64E−4	1.52E−4

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr)								
(deg)	$1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
				T_e = 400.0 keV	β = 0.8279	γ = 1.783			
0	1.08E−1	1.72E−2	7.02E−3	2.64E−3	5.12E−3	2.58E−3	1.02E−3	1.49E−5	7.33E−6
5	1.10E−1	1.74E−2	6.86E−3	2.68E−3	5.20E−3	2.52E−3	1.04E−3	1.56E−5	7.38E−6
10	1.17E−1	1.85E−2	6.42E−3	2.78E−3	5.53E−3	2.35E−3	1.07E−3	1.73E−5	7.54E−6
15	1.32E−1	2.10E−2	5.84E−3	2.88E−3	6.28E−3	2.13E−3	1.11E−3	1.94E−5	7.86E−6
20	1.56E−1	2.53E−2	5.26E−3	2.94E−3	7.57E−3	1.91E−3	1.13E−3	2.13E−5	8.38E−6
25	1.90E−1	3.12E−2	4.83E−3	2.96E−3	9.36E−3	1.75E−3	1.13E−3	2.27E−5	9.07E−6
30	2.31E−1	3.82E−2	4.61E−3	2.95E−3	1.15E−2	1.67E−3	1.13E−3	2.34E−5	9.93E−6
35	2.76E−1	4.58E−2	4.65E−3	2.94E−3	1.38E−2	1.68E−3	1.12E−3	2.35E−5	1.10E−5
40	3.21E−1	5.32E−2	4.96E−3	2.96E−3	1.60E−2	1.79E−3	1.12E−3	2.34E−5	1.22E−5
45	3.65E−1	6.00E−2	5.51E−3	3.04E−3	1.80E−2	1.99E−3	1.15E−3	2.33E−5	1.38E−5
50	4.05E−1	6.58E−2	6.28E−3	3.19E−3	1.97E−2	2.26E−3	1.20E−3	2.36E−5	1.59E−5
55	4.39E−1	7.04E−2	7.23E−3	3.42E−3	2.10E−2	2.60E−3	1.28E−3	2.47E−5	1.86E−5
60	4.68E−1	7.36E−2	8.33E−3	3.73E−3	2.19E−2	2.98E−3	1.39E−3	2.68E−5	2.20E−5
65	4.90E−1	7.55E−2	9.54E−3	4.09E−3	2.23E−2	3.39E−3	1.51E−3	3.02E−5	2.63E−5
70	5.05E−1	7.61E−2	1.08E−2	4.51E−3	2.24E−2	3.81E−3	1.66E−3	3.52E−5	3.16E−5
75	5.13E−1	7.54E−2	1.21E−2	4.94E−3	2.21E−2	4.23E−3	1.81E−3	4.19E−5	3.79E−5
80	5.15E−1	7.37E−2	1.33E−2	5.39E−3	2.15E−2	4.63E−3	1.95E−3	5.02E−5	4.50E−5
85	5.09E−1	7.09E−2	1.45E−2	5.81E−3	2.06E−2	5.00E−3	2.09E−3	6.02E−5	5.29E−5
90	4.97E−1	6.73E−2	1.56E−2	6.19E−3	1.94E−2	5.33E−3	2.21E−3	7.17E−5	6.13E−5
95	4.80E−1	6.30E−2	1.66E−2	6.50E−3	1.81E−2	5.60E−3	2.31E−3	8.42E−5	6.99E−5
100	4.57E−1	5.82E−2	1.74E−2	6.72E−3	1.66E−2	5.82E−3	2.37E−3	9.76E−5	7.83E−5
105	4.29E−1	5.31E−2	1.80E−2	6.85E−3	1.51E−2	5.98E−3	2.39E−3	1.11E−4	8.62E−5
110	3.98E−1	4.77E−2	1.85E−2	6.87E−3	1.35E−2	6.07E−3	2.38E−3	1.25E−4	9.31E−5
115	3.63E−1	4.23E−2	1.87E−2	6.77E−3	1.19E−2	6.10E−3	2.33E−3	1.38E−4	9.87E−5
120	3.27E−1	3.69E−2	1.88E−2	6.57E−3	1.03E−2	6.08E−3	2.25E−3	1.50E−4	1.03E−4
125	2.88E−1	3.16E−2	1.88E−2	6.27E−3	8.83E−3	6.01E−3	2.13E−3	1.61E−4	1.05E−4
130	2.50E−1	2.66E−2	1.86E−2	5.88E−3	7.41E−3	5.89E−3	1.99E−3	1.70E−4	1.06E−4
135	2.11E−1	2.20E−2	1.83E−2	5.42E−3	6.08E−3	5.75E−3	1.82E−3	1.77E−4	1.04E−4
140	1.74E−1	1.77E−2	1.79E−2	4.91E−3	4.88E−3	5.58E−3	1.65E−3	1.83E−4	1.02E−4
145	1.39E−1	1.38E−2	1.75E−2	4.39E−3	3.80E−3	5.40E−3	1.46E−3	1.87E−4	9.76E−5
150	1.07E−1	1.04E−2	1.70E−2	3.86E−3	2.85E−3	5.23E−3	1.29E−3	1.90E−4	9.28E−5
155	7.91E−2	7.50E−3	1.65E−2	3.36E−3	2.04E−3	5.06E−3	1.12E−3	1.92E−4	8.77E−5
160	5.50E−2	5.10E−3	1.61E−2	2.92E−3	1.38E−3	4.90E−3	9.70E−4	1.92E−4	8.26E−5
165	3.57E−2	3.22E−3	1.58E−2	2.55E−3	8.66E−4	4.78E−3	8.48E−4	1.93E−4	7.81E−5
170	2.16E−2	1.87E−3	1.55E−2	2.27E−3	4.97E−4	4.68E−3	7.56E−4	1.93E−4	7.45E−5
175	1.30E−2	1.07E−3	1.53E−2	2.10E−3	2.75E−4	4.62E−3	7.00E−4	1.92E−4	7.23E−5
180	1.01E−2	7.95E−4	1.53E−2	2.04E−3	2.01E−4	4.60E−3	6.80E−4	1.92E−4	7.15E−5
				T_e = 500.0 keV	β = 0.8629	γ = 1.978			
0	8.30E−2	1.31E−2	4.19E−3	1.52E−3	3.90E−3	1.53E−3	5.84E−4	6.99E−6	3.77E−6
5	8.51E−2	1.33E−2	4.08E−3	1.57E−3	3.96E−3	1.49E−3	6.02E−4	7.49E−6	3.85E−6
10	9.22E−2	1.42E−2	3.80E−3	1.69E−3	4.22E−3	1.38E−3	6.45E−4	8.76E−6	4.06E−6
15	1.06E−1	1.63E−2	3.42E−3	1.81E−3	4.81E−3	1.24E−3	6.91E−4	1.03E−5	4.41E−6
20	1.27E−1	1.96E−2	3.08E−3	1.90E−3	5.80E−3	1.11E−3	7.21E−4	1.15E−5	4.86E−6
25	1.54E−1	2.40E−2	2.83E−3	1.94E−3	7.12E−3	1.02E−3	7.33E−4	1.23E−5	5.39E−6
30	1.84E−1	2.89E−2	2.72E−3	1.94E−3	8.61E−3	9.77E−4	7.34E−4	1.26E−5	5.98E−6
35	2.15E−1	3.40E−2	2.78E−3	1.95E−3	1.01E−2	9.99E−4	7.33E−4	1.26E−5	6.66E−6
40	2.45E−1	3.88E−2	3.01E−3	1.97E−3	1.16E−2	1.08E−3	7.38E−4	1.24E−5	7.46E−6
45	2.72E−1	4.30E−2	3.38E−3	2.03E−3	1.28E−2	1.22E−3	7.56E−4	1.23E−5	8.46E−6
50	2.97E−1	4.65E−2	3.89E−3	2.13E−3	1.38E−2	1.40E−3	7.91E−4	1.23E−5	9.72E−6
55	3.17E−1	4.92E−2	4.51E−3	2.27E−3	1.46E−2	1.62E−3	8.42E−4	1.28E−5	1.13E−5
60	3.34E−1	5.10E−2	5.23E−3	2.46E−3	1.50E−2	1.86E−3	9.08E−4	1.39E−5	1.34E−5
65	3.46E−1	5.19E−2	6.01E−3	2.69E−3	1.53E−2	2.13E−3	9.86E−4	1.57E−5	1.60E−5
70	3.53E−1	5.20E−2	6.83E−3	2.94E−3	1.52E−2	2.41E−3	1.07E−3	1.84E−5	1.91E−5
75	3.57E−1	5.13E−2	7.67E−3	3.20E−3	1.50E−2	2.68E−3	1.16E−3	2.21E−5	2.27E−5
80	3.55E−1	4.99E−2	8.50E−3	3.46E−3	1.45E−2	2.95E−3	1.25E−3	2.68E−5	2.68E−5
85	3.50E−1	4.79E−2	9.30E−3	3.71E−3	1.39E−2	3.20E−3	1.33E−3	3.25E−5	3.14E−5
90	3.41E−1	4.55E−2	1.00E−2	3.93E−3	1.31E−2	3.43E−3	1.40E−3	3.91E−5	3.61E−5
95	3.28E−1	4.25E−2	1.07E−2	4.11E−3	1.22E−2	3.62E−3	1.45E−3	4.65E−5	4.10E−5
100	3.11E−1	3.93E−2	1.13E−2	4.23E−3	1.12E−2	3.78E−3	1.49E−3	5.44E−5	4.58E−5
105	2.92E−1	3.59E−2	1.17E−2	4.29E−3	1.02E−2	3.90E−3	1.50E−3	6.26E−5	5.02E−5
110	2.70E−1	3.23E−2	1.21E−2	4.29E−3	9.13E−3	3.99E−3	1.49E−3	7.09E−5	5.40E−5
115	2.47E−1	2.87E−2	1.24E−2	4.22E−3	8.07E−3	4.04E−3	1.45E−3	7.89E−5	5.71E−5
120	2.22E−1	2.51E−2	1.25E−2	4.08E−3	7.03E−3	4.05E−3	1.40E−3	8.66E−5	5.93E−5
125	1.96E−1	2.16E−2	1.26E−2	3.88E−3	6.03E−3	4.04E−3	1.32E−3	9.36E−5	6.05E−5
130	1.70E−1	1.83E−2	1.26E−2	3.63E−3	5.09E−3	4.00E−3	1.23E−3	9.98E−5	6.07E−5
135	1.44E−1	1.52E−2	1.25E−2	3.34E−3	4.21E−3	3.93E−3	1.12E−3	1.05E−4	5.99E−5
140	1.20E−1	1.23E−2	1.23E−2	3.02E−3	3.40E−3	3.85E−3	1.01E−3	1.09E−4	5.82E−5
145	9.66E−2	9.73E−3	1.21E−2	2.69E−3	2.68E−3	3.76E−3	8.98E−4	1.13E−4	5.59E−5
150	7.53E−2	7.46E−3	1.19E−2	2.36E−3	2.05E−3	3.67E−3	7.86E−4	1.15E−4	5.31E−5
155	5.65E−2	5.51E−3	1.17E−2	2.05E−3	1.50E−3	3.59E−3	6.81E−4	1.17E−4	5.00E−5
160	4.05E−2	3.90E−3	1.14E−2	1.77E−3	1.06E−3	3.51E−3	5.88E−4	1.18E−4	4.71E−5
165	2.77E−2	2.64E−3	1.13E−2	1.54E−3	7.13E−4	3.44E−3	5.12E−4	1.19E−4	4.45E−5
170	1.84E−2	1.73E−3	1.11E−2	1.36E−3	4.64E−4	3.39E−3	4.54E−4	1.20E−4	4.25E−5
175	1.27E−2	1.19E−3	1.10E−2	1.26E−3	3.14E−4	3.35E−3	4.19E−4	1.20E−4	4.11E−5
180	1.08E−2	1.00E−3	1.10E−2	1.22E−3	2.65E−4	3.34E−3	4.07E−4	1.20E−4	4.07E−5

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr)								
(deg)	$1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
	T_e = 600.0 keV	β = 0.8879	γ = 2.174						
0	6.58E−2	1.04E−2	2.72E−3	9.58E−4	3.08E−3	9.88E−4	3.66E−4	3.76E−6	2.24E−6
5	6.88E−2	1.07E−2	2.64E−3	1.01E−3	3.17E−3	9.60E−4	3.86E−4	4.16E−6	2.33E−6
10	7.79E−2	1.18E−2	2.45E−3	1.14E−3	3.47E−3	8.87E−4	4.34E−4	5.15E−6	2.58E−6
15	9.28E−2	1.38E−2	2.21E−3	1.27E−3	4.06E−3	7.95E−4	4.82E−4	6.24E−6	2.93E−6
20	1.12E−1	1.67E−2	1.98E−3	1.36E−3	4.92E−3	7.11E−4	5.14E−4	7.09E−6	3.32E−6
25	1.34E−1	2.02E−2	1.83E−3	1.41E−3	5.95E−3	6.55E−4	5.28E−4	7.56E−6	3.74E−6
30	1.57E−1	2.39E−2	1.79E−3	1.42E−3	7.05E−3	6.37E−4	5.32E−4	7.70E−6	4.17E−6
35	1.79E−1	2.74E−2	1.85E−3	1.43E−3	8.09E−3	6.60E−4	5.33E−4	7.61E−6	4.64E−6
40	1.99E−1	3.05E−2	2.02E−3	1.45E−3	9.03E−3	7.23E−4	5.38E−4	7.43E−6	5.20E−6
45	2.16E−1	3.32E−2	2.29E−3	1.49E−3	9.82E−3	8.21E−4	5.52E−4	7.28E−6	5.89E−6
50	2.32E−1	3.53E−2	2.65E−3	1.56E−3	1.04E−2	9.50E−4	5.77E−4	7.27E−6	6.76E−6
55	2.44E−1	3.69E−2	3.10E−3	1.66E−3	1.09E−2	1.11E−3	6.12E−4	7.53E−6	7.87E−6
60	2.54E−1	3.79E−2	3.60E−3	1.79E−3	1.11E−2	1.28E−3	6.57E−4	8.16E−6	9.27E−6
65	2.60E−1	3.82E−2	4.15E−3	1.94E−3	1.12E−2	1.47E−3	7.09E−4	9.28E−6	1.10E−5
70	2.64E−1	3.81E−2	4.74E−3	2.11E−3	1.11E−2	1.67E−3	7.66E−4	1.10E−5	1.30E−5
75	2.65E−1	3.74E−2	5.33E−3	2.28E−3	1.09E−2	1.86E−3	8.25E−4	1.33E−5	1.54E−5
80	2.62E−1	3.63E−2	5.93E−3	2.45E−3	1.05E−2	2.06E−3	8.82E−4	1.63E−5	1.81E−5
85	2.57E−1	3.48E−2	6.51E−3	2.61E−3	1.00E−2	2.24E−3	9.33E−4	2.00E−5	2.11E−5
90	2.49E−1	3.29E−2	7.05E−3	2.75E−3	9.46E−3	2.41E−3	9.77E−4	2.42E−5	2.41E−5
95	2.39E−1	3.08E−2	7.55E−3	2.86E−3	8.81E−3	2.55E−3	1.01E−3	2.91E−5	2.72E−5
100	2.27E−1	2.85E−2	7.99E−3	2.93E−3	8.11E−3	2.68E−3	1.03E−3	3.43E−5	3.03E−5
105	2.13E−1	2.60E−2	8.36E−3	2.96E−3	7.38E−3	2.78E−3	1.03E−3	3.98E−5	3.30E−5
110	1.97E−1	2.35E−2	8.67E−3	2.95E−3	6.62E−3	2.86E−3	1.02E−3	4.54E−5	3.54E−5
115	1.80E−1	2.09E−2	8.90E−3	2.89E−3	5.87E−3	2.91E−3	9.95E−4	5.09E−5	3.73E−5
120	1.62E−1	1.83E−2	9.07E−3	2.79E−3	5.13E−3	2.94E−3	9.54E−4	5.63E−5	3.86E−5
125	1.43E−1	1.58E−2	9.17E−3	2.65E−3	4.42E−3	2.95E−3	9.00E−4	6.12E−5	3.93E−5
130	1.24E−1	1.35E−2	9.20E−3	2.47E−3	3.75E−3	2.94E−3	8.35E−4	6.58E−5	3.94E−5
135	1.06E−1	1.13E−2	9.19E−3	2.26E−3	3.12E−3	2.91E−3	7.63E−4	6.97E−5	3.88E−5
140	8.85E−2	9.21E−3	9.14E−3	2.04E−3	2.55E−3	2.87E−3	6.85E−4	7.31E−5	3.76E−5
145	7.19E−2	7.37E−3	9.05E−3	1.81E−3	2.03E−3	2.83E−3	6.06E−4	7.59E−5	3.61E−5
150	5.68E−2	5.74E−3	8.95E−3	1.59E−3	1.58E−3	2.78E−3	5.29E−4	7.81E−5	3.42E−5
155	4.34E−2	4.35E−3	8.84E−3	1.37E−3	1.19E−3	2.73E−3	4.57E−4	7.98E−5	3.22E−5
160	3.21E−2	3.20E−3	8.73E−3	1.18E−3	8.73E−4	2.69E−3	3.93E−4	8.11E−5	3.03E−5
165	2.30E−2	2.29E−3	8.64E−3	1.02E−3	6.24E−4	2.65E−3	3.40E−4	8.20E−5	2.86E−5
170	1.63E−2	1.64E−3	8.57E−3	9.04E−4	4.46E−4	2.62E−3	3.01E−4	8.25E−5	2.73E−5
175	1.23E−2	1.25E−3	8.52E−3	8.31E−4	3.39E−4	2.60E−3	2.77E−4	8.29E−5	2.64E−5
180	1.10E−2	1.12E−3	8.50E−3	8.06E−4	3.03E−4	2.60E−3	2.68E−4	8.30E−5	2.61E−5
	T_e = 800.0 keV	β = 0.9209	γ = 2.566						
0	4.42E−2	6.95E−3	1.34E−3	4.55E−4	2.06E−3	4.86E−4	1.72E−4	1.43E−6	1.01E−6
5	4.98E−2	7.62E−3	1.31E−3	5.18E−4	2.25E−3	4.73E−4	1.96E−4	1.71E−6	1.13E−6
10	6.40E−2	9.38E−3	1.22E−3	6.57E−4	2.75E−3	4.39E−4	2.47E−4	2.36E−6	1.42E−6
15	8.15E−2	1.17E−2	1.11E−3	7.85E−4	3.42E−3	3.96E−4	2.94E−4	2.98E−6	1.75E−6
20	9.83E−2	1.41E−2	1.01E−3	8.62E−4	4.12E−3	3.59E−4	3.22E−4	3.38E−6	2.05E−6
25	1.13E−1	1.64E−2	9.48E−4	8.95E−4	4.79E−3	3.36E−4	3.33E−4	3.54E−6	2.31E−6
30	1.25E−1	1.83E−2	9.40E−4	9.06E−4	5.37E−3	3.33E−4	3.36E−4	3.54E−6	2.55E−6
35	1.36E−1	2.00E−2	9.91E−4	9.12E−4	5.86E−3	3.52E−4	3.37E−4	3.44E−6	2.82E−6
40	1.44E−1	2.13E−2	1.10E−3	9.26E−4	6.26E−3	3.92E−4	3.42E−4	3.31E−6	3.14E−6
45	1.51E−1	2.24E−2	1.26E−3	9.53E−4	6.56E−3	4.51E−4	3.51E−4	3.21E−6	3.54E−6
50	1.57E−1	2.31E−2	1.48E−3	9.95E−4	6.78E−3	5.27E−4	3.65E−4	3.19E−6	4.05E−6
55	1.62E−1	2.36E−2	1.74E−3	1.05E−3	6.91E−3	6.18E−4	3.85E−4	3.31E−6	4.70E−6
60	1.65E−1	2.38E−2	2.03E−3	1.12E−3	6.95E−3	7.20E−4	4.09E−4	3.61E−6	5.50E−6
65	1.66E−1	2.37E−2	2.36E−3	1.20E−3	6.91E−3	8.31E−4	4.37E−4	4.16E−6	6.46E−6
70	1.66E−1	2.34E−2	2.70E−3	1.29E−3	6.79E−3	9.48E−4	4.66E−4	5.00E−6	7.59E−6
75	1.65E−1	2.28E−2	3.06E−3	1.38E−3	6.60E−3	1.07E−3	4.96E−4	6.17E−6	8.88E−6
80	1.62E−1	2.20E−2	3.42E−3	1.47E−3	6.34E−3	1.18E−3	5.24E−4	7.70E−6	1.03E−5
85	1.58E−1	2.10E−2	3.77E−3	1.54E−3	6.03E−3	1.30E−3	5.49E−4	9.60E−6	1.18E−5
90	1.53E−1	1.98E−2	4.12E−3	1.61E−3	5.68E−3	1.40E−3	5.69E−4	1.18E−5	1.34E−5
95	1.46E−1	1.85E−2	4.44E−3	1.66E−3	5.29E−3	1.50E−3	5.82E−4	1.44E−5	1.50E−5
100	1.38E−1	1.71E−2	4.73E−3	1.68E−3	4.87E−3	1.59E−3	5.89E−4	1.72E−5	1.65E−5
105	1.29E−1	1.57E−2	4.99E−3	1.69E−3	4.44E−3	1.66E−3	5.87E−4	2.02E−5	1.79E−5
110	1.19E−1	1.42E−2	5.22E−3	1.67E−3	4.00E−3	1.72E−3	5.77E−4	2.33E−5	1.90E−5
115	1.09E−1	1.27E−2	5.41E−3	1.63E−3	3.57E−3	1.77E−3	5.59E−4	2.65E−5	1.99E−5
120	9.84E−2	1.12E−2	5.56E−3	1.56E−3	3.14E−3	1.81E−3	5.33E−4	2.96E−5	2.05E−5
125	8.74E−2	9.77E−3	5.68E−3	1.47E−3	2.73E−3	1.83E−3	5.01E−4	3.26E−5	2.08E−5
130	7.65E−2	8.39E−3	5.76E−3	1.37E−3	2.34E−3	1.85E−3	4.63E−4	3.53E−5	2.07E−5
135	6.58E−2	7.11E−3	5.82E−3	1.25E−3	1.97E−3	1.85E−3	4.21E−4	3.79E−5	2.03E−5
140	5.55E−2	5.92E−3	5.85E−3	1.12E−3	1.64E−3	1.85E−3	3.76E−4	4.01E−5	1.96E−5
145	4.59E−2	4.85E−3	5.85E−3	9.91E−4	1.34E−3	1.84E−3	3.31E−4	4.21E−5	1.88E−5
150	3.71E−2	3.90E−3	5.85E−3	8.63E−4	1.08E−3	1.83E−3	2.87E−4	4.37E−5	1.78E−5
155	2.94E−2	3.09E−3	5.83E−3	7.43E−4	8.53E−4	1.82E−3	2.47E−4	4.51E−5	1.67E−5
160	2.28E−2	2.42E−3	5.81E−3	6.36E−4	6.68E−4	1.80E−3	2.11E−4	4.61E−5	1.57E−5
165	1.76E−2	1.89E−3	5.78E−3	5.48E−4	5.22E−4	1.79E−3	1.82E−4	4.69E−5	1.48E−5
170	1.37E−2	1.51E−3	5.77E−3	4.82E−4	4.18E−4	1.78E−3	1.60E−4	4.75E−5	1.41E−5
175	1.14E−2	1.29E−3	5.75E−3	4.41E−4	3.55E−4	1.77E−3	1.46E−4	4.78E−5	1.37E−5
180	1.06E−2	1.21E−3	5.75E−3	4.27E−4	3.35E−4	1.77E−3	1.42E−4	4.79E−5	1.35E−5

TABLE. Angle-Differential Cross Sections for Radiative Recombination, $Z = 79$

See page 195 for Explanation of Table

Angle	Differential cross section $d\sigma_{RR}/d\Omega$ (b/sr)								
(deg)	$1s_{1/2}$	$2s_{1/2}$	$2p_{1/2}$	$2p_{3/2}$	$3s_{1/2}$	$3p_{1/2}$	$3p_{3/2}$	$3d_{3/2}$	$3d_{5/2}$
				T_e = 1000.0 keV β = 0.9411 γ = 2.957					
0	3.16E−2	4.96E−3	7.64E−4	2.52E−4	1.47E−3	2.75E−4	9.52E−5	6.78E−7	5.51E−7
5	4.01E−2	6.04E−3	7.54E−4	3.23E−4	1.78E−3	2.71E−4	1.21E−4	8.99E−7	6.96E−7
10	5.89E−2	8.48E−3	7.21E−4	4.64E−4	2.47E−3	2.57E−4	1.73E−4	1.36E−6	1.01E−6
15	7.72E−2	1.09E−2	6.67E−4	5.78E−4	3.18E−3	2.37E−4	2.15E−4	1.73E−6	1.30E−6
20	9.05E−2	1.28E−2	6.14E−4	6.35E−4	3.73E−3	2.17E−4	2.35E−4	1.93E−6	1.52E−6
25	9.93E−2	1.42E−2	5.83E−4	6.55E−4	4.12E−3	2.06E−4	2.42E−4	1.97E−6	1.68E−6
30	1.05E−1	1.51E−2	5.85E−4	6.59E−4	4.40E−3	2.07E−4	2.43E−4	1.94E−6	1.82E−6
35	1.09E−1	1.58E−2	6.24E−4	6.62E−4	4.60E−3	2.21E−4	2.44E−4	1.86E−6	1.99E−6
40	1.12E−1	1.62E−2	6.99E−4	6.72E−4	4.74E−3	2.49E−4	2.47E−4	1.78E−6	2.21E−6
45	1.15E−1	1.65E−2	8.10E−4	6.91E−4	4.83E−3	2.88E−4	2.53E−4	1.72E−6	2.48E−6
50	1.16E−1	1.67E−2	9.53E−4	7.19E−4	4.88E−3	3.39E−4	2.63E−4	1.71E−6	2.84E−6
55	1.17E−1	1.68E−2	1.13E−3	7.57E−4	4.88E−3	4.00E−4	2.75E−4	1.78E−6	3.28E−6
60	1.18E−1	1.67E−2	1.32E−3	8.02E−4	4.84E−3	4.69E−4	2.91E−4	1.96E−6	3.82E−6
65	1.18E−1	1.64E−2	1.54E−3	8.52E−4	4.77E−3	5.44E−4	3.08E−4	2.29E−6	4.46E−6
70	1.17E−1	1.61E−2	1.78E−3	9.05E−4	4.65E−3	6.23E−4	3.26E−4	2.80E−6	5.20E−6
75	1.15E−1	1.56E−2	2.02E−3	9.58E−4	4.49E−3	7.04E−4	3.43E−4	3.52E−6	6.03E−6
80	1.12E−1	1.50E−2	2.27E−3	1.01E−3	4.30E−3	7.86E−4	3.59E−4	4.46E−6	6.94E−6
85	1.09E−1	1.42E−2	2.52E−3	1.05E−3	4.08E−3	8.66E−4	3.73E−4	5.64E−6	7.89E−6
90	1.05E−1	1.34E−2	2.77E−3	1.09E−3	3.84E−3	9.43E−4	3.83E−4	7.04E−6	8.86E−6
95	9.98E−2	1.26E−2	3.00E−3	1.11E−3	3.58E−3	1.01E−3	3.89E−4	8.65E−6	9.82E−6
100	9.43E−2	1.16E−2	3.22E−3	1.12E−3	3.30E−3	1.08E−3	3.91E−4	1.04E−5	1.07E−5
105	8.81E−2	1.07E−2	3.42E−3	1.12E−3	3.01E−3	1.14E−3	3.87E−4	1.24E−5	1.15E−5
110	8.16E−2	9.67E−3	3.60E−3	1.10E−3	2.73E−3	1.19E−3	3.78E−4	1.44E−5	1.22E−5
115	7.46E−2	8.69E−3	3.75E−3	1.06E−3	2.44E−3	1.23E−3	3.65E−4	1.65E−5	1.27E−5
120	6.75E−2	7.72E−3	3.89E−3	1.02E−3	2.16E−3	1.27E−3	3.46E−4	1.86E−5	1.30E−5
125	6.02E−2	6.78E−3	4.00E−3	9.55E−4	1.89E−3	1.30E−3	3.24E−4	2.06E−5	1.31E−5
130	5.30E−2	5.88E−3	4.09E−3	8.83E−4	1.64E−3	1.32E−3	2.98E−4	2.26E−5	1.30E−5
135	4.60E−2	5.04E−3	4.16E−3	8.03E−4	1.40E−3	1.33E−3	2.70E−4	2.44E−5	1.27E−5
140	3.92E−2	4.27E−3	4.21E−3	7.19E−4	1.19E−3	1.34E−3	2.41E−4	2.60E−5	1.23E−5
145	3.29E−2	3.57E−3	4.25E−3	6.33E−4	9.93E−4	1.34E−3	2.11E−4	2.75E−5	1.17E−5
150	2.72E−2	2.96E−3	4.28E−3	5.49E−4	8.22E−4	1.34E−3	1.83E−4	2.88E−5	1.11E−5
155	2.22E−2	2.43E−3	4.29E−3	4.71E−4	6.75E−4	1.34E−3	1.56E−4	2.98E−5	1.04E−5
160	1.79E−2	1.99E−3	4.30E−3	4.01E−4	5.54E−4	1.34E−3	1.33E−4	3.07E−5	9.76E−6
165	1.45E−2	1.65E−3	4.30E−3	3.44E−4	4.59E−4	1.34E−3	1.14E−4	3.13E−5	9.20E−6
170	1.20E−2	1.40E−3	4.30E−3	3.02E−4	3.91E−4	1.34E−3	9.97E−5	3.18E−5	8.76E−6
175	1.05E−2	1.25E−3	4.30E−3	2.75E−4	3.50E−4	1.33E−3	9.10E−5	3.21E−5	8.48E−6
180	9.97E−3	1.20E−3	4.30E−3	2.67E−4	3.36E−4	1.33E−3	8.81E−5	3.22E−5	8.39E−6