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Dielectronic Recombination Rate Coefficients to the Excited States of C I from C II

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Dielectronic recombination rate coefficients to the excited states of C I from C II

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Abstract

With the use of the atomic data of dielectronic recombination processes (energy levels, radiative transition probability and autoionization rate) for the levels with the principal quantum number n = 2 and 3 of C I, the dielectronic recombination rate coefficients from C II ($2s^2$ 2p) to the excited states are calculated. The rate coefficients are fitted to an analytical formula and the fit parameters are given. The values for higher excited states than n = 3 are extrapolated and the total dielectronic recombination rate coefficient are derived. The effective recombination rate coefficients are also derived with a collisional radiative model of carbon atom.

Key words;
autoionizing level, dielectronic recombination, carbon atom, excited states, autoionization rate, radiative transition probabilities,

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1. Introduction

In order to estimate the line emission of carbon atom in a plasma, we have to know the population of the excited states. The populations of the excited states are determined mainly by the excitation from the ground state and the recombination from the ions at low densities. When the electron density increases, the excitation processes from the excited states become important. In the case of a recombining plasma, the recombination to each excited state is necessary to estimate the line emissions. These data are also necessary to obtain the effective recombination rate coefficients at high electron densities. The effective ionization and recombination rate coefficients are important to determine the ion abundances in high density plasmas.

There are several calculations of the total dielectronic recombination from C II to C I (Nussbaumer and Storey (1983), Ramadan and Hahn(1989), Badnell and Pindzola (1989), Badnell (1989)) but there are no data for the excited states. In this paper we calculate the dielectronic recombination rate coefficients to the excited states of carbon atom with AUTOLSJ method by Dubau et al (1981).

We have constructed a collisional radiative model of carbon atom including the sub-levels up to the principal quantum number n = 4 (Ohkouchi et al). The population dynamics of atomic carbon as well as the effective emission and effective ionization rate coefficients is discussed in Sasaki et al (1994) for an ionizing plasma. We give the calculated effective recombination rate coefficients as a function of the electron density and the electron temperature by a collisional radiative model using our new data.

2. Energy levels of C I and C II

Energy levels of C I and C II for n = 2 or 3 are calculated by AUTOLSJ

method. The following configurations are included in the calculation for C I.

1...1s2 2s2 2p2,	2....1s2 2s 2p3,	3.....1s2 2p4,
4....1s2 2s2 2p 3s,	5.....1s2 2s2 2p 3p,	6....1s2 2s2 2p 3d,
7....1s2 2s 2p2 3s,	8.....1s2 2s 2p2 3p,	9....1s2 2s 2p2 3d,
10...1s2 2p3 3s,	11....1s2 2p3 3p,	12...1s2 2p3 3d

The following configurations are included in the calculation for C II.

1....1s2 2s2 2p,	2....1s2 2s 2p2,	3....1s2 2p3,
4....1s2 2s2 3s,	5.....1s2 2s2 3p,	6.....1s2 2s2 3d,
7....1s2 2s 2p 3s,	8.....1s2 2s 2p 3p,	9.....1s2 2s 2p 3p,
10.....1s2 2s 2p 3s,	11....1s2 2p2 3p,	12....1s2 2p2 3d

The energy levels of C I and C II are listed in Table I and II, respectively. The symbols in Table I and II indicate the following meanings,

K	the number of the levels.
CF	the number of the configuration listed at the top of Tables.
2S +1	multiplicity where S indicates the spin
L	orbital angular momentum quantum number
2J	twice of J, J is the total angular momentum quantum number
EK	the energy of the level in Rydberg and eV.

3. Dielectronic recombination rate coefficients to the excited states

Dielectronic recombination process consists of (1) an dielectronic capture process form C II to an autoionizing level s_J of C I and (2) a radiative decay process from s_J to $k_{J'}$, where J and J' indicate the total angular momentum of the levels s and k,.

$$2s^2\ 2p + e \ \rightarrow \ s_J \text{ (autoionizing level)} \qquad (1)$$

$$s_J \quad \text{--->} \quad k_{J'} \text{ (normal level).} \qquad (2)$$

Dielectronic recombination rate coefficient through the s_J level to the $k_{J'}$ level is obtained from the following formula,

$$\alpha_d(s_J - k_{J'}) = 3.3 \times 10^{-24}(I_H/T_e)^{3/2}(F2(s_J - k_{J'}))\exp(-Es(1-s_J)/T_e) \quad (3)$$

$$\text{cm}^3\ \text{s}^{-1}$$

where

$$F2(s_J - k_{J'}) = (g_{sJ}/g_1)A_a(s_J - 1)A_r(s_J - k_{J'})/(\Sigma A_a + \Sigma A_r) \qquad (4)$$

Here T_e and I_H are the electron temperature and the ionization potential of atomic hydrogen, respectively. $Es(1-s_J)$ is the energy difference between the autoionizing level s_J and the ground state of C II. $A_a(s_J - 1)$ is the autoionizing rate from the autoionizing level to the ground state of C II. $A_r(s_J - k_{J'})$ is the radiative transition probability from the level s_J to $k_{J'}$. The symbols g_{sJ} and g_1 indicate the statistical weight of the s_J level and C II(1) where $g_1 = 6$ in our case. We have calculated the numerical data of A_a and A_r for n = 2 and 3 levels. They are listed in Table III. The key number of levels, s_J and $k_{J'}$, in Table III corresponds to K in Table I. Aa, AumAr, Ar, F2 and Es in Table III indicate $A_a(s_J - 1)$, $\Sigma A_r(s_J)$, $A_r(s_J - k_{J'})$, $F2(s_J - k_{J'})$ and $E_s(1 - s_J)$, respectively.

For the rate coefficients $\alpha_d(k)$, to the excited state k in LS levels, $\alpha_d(s_J - k_{J'})$ are summed up with s_J and J' as,.

$$\alpha_d(k) = 3.3 \times 10^{-24}(I_H/T_e)^{3/2}\Sigma_{J'}\Sigma_{s_J}(F2(s_J - k_{J'}))\exp(-Es(1-s_J)/Te). \qquad (5)$$

We used extrapolations as follows to obtain the data for the n-values higher than 4 where n is the principal quantum number.

a) α_d ($1s^2\ 2s^2\ 2p^2$ (^3P, ^1S, ^1D))

The main dielectronic recombination process to the ground configuration levels is,

$$2s^2\ 2p\ (^2P) + e \rightarrow 2s\ 2p^2\ np\ (^{2S+1}L) \quad (6)$$

$$2s\ 2p^2\ np\ (^{2S+1}L) \rightarrow 2s^2\ 2p^2\ (^{2S+1}L'). \quad (7)$$

The transition of (7) is through the radiative transition of A_r(np -> 2s). The value of A_r and ΣA_r are extrapolated from the calculated value of A_r(3p - 2s) as,

$$A_r(np \rightarrow 2s) = A_r(3p - 2s) \times (1/4-1/n^{**}2)^2/(1/4-1/9)^2\ /(n/3)^3. \quad (8)$$

$$\Sigma A_r\ (2s\ 2p2\ np) = A_r(np \rightarrow 2s)\ \Sigma A_r(3p)\ /A_r(3p - 2s). \quad (9)$$

The autoionization rate A_a is scaled as

$$A_a(2s\ 2p2\ np\ ) = A_a(2s\ 2p2\ 3p\ )/(n/3)^3. \quad (10)$$

The values Es is assumed to be constant. Then

$$\alpha_d(2s^2\ 2p^2\ ^{2S+1}L') = \Sigma_n\ \alpha_d(2s\ 2p^2\ np\ ^{2S+1}L - 2s^2\ 2p^2\ ^{2S+1}L') \quad (11)$$

The summation of eq.(11) has been done up to n = 30. The contribution at n = 10 is about 5%. The results are shown in Table IV and in Fig.1(a).

b) α_d ($1s^2\ 2s\ 2p^3$ (^{2S+1}L))

The main dielectronic recombination process to the $2s\ 2p^3$ excited states is,

$$2s^2\ 2p\ (^2P) + e \rightarrow 2s\ 2p^2\ ns, nd\ (^{2S+1}L) \quad (12)$$

$$2s\ 2p^2\ ns, nd\ (^{2S+1}L) \rightarrow 2s\ 2p^3\ (^{2S+1}L'). \quad (13)$$

We have obtained the values of A_r(ns, nd - 2p) with the same method as eq.(8) based on the value of A_r(3s, 3d - 2p). For A_a, the same extrapolation of eq.(10) is used. We have added the processes (12) and (13) up to n = 30. The results are shown in Table IV and in Fig.1(a).

c) α_d ($1s^2\ 2s^2\ 2pnl\ (^{2S+1}L)$)

The dielectronic recombination process to the $2s^2\ 2pnl$ excited states is,

$$2s^2\ 2p + e \quad \rightarrow \quad 2s\ 2p^2\ nl(\ ^{2S+1}L) \tag{14}$$

$$2s\ 2p^2\ nl\ (\ ^{2S+1}L) \quad \rightarrow \quad 2s^2\ 2pnl\ (\ ^{2S+1}L'). \tag{15}$$

The calculated results for n = 3 levels are given in Table IV and Fig.1(b).

In order to obtain the values for n > 3, we have used the radiative transition $A_r(\ 2s\ 2p^2\ 3l - 2s^2\ 2p\ 3l\ )$ as,

$$A_r(2s\ 2p^2\ nl \rightarrow 2s^2\ 2p\ nl) = A_r(2s\ 2p^2\ 3l - 2s^2\ 2p\ 3l) = \text{constant}. \tag{16}$$

$$\Sigma A_r(2s\ 2p^2\ nl\ ) = \Sigma A_r(2s\ 2p^2\ 3l) = \text{constant} \tag{17}$$

The autoionization rate A_a is scales as,

$$A_a(2s\ 2p^2\ nl) = A_a(2s\ 2p^2\ 3l)/(n/3)^3\ . \tag{18}$$

The values Es is assumed to be constant as those with n = 3.

4. Total dielectronic recombination rate coefficient

The total dielectronic recombination rate coefficient is obtained by the sum of all the levels,

$$\alpha_d^t = 3.3 \times 10^{-24}(I_H/T_e)^{3/2}\Sigma k_{J'}\Sigma s_J(F2(s_J - k_{J'}))\exp(-Es(1-s_J)/Te)$$
$$=\Sigma_{S,L}\Sigma_{J'}\Sigma_n \alpha_d (1s^2\ 2s^2\ 2pnl\ ^{2S+1}L_{J'}) + \alpha_d (1s^2\ 2s^2\ 2p^2) + \alpha_d (1s^2\ 2s\ 2p^3) \quad (19)$$

The summation in eq.(19) is done up to n = 500 to obtain the total dielectronic recombination rate coefficient. In Fig.2, α_d ($1s^2\ 2s^2\ 2pns\ ^3P$) is plotted against the principal quantum number n. The contribution of n = 500 is smaller than that of n = 10 by more than two orders of the magnitude in the case of α_d ($1s^2\ 2s^2\ 2pns\ ^3P$). The calculated total dielectronic recombination rate coefficient is shown in Fig. 3 with other calculations by Badnell and Pindzola(1989) and Ramadan and Hahn(1989). The agreement is better with Ramadan and Hahn (1989) than Badnell and Pindzola (1989) and the differences with Badnell and Pindzola (1989) are within 20 % around 3 - 10 eV.

5. The parametrization of the dielectronic recombination rate coefficients

It is convenient to give the rate coefficients in analytical formulae for the use in the various application codes. We have fitted the rate coefficients in the following formula,

$$\alpha_d(k) = \Sigma_i\ A_i \exp(-E_i/T_e)T_e^{-3/2} \qquad cm^3\ s^{-1} \qquad (20)$$

where E_i and T_e are in eV. The fitting parameters for each excited states are listed in Table V.

6. Contribution of the satellite lines to the line spectra

The dielectronic recombination process produce the satellite lines. Since the main contribution come from the high n levels, the satellite lines appear near the line center of the main lines produced by excitation. In the high density plasmas, the level of the thermal limit $n_{th} = 9$ for $n_e = 10^{10}$ cm^{-3} and $n_{th} = 5$ for $n_e = 10^{12}$ cm^{-3} at $T_e = 20$ eV. Then the satellite lines might be disappeared in the plasmas where the electron density is larger than 10^{10} cm^{-3}, although the satellite contribution is not negligible at low densities.

7. Effective recombination rate coefficient of Carbon atom

In plasmas, there are three kinds of recombination processes; the radiative, dielectronic and three body recombination. For the recombination of C II to C I, the dielectronic recombination is the most dominant process for $T_e > 1$ eV at low densities. We constructed a collisional radiative model for carbon atom including the levels up to n = 4 and derived the effective emission and ionization rate coefficients (Ohkouchi et al(1993), Sasaki et al(1994)) for an ionizing plasma. In this paper we have derived the effective recombination rate coefficients using the dielectronic recombination rate coefficients to the excited states obtained in the previous sections. We have calculated the effective recombination by the following formula,

$$\alpha_{eff} \equiv \Sigma_i (A_{i1} + C_{i1}) n(i) + \alpha_t(1) n_e + \alpha_r(1) + \alpha_d(1), \qquad (21)$$

where A_{i1} and C_{i1} are the radiative transition probability and the de-excitation rate coefficients from i to 1 level, n(i) the population density of i level, $\alpha_t(1)$, $\alpha_r(1)$ and $\alpha_d(1)$ are the three body, radiative and dielectronic recombination to the ground state 1, respectively.

The effective recombination rate coefficients depend on the electron density very much since the electron is captured to the high n levels through dielectronic

recombination. In Fig. 4, the effective recombination rate coefficients including the radiative, three body and dielectronic recombination are plotted as a function of electron temperature for the several electron densities. The decrease of the rate coefficient at medium densities is due to the dielectronic recombination and the increase of the rate coefficients at high density of 10^{18} cm^{-3} is due to the three body recombination.

The dielectronic recombination process is also sensitive to the electric field. An electric field increases the rate coefficients due to the Stark mixing at high n levels but on the other hand decreases due to the field ionization (e.g. Reisenfield 1992). Then we have to take into account this effect as well as the density effect in plasmas. This microfield effect is most dominant around $n_e = 10^8$ cm^{-3} (Reisenfield (1992)) and the collisional effect is more significant than the microfield for $n_e > 10^{10}$ cm^{-3}.

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Table I
Energy levels of C I

No. for CF

1 1s2 2s2 2p2	2 1s2 2s 2p3	3 1s2 2p4
4 1s2 2s2 2p 3s	5 1s2 2s2 2p 3p	6 1s2 2s2 2p 3d
7 1s2 2s 2p2 3s	8 1s2 2s 2p2 3p	9 1s2 2s 2p2 3d
10 1s2 2p3 3s	11 1s2 2p3 3p	12 1s2 2p3 3d

K	CF	2S+1	L	2J	EK(Ryd)	EK(eV)
1	1	3	1	0	0.000000	0.00000
2	1	3	1	2	0.000148	0.00201
3	1	3	1	4	0.000393	0.00534
4	1	1	2	4	0.112092	1.52445
5	1	1	0	0	0.185999	2.52958
6	2	5	0	4	0.222639	3.02789
7	4	3	1	0	0.534559	7.27000
8	4	3	1	2	0.534819	7.27353
9	4	3	1	4	0.535356	7.28084
10	4	1	1	2	0.559419	7.60809
11	5	1	1	2	0.606978	8.25490
12	2	3	2	2	0.609801	8.29329
13	2	3	2	4	0.609815	8.29348
14	2	3	2	6	0.609839	8.29381
15	5	3	2	2	0.613949	8.34970
16	5	3	2	4	0.614227	8.35348
17	5	3	2	6	0.614666	8.35945
18	5	3	0	2	0.623317	8.47711
19	5	3	1	0	0.645719	8.78177
20	5	3	1	2	0.645871	8.78384
21	5	3	1	4	0.646149	8.78762
22	5	1	2	4	0.665928	9.05662
23	2	3	1	4	0.694013	9.43857
24	2	3	1	2	0.694263	9.44197
25	2	3	1	0	0.694368	9.44340
26	5	1	0	0	0.694599	9.44654
27	6	1	2	4	0.695190	9.45458
28	6	3	3	4	0.699071	9.50736
29	6	3	3	6	0.699301	9.51049
30	6	3	3	8	0.699699	9.51590
31	6	3	2	2	0.702014	9.54739
32	6	3	2	4	0.702138	9.54907
33	6	3	2	6	0.702259	9.55072
34	6	1	3	6	0.705625	9.59650
35	6	1	1	2	0.707635	9.62383
36	6	3	1	4	0.732403	9.96068
37	6	3	1	2	0.732437	9.96114

K	CF	2S+1	L	2J	EK(Ryd)	EK(eV)
38	6	3	1	0	0.732453	9.96136
39	7	5	1	2	0.940230	12.78712
40	7	5	1	4	0.940509	12.79092
41	7	5	1	6	0.940927	12.79660
42	8	3	0	2	0.994691	13.52779
43	7	3	1	0	1.002556	13.63476
44	7	3	1	2	1.002785	13.63787
45	7	3	1	4	1.003239	13.64405
46	8	5	2	0	1.021727	13.89548
47	8	5	2	2	1.021801	13.89649
48	8	5	2	4	1.021949	13.89850
49	8	5	2	6	1.022174	13.90156
50	8	5	2	8	1.022479	13.90571
51	8	5	1	2	1.028840	13.99222
52	8	5	1	4	1.028991	13.99427
53	8	5	1	6	1.029218	13.99736
54	2	1	2	4	1.057639	14.38389
55	8	3	2	2	1.068410	14.53037
56	8	3	2	4	1.068637	14.53346
57	8	3	2	6	1.068980	14.53812
58	8	5	0	4	1.081665	14.71064
59	8	3	1	0	1.086484	14.77618
60	8	3	1	2	1.086583	14.77753
61	8	3	1	4	1.086781	14.78022
62	9	3	1	4	1.113051	15.13749
63	9	5	3	2	1.113099	15.13814
64	9	5	3	4	1.113188	15.13935
65	9	3	1	2	1.113287	15.14070
66	9	5	3	6	1.113324	15.14120
67	9	3	1	0	1.113408	15.14234
68	9	5	3	8	1.113512	15.14376
69	9	5	3	10	1.113757	15.14709
70	9	5	1	6	1.114289	15.15433
71	9	5	1	4	1.114502	15.15722
72	9	5	1	2	1.114650	15.15924
73	9	5	2	0	1.117692	15.20061
74	9	5	2	2	1.117725	15.20106
75	9	5	2	4	1.117783	15.20184
76	9	5	2	6	1.117854	15.20281
77	9	5	2	8	1.117923	15.20375
78	9	3	3	4	1.118391	15.21011
79	9	3	3	6	1.118626	15.21331
80	9	3	3	8	1.118952	15.21774

K	CF	2S+1	L	2J	EK(Ryd)	EK(eV)
81	9	3	2	2	1.123912	15.28520
82	9	3	2	4	1.123999	15.28638
83	9	3	2	6	1.124113	15.28793
84	2	3	0	2	1.150613	15.64833
85	2	1	1	2	1.164322	15.83478
86	7	3	2	2	1.285773	17.48651
87	7	3	2	4	1.285773	17.48651
88	7	3	2	6	1.285773	17.48651
89	7	1	2	4	1.324138	18.00827
90	8	3	3	4	1.364521	18.55748
91	8	3	3	6	1.364542	18.55777
92	8	3	3	8	1.364571	18.55816
93	8	1	3	6	1.382015	18.79540
94	8	3	2	2	1.386552	18.85710
95	8	3	2	4	1.386555	18.85714
96	8	3	2	6	1.386559	18.85720
97	8	3	1	4	1.393825	18.95602
98	8	3	1	2	1.393829	18.95607
99	8	3	1	0	1.393830	18.95608
100	8	1	2	4	1.395392	18.97733
101	8	1	1	2	1.411004	19.18965
102	7	3	0	2	1.440832	19.59531
103	9	1	2	4	1.443810	19.63581
104	9	3	3	8	1.446456	19.67180
105	9	3	3	6	1.446456	19.67180
106	9	3	3	4	1.446456	19.67180
107	9	1	3	6	1.447501	19.68601
108	9	3	2	2	1.449740	19.71646
109	9	3	2	4	1.449741	19.71647
110	9	3	2	6	1.449743	19.71650
111	9	3	4	6	1.450915	19.73244
112	9	3	4	8	1.450917	19.73247
113	9	3	4	10	1.450918	19.73248
114	9	1	4	8	1.451867	19.74539
115	9	1	0	0	1.453509	19.76772
116	9	3	1	0	1.455102	19.78938
117	9	3	1	2	1.455104	19.78941
118	9	3	1	4	1.455107	19.78945
119	9	1	1	2	1.455529	19.79519
120	9	3	0	2	1.469931	19.99106
121	7	1	0	0	1.488252	20.24022
122	8	3	1	0	1.542955	20.98419
123	8	3	1	2	1.542980	20.98452
124	8	3	1	4	1.543029	20.98519

K	CF	2S+1	L	2J	EK(Ryd)	EK(eV)
125	3	3	1	4	1.545023	21.01231
126	3	3	1	2	1.545541	21.01936
127	3	3	1	0	1.545798	21.02285
128	8	1	1	2	1.554862	21.14612
129	9	1	2	4	1.614207	21.95321
130	9	3	2	6	1.615525	21.97114
131	9	3	2	4	1.615526	21.97115
132	9	3	2	2	1.615526	21.97115
133	7	3	1	0	1.624190	22.08898
134	7	3	1	2	1.624369	22.09141
135	7	3	1	4	1.624737	22.09642
136	7	1	1	2	1.642971	22.34440
137	3	1	2	4	1.669129	22.70015
138	8	1	0	0	1.682478	22.88170
139	8	3	2	2	1.702514	23.15419
140	8	3	2	4	1.702704	23.15677
141	8	3	2	6	1.702999	23.16078
142	8	3	1	0	1.710794	23.26679
143	8	3	1	2	1.710882	23.26799
144	8	3	1	4	1.711065	23.27048
145	8	3	0	2	1.737261	23.62675
146	8	1	2	4	1.739206	23.65320
147	8	1	1	2	1.756381	23.88678
148	9	3	3	4	1.784025	24.26273
149	9	3	3	6	1.784201	24.26513
150	9	3	3	8	1.784466	24.26873
151	9	1	1	2	1.785179	24.27843
152	9	3	1	4	1.787895	24.31537
153	9	3	1	2	1.788105	24.31823
154	9	3	1	0	1.788213	24.31969
155	9	1	3	6	1.788472	24.32322
156	9	3	2	2	1.789117	24.33199
157	9	3	2	4	1.789184	24.33290
158	9	3	2	6	1.789270	24.33407
159	9	1	2	4	1.795304	24.41613
160	10	5	0	4	1.897224	25.80224
161	3	1	0	0	1.921786	26.13629
162	10	3	0	2	1.958023	26.62911
163	11	5	1	2	1.976522	26.88069
164	11	5	1	4	1.976543	26.88098
165	11	5	1	6	1.976575	26.88142
166	11	3	1	4	2.013141	27.37871
167	11	3	1	2	2.013141	27.37871
168	11	3	1	0	2.013143	27.37874
169	12	5	2	0	2.065594	28.09207

K	CF	2S+1	L	2J	EK(Ryd)	EK(eV)
170	12	5	2	2	2.065594	28.09207
171	12	5	2	4	2.065595	28.09209
172	12	5	2	6	2.065596	28.09210
173	12	5	2	8	2.065597	28.09212
174	12	3	2	2	2.069319	28.14274
175	12	3	2	4	2.069326	28.14283
176	12	3	2	6	2.069337	28.14298
177	10	3	2	6	2.079037	28.27490
178	10	3	2	4	2.079039	28.27493
179	10	3	2	2	2.079042	28.27497
180	10	1	2	4	2.104375	28.61949
181	11	3	2	2	2.143013	29.14497
182	11	3	2	4	2.143040	29.14534
183	11	3	2	6	2.143077	29.14584
184	11	1	1	2	2.145537	29.17930
185	11	3	3	4	2.147240	29.20246
186	11	3	3	6	2.147262	29.20276
187	11	3	3	8	2.147291	29.20315
188	11	1	3	6	2.152563	29.27485
189	11	3	1	0	2.197041	29.87975
190	11	3	1	2	2.197059	29.88000
191	11	3	1	4	2.197095	29.88049
192	11	1	2	4	2.225322	30.26438
193	12	3	1	4	2.227506	30.29408
194	12	3	1	2	2.227513	30.29417
195	12	3	1	0	2.227516	30.29421
196	12	1	1	2	2.230339	30.33261
197	12	3	3	4	2.230705	30.33758
198	12	3	3	6	2.230717	30.33775
199	12	3	3	8	2.230733	30.33796
200	12	3	4	6	2.230994	30.34151
201	12	3	4	8	2.230996	30.34154
202	12	3	4	10	2.230998	30.34157
203	12	1	4	8	2.231531	30.34882
204	12	1	0	0	2.231741	30.35167
205	12	3	2	6	2.233142	30.37073
206	12	3	2	4	2.233154	30.37089
207	12	3	2	2	2.233162	30.37100
208	12	1	3	6	2.238315	30.44108
209	12	1	2	4	2.239174	30.45276
210	12	3	0	2	2.239298	30.45445
211	10	3	1	0	2.256314	30.68587
212	10	3	1	2	2.256315	30.68588

K	CF	2S+1	L	2J	EK(Ryd)	EK(eV)
213	10	3	1	4	2.256315	30.68588
214	10	1	1	2	2.279213	30.99729
215	11	3	0	2	2.313385	31.46203
216	11	3	2	2	2.317800	31.52208
217	11	3	2	4	2.317817	31.52231
218	11	3	2	6	2.317841	31.52263
219	11	1	1	2	2.323944	31.60564
220	11	3	1	4	2.347503	31.92604
221	11	3	1	2	2.347557	31.92677
222	11	3	1	0	2.347584	31.92714
223	11	1	2	4	2.355225	32.03106
224	12	3	3	4	2.402101	32.66857
225	12	3	3	6	2.402102	32.66858
226	12	3	3	8	2.402104	32.66861
227	12	3	1	0	2.403670	32.68991
228	12	3	1	2	2.403680	32.69004
229	12	3	1	4	2.403702	32.69035
230	12	1	2	4	2.404138	32.69627
231	12	3	2	2	2.405151	32.71005
232	12	3	2	4	2.405163	32.71021
233	12	3	2	6	2.405178	32.71042
234	12	1	3	6	2.406098	32.72293
235	12	1	1	2	2.411797	32.80044
236	11	1	0	0	2.427279	33.01099

Table II
Energy levels of C II

No. for CF

1 1s2 2s2 2p	2 1s2 2s 2p2	3 1s2 2p3
4 1s2 2s2 3s	5 1s2 2s2 3p	6 1s2 2s2 3d
7 1s2 2s 2p 3s	8 1s2 2s 2p 3p	9 1s2 2s 2p 3p
10 1s2 2s 2p 3s	11 1s2 2p2 3p	12 1s2 2p2 3d

K	CF	2S+1	L	2J	EK(RY)	EK(eV)
1	1	2	1	1	0.000000	0.00000
2	1	2	1	3	0.000596	0.00810
3	2	4	1	1	0.352051	4.78789
4	2	4	1	3	0.352430	4.79304
5	2	4	1	5	0.353059	4.80160
6	2	2	2	3	0.727295	9.89121
7	2	2	2	5	0.727323	9.89159
8	2	2	0	1	0.909708	12.37202
9	4	2	0	1	1.032552	14.04270
10	2	2	1	1	1.089171	14.81272
11	2	2	1	3	1.089911	14.82279
12	5	2	1	1	1.163470	15.82319
13	5	2	1	3	1.163639	15.82549
14	3	4	0	3	1.277370	17.37223
15	6	2	2	3	1.294637	17.60706
16	6	2	2	5	1.294661	17.60739
17	3	2	2	3	1.446207	19.66841
18	3	2	2	5	1.446241	19.66887
19	7	4	1	1	1.513824	20.58800
20	7	4	1	3	1.514185	20.59291
21	7	4	1	5	1.514790	20.60114
22	7	2	1	1	1.576378	21.43874
23	7	2	1	3	1.576932	21.44627
24	8	4	2	1	1.641178	22.32002
25	8	4	2	3	1.641394	22.32296
26	8	4	2	5	1.641752	22.32782
27	8	4	2	7	1.642251	22.33461
28	8	2	1	1	1.654140	22.49630
29	8	2	1	3	1.654419	22.50009
30	8	4	0	3	1.665700	22.65352
31	3	2	1	1	1.676361	22.79851
32	3	2	1	3	1.676466	22.79993
33	8	4	1	1	1.716582	23.34551
34	8	4	1	3	1.716785	23.34827
35	8	4	1	5	1.717115	23.35276
36	8	2	2	3	1.739849	23.66194
37	8	2	2	5	1.740473	23.67043
38	9	4	3	3	1.787795	24.31401

K	CF	2S+1	L	2J	EK(RY)	EK(eV)
39	9	4	3	5	1.787998	24.31677
40	9	4	3	7	1.788287	24.32070
41	9	4	3	9	1.788670	24.32591
42	8	2	0	1	1.794913	24.41081
43	9	4	2	1	1.796417	24.43127
44	9	4	2	3	1.796482	24.43215
45	9	4	2	5	1.796594	24.43368
46	9	4	2	7	1.796755	24.43586
47	9	4	1	5	1.812362	24.64812
48	9	4	1	3	1.812653	24.65208
49	9	4	1	1	1.812823	24.65439
50	9	2	2	3	1.820775	24.76254
51	9	2	2	5	1.820935	24.76471
52	9	2	3	5	1.838957	25.00981
53	9	2	3	7	1.839548	25.01785
54	9	2	1	3	1.875280	25.50380
55	9	2	1	1	1.875566	25.50769
56	7	2	1	1	2.031050	27.62228
57	7	2	1	3	2.031099	27.62294
58	8	2	2	3	2.172404	29.54469
59	8	2	2	5	2.172440	29.54518
60	8	2	1	1	2.181411	29.66719
61	8	2	1	3	2.181552	29.66910
62	8	2	0	1	2.207921	30.02772
63	9	2	3	7	2.293751	31.19501
64	9	2	3	5	2.293760	31.19513
65	9	2	2	3	2.301921	31.30612
66	9	2	2	5	2.301962	31.30668
67	9	2	1	1	2.329142	31.67633
68	9	2	1	3	2.329183	31.67689
69	10	4	1	1	2.345039	31.89253
70	10	4	1	3	2.345402	31.89746
71	10	4	1	5	2.346006	31.90568
72	11	2	0	1	2.427931	33.01986
73	10	2	1	1	2.436309	33.13380
74	10	2	1	3	2.437005	33.14326
75	11	4	2	1	2.453460	33.36705
76	11	4	2	3	2.453671	33.36992
77	11	4	2	5	2.454026	33.37475
78	11	4	2	7	2.454524	33.38152
79	11	4	1	1	2.471002	33.60562
80	11	4	1	3	2.471212	33.60848
81	11	4	1	5	2.471566	33.61329

K	CF	2S+1	L	2J	EK(RY)	EK(eV)
82	11	2	2	3	2.504112	34.05592
83	11	2	2	5	2.504797	34.06523
84	10	2	2	3	2.505060	34.06881
85	10	2	2	5	2.505083	34.06913
86	11	2	1	3	2.542471	34.57760
87	11	2	1	1	2.542504	34.57805
88	11	4	0	3	2.557096	34.77650
89	12	4	3	3	2.586063	35.17045
90	12	4	3	5	2.586268	35.17324
91	12	4	3	7	2.586558	35.17719
92	12	4	3	9	2.586934	35.18230
93	12	2	1	3	2.603216	35.40373
94	12	2	1	1	2.603689	35.41017
95	12	4	2	1	2.605876	35.43991
96	12	4	2	3	2.605910	35.44037
97	12	4	2	5	2.605996	35.44154
98	12	4	2	7	2.606160	35.44377
99	11	2	3	5	2.612086	35.52437
100	11	2	3	7	2.612225	35.52626
101	12	4	1	5	2.614402	35.55587
102	12	4	1	3	2.614689	35.55977
103	12	4	1	1	2.614855	35.56203
104	12	2	3	5	2.621489	35.65225
105	12	2	3	7	2.622195	35.66185
106	12	2	2	3	2.664360	36.23529
107	12	2	2	5	2.664550	36.23788
108	11	2	2	5	2.673757	36.36309
109	11	2	2	3	2.673845	36.36429
110	11	2	1	1	2.715622	36.93246
111	11	2	1	3	2.716002	36.93763
112	12	2	4	7	2.735472	37.20241
113	12	2	4	9	2.735497	37.20275
114	12	2	3	7	2.737220	37.22619
115	12	2	3	5	2.737342	37.22785
116	12	2	2	3	2.748505	37.37966
117	12	2	2	5	2.748578	37.38066
118	12	2	0	1	2.755180	37.47044
119	12	2	1	1	2.783493	37.85550
120	12	2	1	3	2.783639	37.85749
121	10	2	0	1	2.848705	38.74239
122	11	2	1	1	2.948573	40.10059
123	11	2	1	3	2.948602	40.10098
124	12	2	2	5	3.056098	41.56293
125	12	2	2	3	3.056141	41.563519

TableIII

Atomic data for dielectronic recombination

K_J.	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
1	42	3	0.4828E+10	0.2440E+10	0.2695E+09	0.8951E+08	0.3576E+01
1	55	3	0.2260E+15	0.1948E+09	0.8027E+08	0.4013E+08	0.4579E+01
1	60	3	0.2780E+15	0.6910E+08	0.4873E+07	0.2436E+07	0.4826E+01
1	84	3	0.3495E+12	0.6368E+10	0.7039E+09	0.3457E+09	0.5697E+01
1	85	3	0.4544E+15	0.6690E+10	0.4697E+06	0.2348E+06	0.5883E+01
1	94	3	0.1340E+14	0.7998E+09	0.1411E+07	0.7055E+06	0.8906E+01
1	98	3	0.1606E+14	0.8930E+09	0.6456E+07	0.3228E+07	0.9005E+01
1	123	3	0.4954E+14	0.2725E+10	0.4081E+07	0.2040E+07	0.1103E+02
1	139	3	0.1539E+14	0.6136E+10	0.1990E+07	0.9946E+06	0.1320E+02
1	143	3	0.1259E+14	0.6485E+10	0.6894E+07	0.3445E+07	0.1332E+02
1	145	3	0.1197E+11	0.6096E+10	0.8686E+06	0.2878E+06	0.1368E+02
1	162	3	0.3594E+07	0.7003E+10	0.4331E+07	0.1111E+04	0.1668E+02
1	174	3	0.6792E+11	0.4807E+10	0.4788E+08	0.2236E+08	0.1819E+02
1	179	3	0.2045E+13	0.3241E+10	0.2614E+07	0.1305E+07	0.1832E+02
1	194	3	0.4899E+11	0.3347E+10	0.2688E+08	0.1258E+08	0.2034E+02
1	207	3	0.4125E+11	0.2280E+10	0.2852E+08	0.1351E+08	0.2042E+02
1	210	3	0.1197E+07	0.2803E+10	0.1942E+08	0.4145E+04	0.2050E+02
1	212	3	0.1180E+13	0.3606E+10	0.6002E+07	0.2992E+07	0.2073E+02
1	228	3	0.4125E+11	0.4418E+10	0.1668E+08	0.7533E+07	0.2274E+02
1	231	3	0.2197E+12	0.4360E+10	0.3559E+08	0.1745E+08	0.2276E+02
2	122	1	0.4950E+14	0.2726E+10	0.1238E+08	0.2063E+07	0.1103E+02
2	60	3	0.2780E+15	0.6910E+08	0.3691E+07	0.1845E+07	0.4826E+01
2	123	3	0.4954E+14	0.2725E+10	0.3094E+07	0.1547E+07	0.1103E+02
2	124	5	0.4963E+14	0.2723E+10	0.3039E+07	0.2532E+07	0.1103E+02
2	61	5	0.2778E+15	0.6891E+08	0.3907E+07	0.3256E+07	0.4829E+01
2	139	3	0.1539E+14	0.6136E+10	0.1328E+07	0.6637E+06	0.1320E+02
2	140	5	0.1538E+14	0.6137E+10	0.2666E+07	0.2221E+07	0.1321E+02
2	142	1	0.1264E+14	0.6484E+10	0.2120E+08	0.3532E+07	0.1332E+02
2	55	3	0.2260E+15	0.1948E+09	0.5961E+08	0.2980E+08	0.4579E+01
2	143	3	0.1259E+14	0.6485E+10	0.5333E+07	0.2665E+07	0.1332E+02
2	144	5	0.1250E+14	0.6488E+10	0.5133E+07	0.4275E+07	0.1332E+02
2	84	3	0.3495E+12	0.6368E+10	0.2112E+10	0.1037E+10	0.5697E+01
2	145	3	0.1197E+11	0.6096E+10	0.2534E+07	0.8395E+06	0.1368E+02
2	56	5	0.2258E+15	0.1950E+09	0.1085E+09	0.9042E+08	0.4582E+01
2	162	3	0.3594E+07	0.7003E+10	0.1299E+08	0.3332E+04	0.1668E+02
2	85	3	0.4544E+15	0.6690E+10	0.1668E+07	0.8340E+06	0.5883E+01
2	174	3	0.6792E+11	0.4807E+10	0.3586E+08	0.1674E+08	0.1819E+02
2	175	5	0.6779E+11	0.4809E+10	0.6462E+08	0.5028E+08	0.1819E+02
2	178	5	0.2045E+13	0.3239E+10	0.3512E+07	0.2922E+07	0.1832E+02
2	59	1	0.2781E+15	0.6893E+08	0.1713E+08	0.2855E+07	0.4825E+01
2	179	3	0.2045E+13	0.3241E+10	0.1967E+07	0.9819E+06	0.1832E+02
2	193	5	0.4880E+11	0.3346E+10	0.2015E+08	0.1571E+08	0.2034E+02
2	94	3	0.1340E+14	0.7998E+09	0.1093E+07	0.5465E+06	0.8906E+01
2	194	3	0.4899E+11	0.3347E+10	0.2014E+08	0.9426E+07	0.2034E+02
2	195	1	0.4908E+11	0.3348E+10	0.8097E+08	0.1263E+08	0.2034E+02
2	206	5	0.4162E+11	0.2280E+10	0.3839E+08	0.3033E+08	0.2042E+02
2	95	5	0.1341E+14	0.7990E+09	0.1901E+07	0.1584E+07	0.8906E+01
2	207	3	0.4125E+11	0.2280E+10	0.2144E+08	0.1016E+08	0.2042E+0

K_J	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
2	97	5	0.1627E+14	0.8914E+09	0.4823E+07	0.4019E+07	0.9005E+01
2	210	3	0.1197E+07	0.2803E+10	0.5812E+08	0.1240E+05	0.2050E+02
2	211	1	0.1180E+13	0.3605E+10	0.1802E+08	0.2994E+07	0.2073E+02
2	42	3	0.4828E+10	0.2440E+10	0.8084E+09	0.2685E+09	0.3576E+01
2	212	3	0.1180E+13	0.3606E+10	0.4484E+07	0.2235E+07	0.2073E+02
2	213	5	0.1180E+13	0.3607E+10	0.4457E+07	0.3703E+07	0.2073E+02
2	227	1	0.4101E+11	0.4420E+10	0.4910E+08	0.7387E+07	0.2274E+02
2	98	3	0.1606E+14	0.8930E+09	0.4808E+07	0.2404E+07	0.9005E+01
2	228	3	0.4125E+11	0.4418E+10	0.1199E+08	0.5415E+07	0.2274E+02
2	229	5	0.4178E+11	0.4417E+10	0.1286E+08	0.9692E+07	0.2274E+02
2	99	1	0.1606E+14	0.8938E+09	0.1927E+08	0.3211E+07	0.9005E+01
2	231	3	0.2197E+12	0.4360E+10	0.2721E+08	0.1334E+08	0.2276E+02
2	232	5	0.2196E+12	0.4359E+10	0.4817E+08	0.3936E+08	0.2276E+02
3	177	7	0.2044E+13	0.3238E+10	0.4659E+07	0.5427E+07	0.1832E+02
3	95	5	0.1341E+14	0.7990E+09	0.6760E+06	0.5633E+06	0.8906E+01
3	178	5	0.2045E+13	0.3239E+10	0.1180E+07	0.9818E+06	0.1832E+02
3	96	7	0.1342E+14	0.7978E+09	0.2568E+07	0.2996E+07	0.8906E+01
3	42	3	0.4828E+10	0.2440E+10	0.1348E+10	0.4477E+09	0.3576E+01
3	179	3	0.2045E+13	0.3241E+10	0.1322E+06	0.6600E+05	0.1832E+02
3	140	5	0.1538E+14	0.6137E+10	0.6954E+06	0.5793E+06	0.1321E+02
3	193	5	0.4880E+11	0.3346E+10	0.6054E+08	0.4721E+08	0.2034E+02
3	141	7	0.1537E+14	0.6139E+10	0.3312E+07	0.3862E+07	0.1321E+02
3	97	5	0.1627E+14	0.8914E+09	0.1431E+08	0.1192E+08	0.9005E+01
3	194	3	0.4899E+11	0.3347E+10	0.3386E+08	0.1585E+08	0.2034E+02
3	84	3	0.3495E+12	0.6368E+10	0.3522E+10	0.1729E+10	0.5697E+01
3	205	7	0.4218E+11	0.2282E+10	0.5100E+08	0.5645E+08	0.2042E+02
3	56	5	0.2258E+15	0.1950E+09	0.3541E+08	0.2951E+08	0.4582E+01
3	206	5	0.4162E+11	0.2280E+10	0.1285E+08	0.1015E+08	0.2042E+02
3	143	3	0.1259E+14	0.6485E+10	0.8991E+07	0.4493E+07	0.1332E+02
3	98	3	0.1606E+14	0.8930E+09	0.7969E+07	0.3984E+07	0.9005E+01
3	207	3	0.4125E+11	0.2280E+10	0.1435E+07	0.6799E+06	0.2042E+02
3	144	5	0.1250E+14	0.6488E+10	0.1611E+08	0.1342E+08	0.1332E+02
3	60	3	0.2780E+15	0.6910E+08	0.8752E+07	0.4376E+07	0.4826E+01
3	210	3	0.1197E+07	0.2803E+10	0.9644E+08	0.2058E+05	0.2050E+02
3	85	3	0.4544E+15	0.6690E+10	0.2452E+07	0.1226E+07	0.5883E+01
3	145	3	0.1197E+11	0.6096E+10	0.3987E+07	0.1321E+07	0.1368E+02
3	57	7	0.2255E+15	0.1952E+09	0.1441E+09	0.1681E+09	0.4587E+01
3	212	3	0.1180E+13	0.3606E+10	0.7439E+07	0.3708E+07	0.2073E+02
3	61	5	0.2778E+15	0.6891E+08	0.1339E+08	0.1116E+08	0.4829E+01
3	213	5	0.1180E+13	0.3607E+10	0.1328E+08	0.1103E+08	0.2073E+02
3	162	3	0.3594E+07	0.7003E+10	0.2165E+08	0.5553E+04	0.1668E+02
3	123	3	0.4954E+14	0.2725E+10	0.5175E+07	0.2587E+07	0.1103E+02
3	55	3	0.2260E+15	0.1948E+09	0.3881E+07	0.1940E+07	0.4579E+01
3	228	3	0.4125E+11	0.4418E+10	0.2060E+08	0.9304E+07	0.2274E+02
3	174	3	0.6792E+11	0.4807E+10	0.2385E+07	0.1114E+07	0.1819E+02
3	229	5	0.4178E+11	0.4417E+10	0.3675E+08	0.2770E+08	0.2274E+02
3	124	5	0.4963E+14	0.2723E+10	0.9258E+07	0.7715E+07	0.1103E+02
3	175	5	0.6779E+11	0.4809E+10	0.2149E+08	0.1672E+08	0.1819E+02
3	231	3	0.2197E+12	0.4360E+10	0.1885E+07	0.9242E+06	0.2276E+02
3	176	7	0.6758E+11	0.4810E+10	0.8608E+08	0.9375E+08	0.1819E+02
3	232	5	0.2196E+12	0.4359E+10	0.1669E+08	0.1364E+08	0.2276E+02

K_J,	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
3	233	7	0.2198E+12	0.4357E+10	0.6519E+08	0.7458E+08	0.2276E+02
4	180	5	0.1422E+14	0.2756E+10	0.2338E+08	0.1948E+08	0.1867E+02
4	214	3	0.1841E+13	0.4730E+10	0.1769E+06	0.8822E+05	0.2105E+02
4	128	3	0.5102E+13	0.2960E+10	0.2860E+08	0.1429E+08	0.1119E+02
4	146	5	0.1723E+15	0.5717E+10	0.5012E+07	0.4177E+07	0.1370E+02
4	208	7	0.5572E+12	0.2251E+10	0.1358E+09	0.1578E+09	0.2049E+02
4	209	5	0.4151E+12	0.2614E+10	0.1469E+09	0.1217E+09	0.2050E+02
4	147	3	0.1339E+15	0.6623E+10	0.1486E+09	0.7430E+08	0.1394E+02
4	93	7	0.3967E+14	0.1101E+10	0.1678E+09	0.1958E+09	0.8844E+01
4	230	5	0.3572E+11	0.4285E+10	0.9410E+07	0.7002E+07	0.2274E+02
4	84	3	0.3495E+12	0.6368E+10	0.3317E+07	0.1629E+07	0.5697E+01
4	54	5	0.2159E+16	0.4267E+10	0.4265E+10	0.3554E+10	0.4433E+01
4	196	3	0.7314E+12	0.2858E+10	0.5333E+08	0.2656E+08	0.2038E+02
4	85	3	0.4544E+15	0.6690E+10	0.5121E+10	0.2560E+10	0.5883E+01
4	100	5	0.1564E+15	0.7476E+09	0.1384E+06	0.1153E+06	0.9026E+01
4	101	3	0.5176E+14	0.8400E+09	0.9877E+08	0.4938E+08	0.9238E+01
4	234	7	0.4974E+12	0.4317E+10	0.8004E+08	0.9258E+08	0.2277E+02
4	235	3	0.1893E+11	0.4895E+10	0.2681E+07	0.1065E+07	0.2285E+02
5	147	3	0.1339E+15	0.6623E+10	0.2425E+08	0.1212E+08	0.1394E+02
5	85	3	0.4544E+15	0.6690E+10	0.1499E+10	0.7495E+09	0.5883E+01
5	101	3	0.5176E+14	0.8400E+09	0.6339E+08	0.3169E+08	0.9238E+01
5	84	3	0.3495E+12	0.6368E+10	0.9676E+06	0.4751E+06	0.5697E+01
5	196	3	0.7314E+12	0.2858E+10	0.3661E+06	0.1823E+06	0.2038E+02
5	214	3	0.1841E+13	0.4730E+10	0.1264E+08	0.6304E+07	0.2105E+02
5	128	3	0.5102E+13	0.2960E+10	0.2371E+08	0.1185E+08	0.1119E+02
5	235	3	0.1893E+11	0.4895E+10	0.1695E+09	0.6734E+08	0.2285E+02
6	74	3	0.1217E+10	0.5511E+08	0.1163E+06	0.5563E+05	0.5250E+01
6	75	5	0.3505E+10	0.5529E+08	0.2408E+06	0.1976E+06	0.5250E+01
6	76	7	0.9277E+10	0.5564E+08	0.2355E+06	0.2731E+06	0.5251E+01
6	40	5	0.1543E+10	0.1761E+09	0.1761E+09	0.1317E+09	0.2840E+01
6	39	3	0.8692E+09	0.1761E+09	0.1761E+09	0.7322E+08	0.2836E+01
6	41	7	0.2276E+08	0.1760E+09	0.1760E+09	0.2351E+08	0.2845E+01
6	163	3	0.2681E+07	0.5967E+10	0.3296E+08	0.7401E+04	0.1693E+02
6	164	5	0.4844E+07	0.5967E+10	0.3286E+08	0.2221E+05	0.1693E+02
6	165	7	0.9198E+06	0.5967E+10	0.3272E+08	0.5883E+04	0.1693E+02
6	62	5	0.1729E+13	0.1431E+09	0.1055E+06	0.8791E+05	0.5186E+01
6	70	7	0.2628E+09	0.6781E+08	0.4532E+08	0.4203E+08	0.5203E+01
6	71	5	0.3999E+10	0.6784E+08	0.4505E+08	0.3692E+08	0.5206E+01
6	72	3	0.2713E+10	0.6762E+08	0.4510E+08	0.2200E+08	0.5208E+01
7	156	3	0.3967E+13	0.6445E+10	0.1970E+08	0.9834E+07	0.1438E+02
7	215	3	0.1794E+12	0.4549E+10	0.1348E+07	0.6573E+06	0.2151E+02
7	216	3	0.3538E+12	0.4457E+10	0.3993E+06	0.1972E+06	0.2157E+02
7	221	3	0.8295E+12	0.4408E+10	0.5048E+07	0.2511E+07	0.2198E+02
7	120	3	0.6102E+13	0.1634E+10	0.8188E+08	0.4093E+08	0.1004E+02
7	44	3	0.3123E+15	0.2925E+09	0.1003E+08	0.5015E+07	0.3686E+01
7	132	3	0.5213E+13	0.2693E+10	0.1108E+08	0.5537E+07	0.1202E+02
7	134	3	0.1206E+14	0.5956E+10	0.1873E+10	0.9360E+09	0.1214E+02
7	136	3	0.5524E+14	0.6918E+10	0.3787E+06	0.1893E+06	0.1239E+02

K_J,	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
7	181	3	0.1813E+11	0.2155E+10	0.8172E+06	0.3652E+06	0.1919E+02
7	190	3	0.2972E+12	0.2317E+10	0.2757E+08	0.1368E+08	0.1993E+02
7	81	3	0.1660E+13	0.2147E+09	0.9884E+06	0.4941E+06	0.5334E+01
7	167	3	0.3217E+11	0.5691E+10	0.3740E+06	0.1589E+06	0.1743E+02
7	86	3	0.1827E+14	0.1070E+10	0.4360E+09	0.2180E+09	0.7535E+01
7	102	3	0.1762E+14	0.2452E+10	0.1978E+09	0.9889E+08	0.9644E+01
7	108	3	0.7489E+12	0.9532E+09	0.2422E+07	0.1209E+07	0.9765E+01
7	117	3	0.4812E+12	0.1047E+10	0.4870E+07	0.2430E+07	0.9838E+01
7	126	3	0.3238E+13	0.5001E+10	0.6119E+08	0.3055E+08	0.1107E+02
7	151	3	0.1454E+13	0.7167E+10	0.1294E+06	0.6438E+05	0.1433E+02
7	153	3	0.9593E+11	0.7294E+10	0.5753E+07	0.2673E+07	0.1437E+02
8	156	3	0.3967E+13	0.6445E+10	0.1842E+08	0.9195E+07	0.1438E+02
8	157	5	0.3940E+13	0.6451E+10	0.2703E+08	0.2249E+08	0.1438E+02
8	133	1	0.1205E+14	0.5955E+10	0.5627E+10	0.9374E+09	0.1214E+02
8	116	1	0.4812E+12	0.1047E+10	0.1457E+08	0.2423E+07	0.9838E+01
8	134	3	0.1206E+14	0.5956E+10	0.1404E+10	0.7017E+09	0.1214E+02
8	135	5	0.1207E+14	0.5958E+10	0.1407E+10	0.1172E+10	0.1215E+02
8	45	5	0.3122E+15	0.2926E+09	0.7539E+07	0.6282E+07	0.3693E+01
8	136	3	0.5524E+14	0.6918E+10	0.4419E+06	0.2209E+06	0.1239E+02
8	166	5	0.3182E+11	0.5691E+10	0.2790E+06	0.1972E+06	0.1743E+02
8	117	3	0.4812E+12	0.1047E+10	0.3642E+07	0.1817E+07	0.9838E+01
8	167	3	0.3217E+11	0.5691E+10	0.2760E+06	0.1173E+06	0.1743E+02
8	168	1	0.3236E+11	0.5692E+10	0.1136E+07	0.1610E+06	0.1743E+02
8	118	5	0.4812E+12	0.1046E+10	0.3641E+07	0.3028E+07	0.9838E+01
8	81	3	0.1660E+13	0.2147E+09	0.7496E+06	0.3748E+06	0.5334E+01
8	120	3	0.6102E+13	0.1634E+10	0.2439E+09	0.1219E+09	0.1004E+02
8	121	1	0.1191E+15	0.2289E+10	0.9108E+06	0.1518E+06	0.1029E+02
8	82	5	0.1662E+13	0.2147E+09	0.1321E+07	0.1101E+07	0.5335E+01
8	43	1	0.3123E+15	0.2926E+09	0.2997E+08	0.4995E+07	0.3683E+01
8	86	3	0.1827E+14	0.1070E+10	0.3256E+09	0.1628E+09	0.7535E+01
8	87	5	0.1827E+14	0.1069E+10	0.5881E+09	0.4901E+09	0.7535E+01
8	89	5	0.2437E+15	0.6289E+09	0.1417E+06	0.1181E+06	0.8057E+01
8	215	3	0.1794E+12	0.4549E+10	0.4097E+07	0.1998E+07	0.2151E+02
8	102	3	0.1762E+14	0.2452E+10	0.5907E+09	0.2953E+09	0.9644E+01
8	216	3	0.3538E+12	0.4457E+10	0.3026E+06	0.1494E+06	0.2157E+02
8	217	5	0.3536E+12	0.4456E+10	0.5414E+06	0.4456E+06	0.2157E+02
8	220	5	0.8341E+12	0.4409E+10	0.3829E+07	0.3174E+07	0.2197E+02
8	125	5	0.3264E+13	0.4998E+10	0.4548E+08	0.3784E+08	0.1106E+02
8	221	3	0.8295E+12	0.4408E+10	0.3790E+07	0.1885E+07	0.2198E+02
8	222	1	0.8271E+12	0.4407E+10	0.1503E+08	0.2492E+07	0.2198E+02
8	44	3	0.3123E+15	0.2925E+09	0.7468E+07	0.3734E+07	0.3686E+01
8	126	3	0.3238E+13	0.5001E+10	0.4609E+08	0.2301E+08	0.1107E+02
8	127	1	0.3226E+13	0.5003E+10	0.1844E+09	0.3069E+08	0.1107E+02
8	181	3	0.1813E+11	0.2155E+10	0.5933E+06	0.2651E+06	0.1919E+02
8	182	5	0.1818E+11	0.2155E+10	0.1098E+07	0.8180E+06	0.1919E+02
8	189	1	0.2990E+12	0.2316E+10	0.8272E+08	0.1368E+08	0.1993E+02
8	108	3	0.7489E+12	0.9532E+09	0.1822E+07	0.9098E+06	0.9765E+01
8	190	3	0.2972E+12	0.2317E+10	0.2070E+08	0.1027E+08	0.1993E+02
8	191	5	0.2938E+12	0.2316E+10	0.2060E+08	0.1703E+08	0.1993E+02
8	109	5	0.7493E+12	0.9525E+09	0.3267E+07	0.2719E+07	0.9765E+01
8	131	5	0.5221E+13	0.2690E+10	0.1490E+08	0.1241E+08	0.1202E+02

K_J,	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
8	152	5	0.1245E+12	0.7287E+10	0.5763E+07	0.4537E+07	0.1436E+02
8	115	1	0.9614E+13	0.1421E+10	0.1361E+06	0.2268E+05	0.9816E+01
8	153	3	0.9593E+11	0.7294E+10	0.7369E+06	0.3424E+06	0.1437E+02
8	154	1	0.2803E+09	0.7315E+10	0.8845E+07	0.5440E+05	0.1437E+02
8	132	3	0.5213E+13	0.2693E+10	0.8103E+07	0.4049E+07	0.1202E+02
9	86	3	0.1827E+14	0.1070E+10	0.2152E+08	0.1076E+08	0.7535E+01
9	153	3	0.9593E+11	0.7294E+10	0.3018E+07	0.1402E+07	0.1437E+02
9	136	3	0.5524E+14	0.6918E+10	0.3977E+06	0.1988E+06	0.1239E+02
9	155	7	0.1092E+14	0.5593E+10	0.1339E+07	0.1561E+07	0.1437E+02
9	125	5	0.3264E+13	0.4998E+10	0.1372E+09	0.1142E+09	0.1106E+02
9	117	3	0.4812E+12	0.1047E+10	0.6038E+07	0.3012E+07	0.9838E+01
9	156	3	0.3967E+13	0.6445E+10	0.1802E+07	0.8995E+06	0.1438E+02
9	102	3	0.1762E+14	0.2452E+10	0.9756E+09	0.4877E+09	0.9644E+01
9	182	5	0.1818E+11	0.2155E+10	0.3484E+06	0.2596E+06	0.1919E+02
9	183	7	0.1833E+11	0.2155E+10	0.1435E+07	0.1498E+07	0.1919E+02
9	157	5	0.3940E+13	0.6451E+10	0.1288E+08	0.1072E+08	0.1438E+02
9	215	3	0.1794E+12	0.4549E+10	0.7012E+07	0.3419E+07	0.2151E+02
9	158	7	0.4280E+13	0.6400E+10	0.3959E+08	0.4612E+08	0.1438E+02
9	126	3	0.3238E+13	0.5001E+10	0.7660E+08	0.3824E+08	0.1107E+02
9	190	3	0.2972E+12	0.2317E+10	0.3436E+08	0.1705E+08	0.1993E+02
9	217	5	0.3536E+12	0.4456E+10	0.1850E+06	0.1522E+06	0.2157E+02
9	218	7	0.3534E+12	0.4455E+10	0.7324E+06	0.8438E+06	0.2157E+02
9	118	5	0.4812E+12	0.1046E+10	0.1086E+08	0.9030E+07	0.9838E+01
9	220	5	0.8341E+12	0.4409E+10	0.1150E+08	0.9533E+07	0.2197E+02
9	191	5	0.2938E+12	0.2316E+10	0.6184E+08	0.5113E+08	0.1993E+02
9	45	5	0.3122E+15	0.2926E+09	0.2241E+08	0.1867E+08	0.3693E+01
9	221	3	0.8295E+12	0.4408E+10	0.6296E+07	0.3131E+07	0.2198E+02
9	87	5	0.1827E+14	0.1069E+10	0.1944E+09	0.1620E+09	0.7535E+01
9	130	7	0.5235E+13	0.2687E+10	0.1954E+08	0.2278E+08	0.1202E+02
9	120	3	0.6102E+13	0.1634E+10	0.4008E+09	0.2003E+09	0.1004E+02
9	131	5	0.5221E+13	0.2690E+10	0.4728E+07	0.3938E+07	0.1202E+02
9	166	5	0.3182E+11	0.5691E+10	0.8298E+06	0.5866E+06	0.1743E+02
9	108	3	0.7489E+12	0.9532E+09	0.1224E+06	0.6112E+05	0.9765E+01
9	88	7	0.1827E+14	0.1068E+10	0.7817E+09	0.9119E+09	0.7535E+01
9	167	3	0.3217E+11	0.5691E+10	0.4767E+06	0.2025E+06	0.1743E+02
9	132	3	0.5213E+13	0.2693E+10	0.5132E+06	0.2565E+06	0.1202E+02
9	109	5	0.7493E+12	0.9525E+09	0.1097E+07	0.9130E+06	0.9765E+01
9	110	7	0.7500E+12	0.9517E+09	0.4359E+07	0.5079E+07	0.9765E+01
9	44	3	0.3123E+15	0.2925E+09	0.1247E+08	0.6235E+07	0.3686E+01
9	134	3	0.1206E+14	0.5956E+10	0.2353E+10	0.1176E+10	0.1214E+02
9	82	5	0.1662E+13	0.2147E+09	0.4499E+06	0.3749E+06	0.5335E+01
9	135	5	0.1207E+14	0.5958E+10	0.4225E+10	0.3519E+10	0.1215E+02
9	152	5	0.1245E+12	0.7287E+10	0.3952E+07	0.3111E+07	0.1436E+02
9	83	7	0.1665E+13	0.2147E+09	0.1746E+07	0.2037E+07	0.5337E+01
10	119	3	0.1983E+09	0.1149E+10	0.6414E+07	0.4720E+06	0.9844E+01
10	151	3	0.1454E+13	0.7167E+10	0.1304E+08	0.6488E+07	0.1433E+02
10	223	5	0.6700E+12	0.4102E+10	0.4631E+06	0.3836E+06	0.2208E+02
10	159	5	0.6236E+13	0.6741E+10	0.1263E+08	0.1051E+08	0.1446E+02
10	161	1	0.1079E+14	0.5350E+10	0.7115E+06	0.1185E+06	0.1618E+02
10	184	3	0.1194E+12	0.2365E+10	0.3046E+08	0.1493E+08	0.1923E+02

K_J,	S_J	g_{sJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
10	135	5	0.1207E+14	0.5958E+10	0.3406E+06	0.2837E+06	0.1215E+02
10	87	5	0.1827E+14	0.1069E+10	0.1264E+06	0.1053E+06	0.7535E+01
10	129	5	0.1778E+13	0.2572E+10	0.9600E+07	0.7988E+07	0.1200E+02
10	133	1	0.1205E+14	0.5955E+10	0.1691E+07	0.2817E+06	0.1214E+02
10	136	3	0.5524E+14	0.6918E+10	0.6477E+10	0.3238E+10	0.1239E+02
10	137	5	0.8649E+13	0.2479E+10	0.3861E+06	0.3217E+06	0.1275E+02
10	192	5	0.5725E+12	0.2155E+10	0.3070E+08	0.2549E+08	0.2031E+02
10	115	1	0.9614E+13	0.1421E+10	0.3954E+09	0.6589E+08	0.9816E+01
10	219	3	0.7506E+12	0.4369E+10	0.1033E+08	0.5135E+07	0.2165E+02
10	89	5	0.2437E+15	0.6289E+09	0.4811E+09	0.4009E+09	0.8057E+01
10	103	5	0.1632E+10	0.8727E+09	0.3552E+07	0.1929E+07	0.9684E+01
10	134	3	0.1206E+14	0.5956E+10	0.2753E+06	0.1376E+06	0.1214E+02
10	121	1	0.1191E+15	0.2289E+10	0.2098E+10	0.3497E+09	0.1029E+02
10	236	1	0.1610E+11	0.4127E+10	0.4937E+08	0.6549E+07	0.2306E+02
11	85	3	0.4544E+15	0.6690E+10	0.3220E+08	0.1610E+08	0.5883E+01
11	100	5	0.1564E+15	0.7476E+09	0.7254E+09	0.6045E+09	0.9026E+01
11	143	3	0.1259E+14	0.6485E+10	0.3624E+06	0.1811E+06	0.1332E+02
11	97	5	0.1627E+14	0.8914E+09	0.1715E+07	0.1429E+07	0.9005E+01
11	209	5	0.4151E+12	0.2614E+10	0.1356E+07	0.1123E+07	0.2050E+02
11	122	1	0.4950E+14	0.2726E+10	0.2891E+07	0.4818E+06	0.1103E+02
11	144	5	0.1250E+14	0.6488E+10	0.1196E+07	0.9961E+06	0.1332E+02
11	54	5	0.2159E+16	0.4267E+10	0.1219E+07	0.1016E+07	0.4433E+01
11	138	1	0.1682E+10	0.6674E+10	0.6662E+10	0.2235E+09	0.1293E+02
11	101	3	0.5176E+14	0.8400E+09	0.3450E+09	0.1725E+09	0.9238E+01
11	95	5	0.1341E+14	0.7990E+09	0.1166E+06	0.9716E+05	0.8906E+01
11	146	5	0.1723E+15	0.5717E+10	0.1075E+10	0.8958E+09	0.1370E+02
11	139	3	0.1539E+14	0.6136E+10	0.5434E+07	0.2716E+07	0.1320E+02
11	128	3	0.5102E+13	0.2960E+10	0.1152E+10	0.5757E+09	0.1119E+02
11	147	3	0.1339E+15	0.6623E+10	0.1174E+10	0.5870E+09	0.1394E+02
11	230	5	0.3572E+11	0.4285E+10	0.3156E+07	0.2348E+07	0.2274E+02
11	123	3	0.4954E+14	0.2725E+10	0.1123E+07	0.5615E+06	0.1103E+02
11	214	3	0.1841E+13	0.4730E+10	0.1261E+08	0.6289E+07	0.2105E+02
11	140	5	0.1538E+14	0.6137E+10	0.3844E+06	0.3202E+06	0.1321E+02
11	180	5	0.1422E+14	0.2756E+10	0.1131E+08	0.9423E+07	0.1867E+02
11	196	3	0.7314E+12	0.2858E+10	0.2180E+07	0.1086E+07	0.2038E+02
11	204	1	0.2430E+06	0.2320E+10	0.2842E+07	0.4961E+02	0.2040E+02
11	90	5	0.6746E+14	0.5907E+09	0.8216E+06	0.6847E+06	0.8606E+01
11	98	3	0.1606E+14	0.8930E+09	0.2488E+06	0.1244E+06	0.9005E+01
11	142	1	0.1264E+14	0.6484E+10	0.2614E+07	0.4354E+06	0.1332E+02
11	235	3	0.1893E+11	0.4895E+10	0.1012E+06	0.4020E+05	0.2285E+02
11	94	3	0.1340E+14	0.7998E+09	0.2890E+06	0.1445E+06	0.8906E+01
12	189	1	0.2990E+12	0.2316E+10	0.2946E+07	0.4872E+06	0.1993E+02
12	86	3	0.1827E+14	0.1070E+10	0.1659E+09	0.8295E+08	0.7535E+01
12	131	5	0.5221E+13	0.2690E+10	0.6306E+07	0.5252E+07	0.1202E+02
12	148	5	0.5411E+13	0.5470E+10	0.8338E+08	0.6941E+08	0.1431E+02
12	190	3	0.2972E+12	0.2317E+10	0.7591E+06	0.3766E+06	0.1993E+02
12	106	5	0.1897E+13	0.7257E+09	0.1286E+07	0.1071E+07	0.9720E+01
12	166	5	0.3182E+11	0.5691E+10	0.1546E+06	0.1093E+06	0.1743E+02
12	216	3	0.3538E+12	0.4457E+10	0.7294E+07	0.3602E+07	0.2157E+02
12	65	3	0.1713E+13	0.1434E+09	0.1662E+06	0.8309E+05	0.5189E+01

K_J.	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
12	67	1	0.1707E+13	0.1437E+09	0.1210E+07	0.2016E+06	0.5191E+01
12	217	5	0.3536E+12	0.4456E+10	0.1482E+07	0.1220E+07	0.2157E+02
12	132	3	0.5213E+13	0.2693E+10	0.3057E+08	0.1528E+08	0.1202E+02
12	167	3	0.3217E+11	0.5691E+10	0.4012E+07	0.1704E+07	0.1743E+02
12	152	5	0.1245E+12	0.7287E+10	0.4123E+06	0.3246E+06	0.1436E+02
12	168	1	0.3236E+11	0.5692E+10	0.1633E+08	0.2315E+07	0.1743E+02
12	220	5	0.8341E+12	0.4409E+10	0.1182E+06	0.9798E+05	0.2197E+02
12	82	5	0.1662E+13	0.2147E+09	0.5417E+07	0.4514E+07	0.5335E+01
12	125	5	0.3264E+13	0.4998E+10	0.3443E+08	0.2865E+08	0.1106E+02
12	133	1	0.1205E+14	0.5955E+10	0.2317E+09	0.3860E+08	0.1214E+02
12	221	3	0.8295E+12	0.4408E+10	0.3006E+07	0.1495E+07	0.2198E+02
12	153	3	0.9593E+11	0.7294E+10	0.1603E+08	0.7449E+07	0.1437E+02
12	222	1	0.8271E+12	0.4407E+10	0.1213E+08	0.2011E+07	0.2198E+02
12	108	3	0.7489E+12	0.9532E+09	0.7541E+08	0.3766E+08	0.9765E+01
12	154	1	0.2803E+09	0.7315E+10	0.8850E+08	0.5443E+06	0.1437E+02
12	87	5	0.1827E+14	0.1069E+10	0.3323E+08	0.2769E+08	0.7535E+01
12	75	5	0.3505E+10	0.5529E+08	0.2403E+06	0.1971E+06	0.5250E+01
12	126	3	0.3238E+13	0.5001E+10	0.8479E+09	0.4233E+09	0.1107E+02
12	134	3	0.1206E+14	0.5956E+10	0.5862E+08	0.2930E+08	0.1214E+02
12	156	3	0.3967E+13	0.6445E+10	0.2664E+08	0.1330E+08	0.1438E+02
12	109	5	0.7493E+12	0.9525E+09	0.1483E+08	0.1234E+08	0.9765E+01
12	127	1	0.3226E+13	0.5003E+10	0.3367E+10	0.5603E+09	0.1107E+02
12	157	5	0.3940E+13	0.6451E+10	0.3776E+07	0.3142E+07	0.1438E+02
12	43	1	0.3123E+15	0.2926E+09	0.1630E+09	0.2717E+08	0.3683E+01
12	135	5	0.1207E+14	0.5958E+10	0.2402E+07	0.2001E+07	0.1215E+02
12	181	3	0.1813E+11	0.2155E+10	0.4741E+08	0.2119E+08	0.1919E+02
12	78	5	0.2038E+13	0.1960E+09	0.1531E+09	0.1276E+09	0.5259E+01
12	44	3	0.3123E+15	0.2925E+09	0.4045E+08	0.2022E+08	0.3686E+01
12	182	5	0.1818E+11	0.2155E+10	0.9060E+07	0.6750E+07	0.1919E+02
12	45	5	0.3122E+15	0.2926E+09	0.1595E+07	0.1329E+07	0.3693E+01
12	116	1	0.4812E+12	0.1047E+10	0.2404E+06	0.3998E+05	0.9838E+01
12	185	5	0.1096E+12	0.2034E+10	0.7780E+08	0.6365E+08	0.1925E+02
12	81	3	0.1660E+13	0.2147E+09	0.3597E+08	0.1798E+08	0.5334E+01
13	185	5	0.1096E+12	0.2034E+10	0.1389E+08	0.1136E+08	0.1925E+02
13	186	7	0.1096E+12	0.2034E+10	0.8221E+08	0.9416E+08	0.1925E+02
13	106	5	0.1897E+13	0.7257E+09	0.2332E+06	0.1943E+06	0.9720E+01
13	82	5	0.1662E+13	0.2147E+09	0.3524E+08	0.2936E+08	0.5335E+01
13	151	3	0.1454E+13	0.7167E+10	0.2804E+06	0.1395E+06	0.1433E+02
13	117	3	0.4812E+12	0.1047E+10	0.1728E+06	0.8621E+05	0.9838E+01
13	166	5	0.3182E+11	0.5691E+10	0.2369E+07	0.1675E+07	0.1743E+02
13	44	3	0.3123E+15	0.2925E+09	0.1223E+09	0.6115E+08	0.3686E+01
13	216	3	0.3538E+12	0.4457E+10	0.2449E+07	0.1209E+07	0.2157E+02
13	190	3	0.2972E+12	0.2317E+10	0.2206E+07	0.1094E+07	0.1993E+02
13	132	3	0.5213E+13	0.2693E+10	0.1009E+08	0.5042E+07	0.1202E+02
13	152	5	0.1245E+12	0.7287E+10	0.8291E+07	0.6527E+07	0.1436E+02
13	217	5	0.3536E+12	0.4456E+10	0.6764E+07	0.5567E+07	0.2157E+02
13	191	5	0.2938E+12	0.2316E+10	0.4686E+06	0.3874E+06	0.1993E+02
13	218	7	0.3534E+12	0.4455E+10	0.1110E+07	0.1279E+07	0.2157E+02
13	125	5	0.3264E+13	0.4998E+10	0.5123E+09	0.4263E+09	0.1106E+02
13	167	3	0.3217E+11	0.5691E+10	0.1228E+08	0.5217E+07	0.1743E+02
13	83	7	0.1665E+13	0.2147E+09	0.3495E+07	0.4077E+07	0.5337E+01

K_J,	S_J	g_{sJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
13	45	5	0.3122E+15	0.2926E+09	0.2413E+08	0.2011E+08	0.3693E+01
13	220	5	0.8341E+12	0.4409E+10	0.1774E+07	0.1471E+07	0.2197E+02
13	108	3	0.7489E+12	0.9532E+09	0.2498E+08	0.1247E+08	0.9765E+01
13	153	3	0.9593E+11	0.7294E+10	0.7109E+08	0.3303E+08	0.1437E+02
13	87	5	0.1827E+14	0.1069E+10	0.1536E+09	0.1280E+09	0.7535E+01
13	126	3	0.3238E+13	0.5001E+10	0.2524E+10	0.1260E+10	0.1107E+02
13	221	3	0.8295E+12	0.4408E+10	0.9035E+07	0.4494E+07	0.2198E+02
13	76	7	0.9277E+10	0.5564E+08	0.7529E+06	0.8731E+06	0.5251E+01
13	88	7	0.1827E+14	0.1068E+10	0.2464E+08	0.2874E+08	0.7535E+01
13	134	3	0.1206E+14	0.5956E+10	0.1728E+09	0.8636E+08	0.1214E+02
13	109	5	0.7493E+12	0.9525E+09	0.6978E+08	0.5808E+08	0.9765E+01
13	81	3	0.1660E+13	0.2147E+09	0.1187E+08	0.5934E+07	0.5334E+01
13	156	3	0.3967E+13	0.6445E+10	0.1848E+07	0.9225E+06	0.1438E+02
13	110	7	0.7500E+12	0.9517E+09	0.1086E+08	0.1265E+08	0.9765E+01
13	65	3	0.1713E+13	0.1434E+09	0.1040E+07	0.5200E+06	0.5189E+01
13	135	5	0.1207E+14	0.5958E+10	0.3543E+08	0.2951E+08	0.1215E+02
13	157	5	0.3940E+13	0.6451E+10	0.2483E+08	0.2066E+08	0.1438E+02
13	78	5	0.2038E+13	0.1960E+09	0.2599E+08	0.2166E+08	0.5259E+01
13	158	7	0.4280E+13	0.6400E+10	0.2307E+07	0.2687E+07	0.1438E+02
13	130	7	0.5235E+13	0.2687E+10	0.4757E+07	0.5547E+07	0.1202E+02
13	181	3	0.1813E+11	0.2155E+10	0.1594E+08	0.7123E+07	0.1919E+02
13	79	7	0.2032E+13	0.1954E+09	0.1613E+09	0.1882E+09	0.5262E+01
13	105	7	0.1898E+13	0.7251E+09	0.1380E+07	0.1609E+07	0.9720E+01
13	86	3	0.1827E+14	0.1070E+10	0.5519E+08	0.2759E+08	0.7535E+01
13	182	5	0.1818E+11	0.2155E+10	0.4439E+08	0.3307E+08	0.1919E+02
13	131	5	0.5221E+13	0.2690E+10	0.2832E+08	0.2359E+08	0.1202E+02
13	183	7	0.1833E+11	0.2155E+10	0.6588E+07	0.6877E+07	0.1919E+02
13	148	5	0.5411E+13	0.5470E+10	0.1415E+08	0.1178E+08	0.1431E+02
13	149	7	0.5423E+13	0.5472E+10	0.8809E+08	0.1027E+09	0.1431E+02
14	109	5	0.7493E+12	0.9525E+09	0.1544E+08	0.1285E+08	0.9765E+01
14	182	5	0.1818E+11	0.2155E+10	0.1002E+08	0.7465E+07	0.1919E+02
14	218	7	0.3534E+12	0.4455E+10	0.8725E+07	0.1005E+08	0.2157E+02
14	130	7	0.5235E+13	0.2687E+10	0.3650E+08	0.4256E+08	0.1202E+02
14	105	7	0.1898E+13	0.7251E+09	0.1672E+06	0.1950E+06	0.9720E+01
14	183	7	0.1833E+11	0.2155E+10	0.5696E+08	0.5946E+08	0.1919E+02
14	148	5	0.5411E+13	0.5470E+10	0.3410E+06	0.2839E+06	0.1431E+02
14	88	7	0.1827E+14	0.1068E+10	0.1966E+09	0.2294E+09	0.7535E+01
14	220	5	0.8341E+12	0.4409E+10	0.9965E+07	0.8261E+07	0.2197E+02
14	149	7	0.5423E+13	0.5472E+10	0.9532E+07	0.1111E+08	0.1431E+02
14	185	5	0.1096E+12	0.2034E+10	0.3752E+06	0.3070E+06	0.1925E+02
14	150	9	0.5406E+13	0.5473E+10	0.9796E+08	0.1468E+09	0.1432E+02
14	186	7	0.1096E+12	0.2034E+10	0.9726E+07	0.1114E+08	0.1925E+02
14	187	9	0.1096E+12	0.2035E+10	0.9176E+08	0.1351E+09	0.1925E+02
14	125	5	0.3264E+13	0.4998E+10	0.2835E+10	0.2359E+10	0.1106E+02
14	110	7	0.7500E+12	0.9517E+09	0.8870E+08	0.1034E+09	0.9765E+01
14	157	5	0.3940E+13	0.6451E+10	0.3529E+06	0.2936E+06	0.1438E+02
14	131	5	0.5221E+13	0.2690E+10	0.6267E+07	0.5220E+07	0.1202E+02
14	83	7	0.1665E+13	0.2147E+09	0.4516E+08	0.5268E+08	0.5337E+01
14	158	7	0.4280E+13	0.6400E+10	0.2395E+08	0.2790E+08	0.1438E+02
14	135	5	0.1207E+14	0.5958E+10	0.1933E+09	0.1610E+09	0.1215E+02
14	79	7	0.2032E+13	0.1954E+09	0.1765E+08	0.2059E+08	0.5262E+01

K_J	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
14	80	9	0.2028E+13	0.1948E+09	0.1784E+09	0.2676E+09	0.5266E+01
14	152	5	0.1245E+12	0.7287E+10	0.7871E+08	0.6196E+08	0.1436E+02
14	191	5	0.2938E+12	0.2316E+10	0.2503E+07	0.2070E+07	0.1993E+02
14	62	5	0.1729E+13	0.1431E+09	0.1117E+07	0.9308E+06	0.5186E+01
14	45	5	0.3122E+15	0.2926E+09	0.1368E+09	0.1140E+09	0.3693E+01
14	82	5	0.1662E+13	0.2147E+09	0.7520E+07	0.6266E+07	0.5335E+01
14	87	5	0.1827E+14	0.1069E+10	0.3432E+08	0.2860E+08	0.7535E+01
14	78	5	0.2038E+13	0.1960E+09	0.6516E+06	0.5429E+06	0.5259E+01
14	104	9	0.1899E+13	0.7241E+09	0.1576E+07	0.2363E+07	0.9720E+01
14	77	9	0.1614E+11	0.5604E+08	0.1413E+07	0.2112E+07	0.5252E+01
14	118	5	0.4812E+12	0.1046E+10	0.1646E+06	0.1369E+06	0.9838E+01
14	166	5	0.3182E+11	0.5691E+10	0.1368E+08	0.9670E+07	0.1743E+02
14	155	7	0.1092E+14	0.5593E+10	0.1180E+07	0.1376E+07	0.1437E+02
14	217	5	0.3536E+12	0.4456E+10	0.1535E+07	0.1263E+07	0.2157E+02
15	98	3	0.1606E+14	0.8930E+09	0.4289E+07	0.2144E+07	0.9005E+01
15	179	3	0.2045E+13	0.3241E+10	0.1012E+08	0.5052E+07	0.1832E+02
15	142	1	0.1264E+14	0.6484E+10	0.2663E+10	0.4436E+09	0.1332E+02
15	122	1	0.4950E+14	0.2726E+10	0.1798E+10	0.2997E+09	0.1103E+02
15	59	1	0.2781E+15	0.6893E+08	0.7005E+07	0.1167E+07	0.4825E+01
15	99	1	0.1606E+14	0.8938E+09	0.2032E+08	0.3386E+07	0.9005E+01
15	211	1	0.1180E+13	0.3605E+10	0.5980E+07	0.9936E+06	0.2073E+02
15	97	5	0.1627E+14	0.8914E+09	0.1843E+06	0.1536E+06	0.9005E+01
15	143	3	0.1259E+14	0.6485E+10	0.7040E+09	0.3518E+09	0.1332E+02
15	95	5	0.1341E+14	0.7990E+09	0.4641E+08	0.3867E+08	0.8906E+01
15	212	3	0.1180E+13	0.3606E+10	0.1476E+07	0.7358E+06	0.2073E+02
15	138	1	0.1682E+10	0.6674E+10	0.7236E+07	0.2428E+06	0.1293E+02
15	123	3	0.4954E+14	0.2725E+10	0.4566E+09	0.2283E+09	0.1103E+02
15	224	5	0.9254E+11	0.4184E+10	0.1370E+06	0.1092E+06	0.2272E+02
15	144	5	0.1250E+14	0.6488E+10	0.3052E+08	0.2542E+08	0.1332E+02
15	227	1	0.4101E+11	0.4420E+10	0.1793E+07	0.2698E+06	0.2274E+02
15	100	5	0.1564E+15	0.7476E+09	0.1062E+07	0.8850E+06	0.9026E+01
15	94	3	0.1340E+14	0.7998E+09	0.2420E+09	0.1210E+09	0.8906E+01
15	139	3	0.1539E+14	0.6136E+10	0.3312E+10	0.1655E+10	0.1320E+02
15	228	3	0.4125E+11	0.4418E+10	0.4401E+06	0.1988E+06	0.2274E+02
15	195	1	0.4908E+11	0.3348E+10	0.3508E+06	0.5473E+05	0.2034E+02
15	174	3	0.6792E+11	0.4807E+10	0.3123E+07	0.1458E+07	0.1819E+02
15	124	5	0.4963E+14	0.2723E+10	0.1910E+08	0.1592E+08	0.1103E+02
15	60	3	0.2780E+15	0.6910E+08	0.1840E+07	0.9200E+06	0.4826E+01
15	197	5	0.9415E+11	0.1892E+10	0.8175E+06	0.6678E+06	0.2039E+02
15	175	5	0.6779E+11	0.4809E+10	0.6649E+06	0.5174E+06	0.1819E+02
15	146	5	0.1723E+15	0.5717E+10	0.1243E+07	0.1036E+07	0.1370E+02
15	231	3	0.2197E+12	0.4360E+10	0.1863E+07	0.9134E+06	0.2276E+02
15	90	5	0.6746E+14	0.5907E+09	0.4820E+09	0.4017E+09	0.8606E+01
15	140	5	0.1538E+14	0.6137E+10	0.6790E+09	0.5656E+09	0.1321E+02
15	232	5	0.2196E+12	0.4359E+10	0.3686E+06	0.3012E+06	0.2276E+02
15	206	5	0.4162E+11	0.2280E+10	0.2547E+06	0.2012E+06	0.2042E+02
15	128	3	0.5102E+13	0.2960E+10	0.1593E+07	0.7960E+06	0.1119E+02
15	178	5	0.2045E+13	0.3239E+10	0.2066E+07	0.1719E+07	0.1832E+02
15	147	3	0.1339E+15	0.6623E+10	0.2448E+07	0.1224E+07	0.1394E+02
15	207	3	0.4125E+11	0.2280E+10	0.1269E+07	0.6013E+06	0.2042E+02
15	101	3	0.5176E+14	0.8400E+09	0.4646E+06	0.2323E+06	0.9238E+01

K_J	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
16	95	5	0.1341E+14	0.7990E+09	0.2240E+09	0.1867E+09	0.8906E+01
16	178	5	0.2045E+13	0.3239E+10	0.9392E+07	0.7814E+07	0.1832E+02
16	212	3	0.1180E+13	0.3606E+10	0.4488E+07	0.2237E+07	0.2073E+02
16	139	3	0.1539E+14	0.6136E+10	0.1173E+10	0.5863E+09	0.1320E+02
16	143	3	0.1259E+14	0.6485E+10	0.1959E+10	0.9790E+09	0.1332E+02
16	213	5	0.1180E+13	0.3607E+10	0.8642E+06	0.7180E+06	0.2073E+02
16	94	3	0.1340E+14	0.7998E+09	0.7984E+08	0.3992E+08	0.8906E+01
16	197	5	0.9415E+11	0.1892E+10	0.1519E+06	0.1241E+06	0.2039E+02
16	225	7	0.9242E+11	0.4182E+10	0.1453E+06	0.1622E+06	0.2272E+02
16	198	7	0.9447E+11	0.1892E+10	0.8661E+06	0.9906E+06	0.2039E+02
16	124	5	0.4963E+14	0.2723E+10	0.2782E+09	0.2318E+09	0.1103E+02
16	179	3	0.2045E+13	0.3241E+10	0.3409E+07	0.1702E+07	0.1832E+02
16	205	7	0.4218E+11	0.2282E+10	0.1884E+06	0.2085E+06	0.2042E+02
16	96	7	0.1342E+14	0.7978E+09	0.3351E+08	0.3909E+08	0.8906E+01
16	60	3	0.2780E+15	0.6910E+08	0.5224E+07	0.2612E+07	0.4826E+01
16	228	3	0.4125E+11	0.4418E+10	0.1364E+07	0.6160E+06	0.2274E+02
16	144	5	0.1250E+14	0.6488E+10	0.4354E+09	0.3626E+09	0.1332E+02
16	206	5	0.4162E+11	0.2280E+10	0.1169E+07	0.9236E+06	0.2042E+02
16	229	5	0.4178E+11	0.4417E+10	0.2625E+06	0.1978E+06	0.2274E+02
16	140	5	0.1538E+14	0.6137E+10	0.3067E+10	0.2555E+10	0.1321E+02
16	90	5	0.6746E+14	0.5907E+09	0.8875E+08	0.7396E+08	0.8606E+01
16	174	3	0.6792E+11	0.4807E+10	0.1055E+07	0.4926E+06	0.1819E+02
16	141	7	0.1537E+14	0.6139E+10	0.5132E+09	0.5985E+09	0.1321E+02
16	207	3	0.4125E+11	0.2280E+10	0.4226E+06	0.2002E+06	0.2042E+02
16	98	3	0.1606E+14	0.8930E+09	0.1515E+08	0.7575E+07	0.9005E+01
16	231	3	0.2197E+12	0.4360E+10	0.6049E+06	0.2966E+06	0.2276E+02
16	91	7	0.6746E+14	0.5900E+09	0.5102E+09	0.5952E+09	0.8606E+01
16	175	5	0.6779E+11	0.4809E+10	0.2898E+07	0.2255E+07	0.1819E+02
16	128	3	0.5102E+13	0.2960E+10	0.1914E+06	0.9564E+05	0.1119E+02
16	232	5	0.2196E+12	0.4359E+10	0.1735E+07	0.1418E+07	0.2276E+02
16	176	7	0.6758E+11	0.4810E+10	0.5108E+06	0.5563E+06	0.1819E+02
16	233	7	0.2198E+12	0.4357E+10	0.2747E+06	0.3143E+06	0.2276E+02
16	61	5	0.2778E+15	0.6891E+08	0.1154E+07	0.9617E+06	0.4829E+01
16	177	7	0.2044E+13	0.3238E+10	0.1554E+07	0.1810E+07	0.1832E+02
16	123	3	0.4954E+14	0.2725E+10	0.1343E+10	0.6715E+09	0.1103E+02
16	194	3	0.4899E+11	0.3347E+10	0.2653E+06	0.1242E+06	0.2034E+02
16	97	5	0.1627E+14	0.8914E+09	0.2323E+07	0.1936E+07	0.9005E+01
17	193	5	0.4880E+11	0.3346E+10	0.3029E+06	0.2362E+06	0.2034E+02
17	146	5	0.1723E+15	0.5717E+10	0.1186E+06	0.9883E+05	0.1370E+02
17	90	5	0.6746E+14	0.5907E+09	0.2508E+07	0.2090E+07	0.8606E+01
17	206	5	0.4162E+11	0.2280E+10	0.2614E+06	0.2065E+06	0.2042E+02
17	213	5	0.1180E+13	0.3607E+10	0.4960E+07	0.4121E+07	0.2073E+02
17	229	5	0.4178E+11	0.4417E+10	0.1544E+07	0.1164E+07	0.2274E+02
17	177	7	0.2044E+13	0.3238E+10	0.1213E+08	0.1413E+08	0.1832E+02
17	97	5	0.1627E+14	0.8914E+09	0.1610E+08	0.1342E+08	0.9005E+01
17	96	7	0.1342E+14	0.7978E+09	0.2823E+09	0.3293E+09	0.8906E+01
17	61	5	0.2778E+15	0.6891E+08	0.5937E+07	0.4947E+07	0.4829E+01
17	144	5	0.1250E+14	0.6488E+10	0.2183E+10	0.1818E+10	0.1332E+02
17	178	5	0.2045E+13	0.3239E+10	0.2140E+07	0.1781E+07	0.1832E+02
17	91	7	0.6746E+14	0.5900E+09	0.6308E+08	0.7359E+08	0.8606E+01
17	95	5	0.1341E+14	0.7990E+09	0.4908E+08	0.4090E+08	0.8906E+01

K_J.	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
17	140	5	0.1538E+14	0.6137E+10	0.7576E+09	0.6311E+09	0.1321E+02
17	124	5	0.4963E+14	0.2723E+10	0.1506E+10	0.1255E+10	0.1103E+02
17	198	7	0.9447E+11	0.1892E+10	0.1086E+06	0.1242E+06	0.2039E+02
17	232	5	0.2196E+12	0.4359E+10	0.3716E+06	0.3036E+06	0.2276E+02
17	199	9	0.9481E+11	0.1893E+10	0.9754E+06	0.1434E+07	0.2039E+02
17	226	9	0.9224E+11	0.4181E+10	0.1593E+06	0.2286E+06	0.2272E+02
17	233	7	0.2198E+12	0.4357E+10	0.2218E+07	0.2537E+07	0.2276E+02
17	175	5	0.6779E+11	0.4809E+10	0.6650E+06	0.5175E+06	0.1819E+02
17	92	9	0.6746E+14	0.5892E+09	0.5724E+09	0.8586E+09	0.8607E+01
17	141	7	0.1537E+14	0.6139E+10	0.4011E+10	0.4678E+10	0.1321E+02
17	205	7	0.4218E+11	0.2282E+10	0.1486E+07	0.1645E+07	0.2042E+02
17	176	7	0.6758E+11	0.4810E+10	0.3782E+07	0.4119E+07	0.1819E+02
18	60	3	0.2780E+15	0.6910E+08	0.7848E+06	0.3924E+06	0.4826E+01
18	128	3	0.5102E+13	0.2960E+10	0.2306E+06	0.1152E+06	0.1119E+02
18	146	5	0.1723E+15	0.5717E+10	0.5130E+06	0.4275E+06	0.1370E+02
18	98	3	0.1606E+14	0.8930E+09	0.5233E+09	0.2616E+09	0.9005E+01
18	100	5	0.1564E+15	0.7476E+09	0.1519E+07	0.1266E+07	0.9026E+01
18	143	3	0.1259E+14	0.6485E+10	0.1908E+10	0.9535E+09	0.1332E+02
18	124	5	0.4963E+14	0.2723E+10	0.1672E+09	0.1393E+09	0.1103E+02
18	147	3	0.1339E+15	0.6623E+10	0.1583E+06	0.7915E+05	0.1394E+02
18	140	5	0.1538E+14	0.6137E+10	0.1697E+07	0.1414E+07	0.1321E+02
18	138	1	0.1682E+10	0.6674E+10	0.6105E+06	0.2048E+05	0.1293E+02
18	211	1	0.1180E+13	0.3605E+10	0.7375E+07	0.1225E+07	0.2073E+02
18	61	5	0.2778E+15	0.6891E+08	0.8925E+06	0.7437E+06	0.4829E+01
18	97	5	0.1627E+14	0.8914E+09	0.5127E+09	0.4272E+09	0.9005E+01
18	99	1	0.1606E+14	0.8938E+09	0.5278E+09	0.8796E+08	0.9005E+01
18	144	5	0.1250E+14	0.6488E+10	0.1953E+10	0.1627E+10	0.1332E+02
18	123	3	0.4954E+14	0.2725E+10	0.1567E+09	0.7835E+08	0.1103E+02
18	212	3	0.1180E+13	0.3606E+10	0.7473E+07	0.3725E+07	0.2073E+02
18	59	1	0.2781E+15	0.6893E+08	0.7290E+06	0.1215E+06	0.4825E+01
18	142	1	0.1264E+14	0.6484E+10	0.1891E+10	0.3150E+09	0.1332E+02
18	139	3	0.1539E+14	0.6136E+10	0.1018E+07	0.5088E+06	0.1320E+02
18	122	1	0.4950E+14	0.2726E+10	0.1505E+09	0.2508E+08	0.1103E+02
18	213	5	0.1180E+13	0.3607E+10	0.7703E+07	0.6400E+07	0.2073E+02
19	162	3	0.3594E+07	0.7003E+10	0.3845E+07	0.9861E+03	0.1668E+02
19	139	3	0.1539E+14	0.6136E+10	0.8896E+09	0.4446E+09	0.1320E+02
19	98	3	0.1606E+14	0.8930E+09	0.8633E+08	0.4316E+08	0.9005E+01
19	60	3	0.2780E+15	0.6910E+08	0.8945E+07	0.4472E+07	0.4826E+01
19	123	3	0.4954E+14	0.2725E+10	0.2300E+09	0.1150E+09	0.1103E+02
19	94	3	0.1340E+14	0.7998E+09	0.2183E+09	0.1091E+09	0.8906E+01
19	84	3	0.3495E+12	0.6368E+10	0.1177E+07	0.5780E+06	0.5697E+01
19	143	3	0.1259E+14	0.6485E+10	0.5720E+09	0.2859E+09	0.1332E+02
19	212	3	0.1180E+13	0.3606E+10	0.3101E+07	0.1546E+07	0.2073E+02
19	179	3	0.2045E+13	0.3241E+10	0.2542E+07	0.1269E+07	0.1832E+02
19	42	3	0.4828E+10	0.2440E+10	0.1572E+07	0.5221E+06	0.3576E+01
19	194	3	0.4899E+11	0.3347E+10	0.8635E+06	0.4041E+06	0.2034E+02
19	145	3	0.1197E+11	0.6096E+10	0.6748E+09	0.2236E+09	0.1368E+02
19	174	3	0.6792E+11	0.4807E+10	0.9233E+07	0.4311E+07	0.1819E+02
19	210	3	0.1197E+07	0.2803E+10	0.2583E+07	0.5513E+03	0.2050E+02
19	55	3	0.2260E+15	0.1948E+09	0.2338E+08	0.1169E+08	0.4579E+01

K_J.	S_J	g_{sJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
20	84	3	0.3495E+12	0.6368E+10	0.3545E+07	0.1741E+07	0.5697E+01
20	139	3	0.1539E+14	0.6136E+10	0.6508E+09	0.3253E+09	0.1320E+02
20	179	3	0.2045E+13	0.3241E+10	0.1934E+07	0.9655E+06	0.1832E+02
20	213	5	0.1180E+13	0.3607E+10	0.2219E+07	0.1844E+07	0.2073E+02
20	95	5	0.1341E+14	0.7990E+09	0.2959E+09	0.2466E+09	0.8906E+01
20	98	3	0.1606E+14	0.8930E+09	0.6162E+08	0.3081E+08	0.9005E+01
20	227	1	0.4101E+11	0.4420E+10	0.3013E+06	0.4533E+05	0.2274E+02
20	174	3	0.6792E+11	0.4807E+10	0.6954E+07	0.3247E+07	0.1819E+02
20	146	5	0.1723E+15	0.5717E+10	0.2167E+06	0.1806E+06	0.1370E+02
20	56	5	0.2258E+15	0.1950E+09	0.3156E+08	0.2630E+08	0.4582E+01
20	162	3	0.3594E+07	0.7003E+10	0.1156E+08	0.2965E+04	0.1668E+02
20	97	5	0.1627E+14	0.8914E+09	0.6854E+08	0.5711E+08	0.9005E+01
20	94	3	0.1340E+14	0.7998E+09	0.1602E+09	0.8010E+08	0.8906E+01
20	193	5	0.4880E+11	0.3346E+10	0.6428E+06	0.5013E+06	0.2034E+02
20	175	5	0.6779E+11	0.4809E+10	0.1243E+08	0.9672E+07	0.1819E+02
20	143	3	0.1259E+14	0.6485E+10	0.4862E+09	0.2430E+09	0.1332E+02
20	123	3	0.4954E+14	0.2725E+10	0.1726E+09	0.8630E+08	0.1103E+02
20	99	1	0.1606E+14	0.8938E+09	0.2512E+09	0.4186E+08	0.9005E+01
20	140	5	0.1538E+14	0.6137E+10	0.1191E+10	0.9921E+09	0.1321E+02
20	194	3	0.4899E+11	0.3347E+10	0.6514E+06	0.3049E+06	0.2034E+02
20	42	3	0.4828E+10	0.2440E+10	0.4680E+07	0.1554E+07	0.3576E+01
20	210	3	0.1197E+07	0.2803E+10	0.7737E+07	0.1651E+04	0.2050E+02
20	138	1	0.1682E+10	0.6674E+10	0.6935E+06	0.2327E+05	0.1293E+02
20	195	1	0.4908E+11	0.3348E+10	0.2632E+07	0.4107E+06	0.2034E+02
20	60	3	0.2780E+15	0.6910E+08	0.7104E+07	0.3552E+07	0.4826E+01
20	211	1	0.1180E+13	0.3605E+10	0.9481E+07	0.1575E+07	0.2073E+02
20	61	5	0.2778E+15	0.6891E+08	0.6493E+07	0.5411E+07	0.4829E+01
20	144	5	0.1250E+14	0.6488E+10	0.3992E+09	0.3325E+09	0.1332E+02
20	122	1	0.4950E+14	0.2726E+10	0.7013E+09	0.1169E+09	0.1103E+02
20	59	1	0.2781E+15	0.6893E+08	0.2786E+08	0.4643E+07	0.4825E+01
20	178	5	0.2045E+13	0.3239E+10	0.3410E+07	0.2837E+07	0.1832E+02
20	124	5	0.4963E+14	0.2723E+10	0.1690E+09	0.1408E+09	0.1103E+02
20	142	1	0.1264E+14	0.6484E+10	0.1835E+10	0.3057E+09	0.1332E+02
20	212	3	0.1180E+13	0.3606E+10	0.2478E+07	0.1235E+07	0.2073E+02
20	145	3	0.1197E+11	0.6096E+10	0.2013E+10	0.6669E+09	0.1368E+02
20	55	3	0.2260E+15	0.1948E+09	0.1721E+08	0.8605E+07	0.4579E+01
21	205	7	0.4218E+11	0.2282E+10	0.1095E+06	0.1212E+06	0.2042E+02
21	174	3	0.6792E+11	0.4807E+10	0.4679E+06	0.2185E+06	0.1819E+02
21	179	3	0.2045E+13	0.3241E+10	0.1328E+06	0.6629E+05	0.1832E+02
21	140	5	0.1538E+14	0.6137E+10	0.3778E+09	0.3147E+09	0.1321E+02
21	213	5	0.1180E+13	0.3607E+10	0.7084E+07	0.5885E+07	0.2073E+02
21	162	3	0.3594E+07	0.7003E+10	0.1935E+08	0.4963E+04	0.1668E+02
21	96	7	0.1342E+14	0.7978E+09	0.3928E+09	0.4582E+09	0.8906E+01
21	55	3	0.2260E+15	0.1948E+09	0.1105E+07	0.5525E+06	0.4579E+01
21	57	7	0.2255E+15	0.1952E+09	0.4170E+08	0.4865E+08	0.4587E+01
21	141	7	0.1537E+14	0.6139E+10	0.1552E+10	0.1810E+10	0.1321E+02
21	175	5	0.6779E+11	0.4809E+10	0.4181E+07	0.3253E+07	0.1819E+02
21	193	5	0.4880E+11	0.3346E+10	0.1955E+07	0.1525E+07	0.2034E+02
21	228	3	0.4125E+11	0.4418E+10	0.1308E+06	0.5907E+05	0.2274E+02
21	84	3	0.3495E+12	0.6368E+10	0.5978E+07	0.2936E+07	0.5697E+01
21	60	3	0.2780E+15	0.6910E+08	0.1168E+08	0.5840E+07	0.4826E+01

K_J	S_J	g_{sJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
21	124	5	0.4963E+14	0.2723E+10	0.5096E+09	0.4246E+09	0.1103E+02
21	176	7	0.6758E+11	0.4810E+10	0.1655E+08	0.1803E+08	0.1819E+02
21	229	5	0.4178E+11	0.4417E+10	0.2138E+06	0.1611E+06	0.2274E+02
21	144	5	0.1250E+14	0.6488E+10	0.1394E+10	0.1161E+10	0.1332E+02
21	100	5	0.1564E+15	0.7476E+09	0.2596E+06	0.2163E+06	0.9026E+01
21	194	3	0.4899E+11	0.3347E+10	0.1106E+07	0.5176E+06	0.2034E+02
21	42	3	0.4828E+10	0.2440E+10	0.7684E+07	0.2552E+07	0.3576E+01
21	210	3	0.1197E+07	0.2803E+10	0.1286E+08	0.2745E+04	0.2050E+02
21	177	7	0.2044E+13	0.3238E+10	0.4537E+07	0.5285E+07	0.1832E+02
21	139	3	0.1539E+14	0.6136E+10	0.4139E+08	0.2069E+08	0.1320E+02
21	95	5	0.1341E+14	0.7990E+09	0.9444E+08	0.7870E+08	0.8906E+01
21	128	3	0.5102E+13	0.2960E+10	0.1313E+06	0.6561E+05	0.1119E+02
21	145	3	0.1197E+11	0.6096E+10	0.3316E+10	0.1099E+10	0.1368E+02
21	94	3	0.1340E+14	0.7998E+09	0.1022E+08	0.5110E+07	0.8906E+01
21	98	3	0.1606E+14	0.8930E+09	0.1077E+09	0.5385E+08	0.9005E+01
21	178	5	0.2045E+13	0.3239E+10	0.1170E+07	0.9735E+06	0.1832E+02
21	61	5	0.2778E+15	0.6891E+08	0.2095E+08	0.1746E+08	0.4829E+01
21	123	3	0.4954E+14	0.2725E+10	0.2912E+09	0.1456E+09	0.1103E+02
21	97	5	0.1627E+14	0.8914E+09	0.1957E+09	0.1631E+09	0.9005E+01
21	56	5	0.2258E+15	0.1950E+09	0.1014E+08	0.8450E+07	0.4582E+01
21	212	3	0.1180E+13	0.3606E+10	0.3844E+07	0.1916E+07	0.2073E+02
21	146	5	0.1723E+15	0.5717E+10	0.3558E+06	0.2965E+06	0.1370E+02
21	143	3	0.1259E+14	0.6485E+10	0.7633E+09	0.3815E+09	0.1332E+02
22	100	5	0.1564E+15	0.7476E+09	0.8098E+07	0.6748E+07	0.9026E+01
22	101	3	0.5176E+14	0.8400E+09	0.1050E+09	0.5250E+08	0.9238E+01
22	54	5	0.2159E+16	0.4267E+10	0.9575E+06	0.7979E+06	0.4433E+01
22	143	3	0.1259E+14	0.6485E+10	0.1820E+06	0.9095E+05	0.1332E+02
22	208	7	0.5572E+12	0.2251E+10	0.1036E+07	0.1204E+07	0.2049E+02
22	147	3	0.1339E+15	0.6623E+10	0.3502E+10	0.1751E+10	0.1394E+02
22	180	5	0.1422E+14	0.2756E+10	0.4445E+07	0.3703E+07	0.1867E+02
22	209	5	0.4151E+12	0.2614E+10	0.1386E+08	0.1148E+08	0.2050E+02
22	141	7	0.1537E+14	0.6139E+10	0.2980E+06	0.3475E+06	0.1321E+02
22	214	3	0.1841E+13	0.4730E+10	0.2704E+07	0.1349E+07	0.2105E+02
22	139	3	0.1539E+14	0.6136E+10	0.1401E+06	0.7002E+05	0.1320E+02
22	128	3	0.5102E+13	0.2960E+10	0.1132E+10	0.5657E+09	0.1119E+02
22	234	7	0.4974E+12	0.4317E+10	0.6251E+06	0.7230E+06	0.2277E+02
22	85	3	0.4544E+15	0.6690E+10	0.2212E+08	0.1106E+08	0.5883E+01
22	230	5	0.3572E+11	0.4285E+10	0.7562E+06	0.5627E+06	0.2274E+02
22	146	5	0.1723E+15	0.5717E+10	0.4546E+10	0.3788E+10	0.1370E+02
22	235	3	0.1893E+11	0.4895E+10	0.2012E+07	0.7993E+06	0.2285E+02
22	93	7	0.3967E+14	0.1101E+10	0.9266E+09	0.1081E+10	0.8844E+01
23	134	3	0.1206E+14	0.5956E+10	0.7052E+07	0.3524E+07	0.1214E+02
23	219	3	0.7506E+12	0.4369E+10	0.4457E+06	0.2216E+06	0.2165E+02
23	45	5	0.3122E+15	0.2926E+09	0.1854E+07	0.1545E+07	0.3693E+01
23	129	5	0.1778E+13	0.2572E+10	0.2958E+08	0.2461E+08	0.1200E+02
23	87	5	0.1827E+14	0.1069E+10	0.3014E+07	0.2512E+07	0.7535E+01
23	190	3	0.2972E+12	0.2317E+10	0.3666E+07	0.1819E+07	0.1993E+02
23	151	3	0.1454E+13	0.7167E+10	0.2672E+09	0.1329E+09	0.1433E+02
23	220	5	0.8341E+12	0.4409E+10	0.5881E+07	0.4875E+07	0.2197E+02
23	44	3	0.3123E+15	0.2925E+09	0.5515E+06	0.2757E+06	0.3686E+01

K_J.	S_J	g_{sJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
23	86	3	0.1827E+14	0.1070E+10	0.3324E+06	0.1662E+06	0.7535E+01
23	130	7	0.5235E+13	0.2687E+10	0.2309E+09	0.2692E+09	0.1202E+02
23	191	5	0.2938E+12	0.2316E+10	0.5577E+07	0.4611E+07	0.1993E+02
23	135	5	0.1207E+14	0.5958E+10	0.1134E+08	0.9445E+07	0.1215E+02
23	221	3	0.8295E+12	0.4408E+10	0.3711E+07	0.1846E+07	0.2198E+02
23	192	5	0.5725E+12	0.2155E+10	0.2520E+06	0.2092E+06	0.2031E+02
23	102	3	0.1762E+14	0.2452E+10	0.2725E+09	0.1362E+09	0.9644E+01
23	152	5	0.1245E+12	0.7287E+10	0.9775E+09	0.7695E+09	0.1436E+02
23	223	5	0.6700E+12	0.4102E+10	0.2311E+06	0.1914E+06	0.2208E+02
23	108	3	0.7489E+12	0.9532E+09	0.7695E+07	0.3843E+07	0.9765E+01
23	125	5	0.3264E+13	0.4998E+10	0.2313E+09	0.1925E+09	0.1106E+02
23	83	7	0.1665E+13	0.2147E+09	0.3653E+08	0.4261E+08	0.5337E+01
23	166	5	0.3182E+11	0.5691E+10	0.4496E+07	0.3178E+07	0.1743E+02
23	136	3	0.5524E+14	0.6918E+10	0.1233E+06	0.6164E+05	0.1239E+02
23	117	3	0.4812E+12	0.1047E+10	0.1472E+09	0.7344E+08	0.9838E+01
23	153	3	0.9593E+11	0.7294E+10	0.3528E+09	0.1639E+09	0.1437E+02
23	137	5	0.8649E+13	0.2479E+10	0.1831E+07	0.1525E+07	0.1275E+02
23	131	5	0.5221E+13	0.2690E+10	0.4764E+08	0.3968E+08	0.1202E+02
23	167	3	0.3217E+11	0.5691E+10	0.2120E+07	0.9007E+06	0.1743E+02
23	103	5	0.1632E+10	0.8727E+09	0.2223E+08	0.1207E+08	0.9684E+01
23	88	7	0.1827E+14	0.1068E+10	0.9855E+07	0.1150E+08	0.7535E+01
23	155	7	0.1092E+14	0.5593E+10	0.2101E+09	0.2450E+09	0.1437E+02
23	65	3	0.1713E+13	0.1434E+09	0.8140E+07	0.4070E+07	0.5189E+01
23	181	3	0.1813E+11	0.2155E+10	0.1361E+06	0.6082E+05	0.1919E+02
23	126	3	0.3238E+13	0.5001E+10	0.1374E+09	0.6859E+08	0.1107E+02
23	118	5	0.4812E+12	0.1046E+10	0.2410E+09	0.2004E+09	0.9838E+01
23	132	3	0.5213E+13	0.2693E+10	0.2889E+07	0.1444E+07	0.1202E+02
23	81	3	0.1660E+13	0.2147E+09	0.1209E+07	0.6044E+06	0.5334E+01
23	156	3	0.3967E+13	0.6445E+10	0.1017E+08	0.5077E+07	0.1438E+02
23	182	5	0.1818E+11	0.2155E+10	0.1056E+07	0.7867E+06	0.1919E+02
23	119	3	0.1983E+09	0.1149E+10	0.1307E+08	0.9618E+06	0.9844E+01
23	109	5	0.7493E+12	0.9525E+09	0.6635E+08	0.5522E+08	0.9765E+01
23	105	7	0.1898E+13	0.7251E+09	0.3723E+06	0.4342E+06	0.9720E+01
23	215	3	0.1794E+12	0.4549E+10	0.1279E+07	0.6237E+06	0.2151E+02
23	183	7	0.1833E+11	0.2155E+10	0.3729E+07	0.3893E+07	0.1919E+02
23	82	5	0.1662E+13	0.2147E+09	0.1012E+08	0.8432E+07	0.5335E+01
23	120	3	0.6102E+13	0.1634E+10	0.2459E+09	0.1229E+09	0.1004E+02
23	157	5	0.3940E+13	0.6451E+10	0.1971E+09	0.1640E+09	0.1438E+02
23	216	3	0.3538E+12	0.4457E+10	0.8696E+06	0.4294E+06	0.2157E+02
23	62	5	0.1729E+13	0.1431E+09	0.1444E+08	0.1203E+08	0.5186E+01
23	148	5	0.5411E+13	0.5470E+10	0.2473E+07	0.2059E+07	0.1431E+02
23	110	7	0.7500E+12	0.9517E+09	0.2254E+09	0.2626E+09	0.9765E+01
23	158	7	0.4280E+13	0.6400E+10	0.1448E+10	0.1687E+10	0.1438E+02
23	188	7	0.1375E+12	0.1967E+10	0.6859E+06	0.7889E+06	0.1932E+02
23	217	5	0.3536E+12	0.4456E+10	0.7486E+07	0.6161E+07	0.2157E+02
23	107	7	0.2378E+11	0.8795E+09	0.1768E+08	0.1989E+08	0.9735E+01
23	159	5	0.6236E+13	0.6741E+10	0.2797E+08	0.2328E+08	0.1446E+02
23	149	7	0.5423E+13	0.5472E+10	0.6703E+07	0.7812E+07	0.1431E+02
23	218	7	0.3534E+12	0.4455E+10	0.3050E+08	0.3514E+08	0.2157E+02
24	116	1	0.4812E+12	0.1047E+10	0.3532E+09	0.5874E+08	0.9838E+01
24	82	5	0.1662E+13	0.2147E+09	0.2840E+08	0.2366E+08	0.5335E+01

K_J,	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
24	132	3	0.5213E+13	0.2693E+10	0.8592E+08	0.4294E+08	0.1202E+02
24	182	5	0.1818E+11	0.2155E+10	0.2914E+07	0.2171E+07	0.1919E+02
24	159	5	0.6236E+13	0.6741E+10	0.3751E+06	0.3122E+06	0.1446E+02
24	221	3	0.8295E+12	0.4408E+10	0.2028E+07	0.1009E+07	0.2198E+02
24	87	5	0.1827E+14	0.1069E+10	0.7843E+07	0.6535E+07	0.7535E+01
24	81	3	0.1660E+13	0.2147E+09	0.1693E+08	0.8464E+07	0.5334E+01
24	222	1	0.8271E+12	0.4407E+10	0.8945E+07	0.1483E+07	0.2198E+02
24	152	5	0.1245E+12	0.7287E+10	0.1038E+09	0.8172E+08	0.1436E+02
24	106	5	0.1897E+13	0.7257E+09	0.1671E+06	0.1392E+06	0.9720E+01
24	133	1	0.1205E+14	0.5955E+10	0.1712E+08	0.2852E+07	0.1214E+02
24	86	3	0.1827E+14	0.1070E+10	0.4934E+07	0.2467E+07	0.7535E+01
24	117	3	0.4812E+12	0.1047E+10	0.8147E+08	0.4065E+08	0.9838E+01
24	109	5	0.7493E+12	0.9525E+09	0.1758E+09	0.1463E+09	0.9765E+01
24	44	3	0.3123E+15	0.2925E+09	0.7285E+06	0.3642E+06	0.3686E+01
24	153	3	0.9593E+11	0.7294E+10	0.4282E+09	0.1990E+09	0.1437E+02
24	129	5	0.1778E+13	0.2572E+10	0.1170E+06	0.9736E+05	0.1200E+02
24	102	3	0.1762E+14	0.2452E+10	0.1713E+09	0.8564E+08	0.9644E+01
24	154	1	0.2803E+09	0.7315E+10	0.9645E+09	0.5932E+07	0.1437E+02
24	189	1	0.2990E+12	0.2316E+10	0.8671E+07	0.1434E+07	0.1993E+02
24	65	3	0.1713E+13	0.1434E+09	0.4995E+07	0.2497E+07	0.5189E+01
24	134	3	0.1206E+14	0.5956E+10	0.3940E+07	0.1969E+07	0.1214E+02
24	215	3	0.1794E+12	0.4549E+10	0.8311E+06	0.4053E+06	0.2151E+02
24	125	5	0.3264E+13	0.4998E+10	0.8275E+08	0.6885E+08	0.1106E+02
24	166	5	0.3182E+11	0.5691E+10	0.1591E+07	0.1125E+07	0.1743E+02
24	118	5	0.4812E+12	0.1046E+10	0.8443E+08	0.7021E+08	0.9838E+01
24	62	5	0.1729E+13	0.1431E+09	0.5922E+07	0.4935E+07	0.5186E+01
24	190	3	0.2972E+12	0.2317E+10	0.1889E+07	0.9372E+06	0.1993E+02
24	216	3	0.3538E+12	0.4457E+10	0.1329E+08	0.6562E+07	0.2157E+02
24	67	1	0.1707E+13	0.1437E+09	0.2113E+08	0.3521E+07	0.5191E+01
24	119	3	0.1983E+09	0.1149E+10	0.1041E+06	0.7661E+04	0.9844E+01
24	148	5	0.5411E+13	0.5470E+10	0.2773E+07	0.2308E+07	0.1431E+02
24	45	5	0.3122E+15	0.2926E+09	0.6117E+06	0.5097E+06	0.3693E+01
24	167	3	0.3217E+11	0.5691E+10	0.1612E+07	0.6848E+06	0.1743E+02
24	191	5	0.2938E+12	0.2316E+10	0.1981E+07	0.1638E+07	0.1993E+02
24	217	5	0.3536E+12	0.4456E+10	0.2413E+08	0.1986E+08	0.2157E+02
24	156	3	0.3967E+13	0.6445E+10	0.5262E+09	0.2627E+09	0.1438E+02
24	115	1	0.9614E+13	0.1421E+10	0.1517E+06	0.2528E+05	0.9816E+01
24	168	1	0.3236E+11	0.5692E+10	0.5701E+07	0.8080E+06	0.1743E+02
24	135	5	0.1207E+14	0.5958E+10	0.3998E+07	0.3330E+07	0.1215E+02
24	126	3	0.3238E+13	0.5001E+10	0.8027E+08	0.4007E+08	0.1107E+02
24	131	5	0.5221E+13	0.2690E+10	0.1787E+09	0.1488E+09	0.1202E+02
24	108	3	0.7489E+12	0.9532E+09	0.1083E+09	0.5408E+08	0.9765E+01
24	43	1	0.3123E+15	0.2926E+09	0.1839E+07	0.3065E+06	0.3683E+01
24	157	5	0.3940E+13	0.6451E+10	0.1418E+10	0.1180E+10	0.1438E+02
24	181	3	0.1813E+11	0.2155E+10	0.1765E+07	0.7887E+06	0.1919E+02
24	127	1	0.3226E+13	0.5003E+10	0.3399E+09	0.5656E+08	0.1107E+02
24	151	3	0.1454E+13	0.7167E+10	0.8331E+07	0.4145E+07	0.1433E+02
24	220	5	0.8341E+12	0.4409E+10	0.2081E+07	0.1725E+07	0.2197E+02
24	120	3	0.6102E+13	0.1634E+10	0.1531E+09	0.7653E+08	0.1004E+02
25	181	3	0.1813E+11	0.2155E+10	0.2204E+07	0.9849E+06	0.1919E+02
25	44	3	0.3123E+15	0.2925E+09	0.7963E+06	0.3981E+06	0.3686E+01

K_J.	S_J	g_{sJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
25	132	3	0.5213E+13	0.2693E+10	0.1272E+09	0.6357E+08	0.1202E+02
25	102	3	0.1762E+14	0.2452E+10	0.5726E+08	0.2863E+08	0.9644E+01
25	81	3	0.1660E+13	0.2147E+09	0.2134E+08	0.1067E+08	0.5334E+01
25	216	3	0.3538E+12	0.4457E+10	0.1793E+08	0.8853E+07	0.2157E+02
25	134	3	0.1206E+14	0.5956E+10	0.5449E+07	0.2723E+07	0.1214E+02
25	86	3	0.1827E+14	0.1070E+10	0.6042E+07	0.3021E+07	0.7535E+01
25	126	3	0.3238E+13	0.5001E+10	0.1112E+09	0.5551E+08	0.1107E+02
25	120	3	0.6102E+13	0.1634E+10	0.5096E+08	0.2547E+08	0.1004E+02
25	151	3	0.1454E+13	0.7167E+10	0.8708E+06	0.4333E+06	0.1433E+02
25	167	3	0.3217E+11	0.5691E+10	0.2077E+07	0.8824E+06	0.1743E+02
25	117	3	0.4812E+12	0.1047E+10	0.1128E+09	0.5628E+08	0.9838E+01
25	108	3	0.7489E+12	0.9532E+09	0.1335E+09	0.6667E+08	0.9765E+01
25	221	3	0.8295E+12	0.4408E+10	0.2823E+07	0.1404E+07	0.2198E+02
25	153	3	0.9593E+11	0.7294E+10	0.1976E+09	0.9182E+08	0.1437E+02
25	190	3	0.2972E+12	0.2317E+10	0.2690E+07	0.1335E+07	0.1993E+02
25	156	3	0.3967E+13	0.6445E+10	0.1074E+10	0.5361E+09	0.1438E+02
25	215	3	0.1794E+12	0.4549E+10	0.2823E+06	0.1377E+06	0.2151E+02
25	65	3	0.1713E+13	0.1434E+09	0.7587E+07	0.3793E+07	0.5189E+01
26	85	3	0.4544E+15	0.6690E+10	0.1102E+08	0.5510E+07	0.5883E+01
26	147	3	0.1339E+15	0.6623E+10	0.1666E+10	0.8330E+09	0.1394E+02
26	196	3	0.7314E+12	0.2858E+10	0.4903E+06	0.2442E+06	0.2038E+02
26	128	3	0.5102E+13	0.2960E+10	0.6104E+09	0.3050E+09	0.1119E+02
26	214	3	0.1841E+13	0.4730E+10	0.3641E+07	0.1816E+07	0.2105E+02
26	101	3	0.5176E+14	0.8400E+09	0.2092E+09	0.1046E+09	0.9238E+01
26	235	3	0.1893E+11	0.4895E+10	0.2407E+07	0.9562E+06	0.2285E+02
26	143	3	0.1259E+14	0.6485E+10	0.1223E+06	0.6112E+05	0.1332E+02
27	117	3	0.4812E+12	0.1047E+10	0.5448E+07	0.2718E+07	0.9838E+01
27	183	7	0.1833E+11	0.2155E+10	0.1659E+06	0.1732E+06	0.1919E+02
27	89	5	0.2437E+15	0.6289E+09	0.1303E+07	0.1086E+07	0.8057E+01
27	184	3	0.1194E+12	0.2365E+10	0.1265E+06	0.6202E+05	0.1923E+02
27	153	3	0.9593E+11	0.7294E+10	0.6997E+08	0.3251E+08	0.1437E+02
27	131	5	0.5221E+13	0.2690E+10	0.7768E+06	0.6470E+06	0.1202E+02
27	221	3	0.8295E+12	0.4408E+10	0.1398E+06	0.6953E+05	0.2198E+02
27	110	7	0.7500E+12	0.9517E+09	0.1051E+08	0.1225E+08	0.9765E+01
27	111	7	0.5648E+13	0.5241E+09	0.1872E+07	0.2184E+07	0.9781E+01
27	102	3	0.1762E+14	0.2452E+10	0.1199E+08	0.5994E+07	0.9644E+01
27	108	3	0.7489E+12	0.9532E+09	0.8730E+06	0.4359E+06	0.9765E+01
27	148	5	0.5411E+13	0.5470E+10	0.1689E+08	0.1406E+08	0.1431E+02
27	223	5	0.6700E+12	0.4102E+10	0.4695E+07	0.3889E+07	0.2208E+02
27	188	7	0.1375E+12	0.1967E+10	0.1496E+08	0.1721E+08	0.1932E+02
27	155	7	0.1092E+14	0.5593E+10	0.1147E+10	0.1337E+10	0.1437E+02
27	135	5	0.1207E+14	0.5958E+10	0.5442E+06	0.4533E+06	0.1215E+02
27	118	5	0.4812E+12	0.1046E+10	0.1058E+08	0.8798E+07	0.9838E+01
27	86	3	0.1827E+14	0.1070E+10	0.1112E+06	0.5560E+05	0.7535E+01
27	166	5	0.3182E+11	0.5691E+10	0.1977E+06	0.1398E+06	0.1743E+02
27	149	7	0.5423E+13	0.5472E+10	0.3889E+06	0.4533E+06	0.1431E+02
27	106	5	0.1897E+13	0.7257E+09	0.1012E+07	0.8430E+06	0.9720E+01
27	62	5	0.1729E+13	0.1431E+09	0.6770E+06	0.5641E+06	0.5186E+01
27	132	3	0.5213E+13	0.2693E+10	0.1062E+08	0.5307E+07	0.1202E+02
27	136	3	0.5524E+14	0.6918E+10	0.3516E+07	0.1758E+07	0.1239E+02

K_J.	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
27	156	3	0.3967E+13	0.6445E+10	0.3469E+06	0.1732E+06	0.1438E+02
27	190	3	0.2972E+12	0.2317E+10	0.1207E+06	0.5988E+05	0.1993E+02
27	125	5	0.3264E+13	0.4998E+10	0.1072E+08	0.8920E+07	0.1106E+02
27	119	3	0.1983E+09	0.1149E+10	0.2908E+09	0.2140E+08	0.9844E+01
27	167	3	0.3217E+11	0.5691E+10	0.1182E+06	0.5022E+05	0.1743E+02
27	137	5	0.8649E+13	0.2479E+10	0.3961E+08	0.3300E+08	0.1275E+02
27	151	3	0.1454E+13	0.7167E+10	0.5196E+10	0.2585E+10	0.1433E+02
27	107	7	0.2378E+11	0.8795E+09	0.4024E+09	0.4527E+09	0.9735E+01
27	191	5	0.2938E+12	0.2316E+10	0.2577E+06	0.2131E+06	0.1993E+02
27	129	5	0.1778E+13	0.2572E+10	0.6638E+09	0.5524E+09	0.1200E+02
27	103	5	0.1632E+10	0.8727E+09	0.5057E+09	0.2746E+09	0.9684E+01
27	217	5	0.3536E+12	0.4456E+10	0.4052E+06	0.3335E+06	0.2157E+02
27	192	5	0.5725E+12	0.2155E+10	0.5470E+07	0.4541E+07	0.2031E+02
27	157	5	0.3940E+13	0.6451E+10	0.2356E+08	0.1960E+08	0.1438E+02
27	82	5	0.1662E+13	0.2147E+09	0.4481E+06	0.3734E+06	0.5335E+01
27	88	7	0.1827E+14	0.1068E+10	0.4860E+06	0.5670E+06	0.7535E+01
27	218	7	0.3534E+12	0.4455E+10	0.1361E+07	0.1568E+07	0.2157E+02
27	109	5	0.7493E+12	0.9525E+09	0.1626E+07	0.1353E+07	0.9765E+01
27	130	7	0.5235E+13	0.2687E+10	0.9591E+07	0.1118E+08	0.1202E+02
27	219	3	0.7506E+12	0.4369E+10	0.1059E+08	0.5264E+07	0.2165E+02
27	158	7	0.4280E+13	0.6400E+10	0.2067E+09	0.2408E+09	0.1438E+02
27	152	5	0.1245E+12	0.7287E+10	0.4893E+08	0.3852E+08	0.1436E+02
27	65	3	0.1713E+13	0.1434E+09	0.3691E+06	0.1845E+06	0.5189E+01
27	120	3	0.6102E+13	0.1634E+10	0.1026E+08	0.5129E+07	0.1004E+02
27	159	5	0.6236E+13	0.6741E+10	0.4342E+09	0.3614E+09	0.1446E+02
27	126	3	0.3238E+13	0.5001E+10	0.5870E+07	0.2930E+07	0.1107E+02
27	83	7	0.1665E+13	0.2147E+09	0.1666E+07	0.1943E+07	0.5337E+01
27	220	5	0.8341E+12	0.4409E+10	0.3165E+06	0.2624E+06	0.2197E+02
27	134	3	0.1206E+14	0.5956E+10	0.2499E+06	0.1249E+06	0.1214E+02
27	105	7	0.1898E+13	0.7251E+09	0.1879E+06	0.2191E+06	0.9720E+01
28	130	7	0.5235E+13	0.2687E+10	0.5844E+07	0.6815E+07	0.1202E+02
28	44	3	0.3123E+15	0.2925E+09	0.1824E+06	0.9120E+05	0.3686E+01
28	186	7	0.1096E+12	0.2034E+10	0.7972E+06	0.9131E+06	0.1925E+02
28	137	5	0.8649E+13	0.2479E+10	0.1507E+06	0.1255E+06	0.1275E+02
28	153	3	0.9593E+11	0.7294E+10	0.1920E+09	0.8922E+08	0.1437E+02
28	111	7	0.5648E+13	0.5241E+09	0.4343E+09	0.5066E+09	0.9781E+01
28	157	5	0.3940E+13	0.6451E+10	0.3938E+09	0.3276E+09	0.1438E+02
28	132	3	0.5213E+13	0.2693E+10	0.1457E+10	0.7281E+09	0.1202E+02
28	118	5	0.4812E+12	0.1046E+10	0.2955E+06	0.2457E+06	0.9838E+01
28	151	3	0.1454E+13	0.7167E+10	0.8869E+06	0.4413E+06	0.1433E+02
28	103	5	0.1632E+10	0.8727E+09	0.2144E+07	0.1164E+07	0.9684E+01
28	108	3	0.7489E+12	0.9532E+09	0.7131E+08	0.3561E+08	0.9765E+01
28	181	3	0.1813E+11	0.2155E+10	0.1477E+07	0.6600E+06	0.1919E+02
28	158	7	0.4280E+13	0.6400E+10	0.1256E+08	0.1463E+08	0.1438E+02
28	109	5	0.7493E+12	0.9525E+09	0.1711E+07	0.1424E+07	0.9765E+01
28	155	7	0.1092E+14	0.5593E+10	0.5131E+06	0.5983E+06	0.1437E+02
28	86	3	0.1827E+14	0.1070E+10	0.1256E+08	0.6280E+07	0.7535E+01
28	119	3	0.1983E+09	0.1149E+10	0.1245E+07	0.9162E+05	0.9844E+01
28	159	5	0.6236E+13	0.6741E+10	0.6860E+07	0.5710E+07	0.1446E+02
28	131	5	0.5221E+13	0.2690E+10	0.2151E+09	0.1792E+09	0.1202E+02
28	216	3	0.3538E+12	0.4457E+10	0.3196E+07	0.1578E+07	0.2157E+02

K_J	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
28	182	5	0.1818E+11	0.2155E+10	0.3006E+06	0.2240E+06	0.1919E+02
28	148	5	0.5411E+13	0.5470E+10	0.3358E+10	0.2796E+10	0.1431E+02
28	129	5	0.1778E+13	0.2572E+10	0.2530E+07	0.2105E+07	0.1200E+02
28	152	5	0.1245E+12	0.7287E+10	0.2772E+08	0.2182E+08	0.1436E+02
28	117	3	0.4812E+12	0.1047E+10	0.9358E+06	0.4669E+06	0.9838E+01
28	106	5	0.1897E+13	0.7257E+09	0.2786E+09	0.2321E+09	0.9720E+01
28	105	7	0.1898E+13	0.7251E+09	0.1240E+08	0.1446E+08	0.9720E+01
28	156	3	0.3967E+13	0.6445E+10	0.3604E+10	0.1799E+10	0.1438E+02
28	217	5	0.3536E+12	0.4456E+10	0.2463E+06	0.2027E+06	0.2157E+02
28	149	7	0.5423E+13	0.5472E+10	0.4053E+09	0.4724E+09	0.1431E+02
28	87	5	0.1827E+14	0.1069E+10	0.8762E+06	0.7301E+06	0.7535E+01
28	107	7	0.2378E+11	0.8795E+09	0.1665E+07	0.1873E+07	0.9735E+01
28	185	5	0.1096E+12	0.2034E+10	0.7435E+07	0.6083E+07	0.1925E+02
29	107	7	0.2378E+11	0.8795E+09	0.8135E+06	0.9152E+06	0.9735E+01
29	87	5	0.1827E+14	0.1069E+10	0.1122E+08	0.9349E+07	0.7535E+01
29	109	5	0.7493E+12	0.9525E+09	0.6390E+08	0.5318E+08	0.9765E+01
29	131	5	0.5221E+13	0.2690E+10	0.1285E+10	0.1070E+10	0.1202E+02
29	218	7	0.3534E+12	0.4455E+10	0.1575E+06	0.1815E+06	0.2157E+02
29	45	5	0.3122E+15	0.2926E+09	0.3083E+06	0.2569E+06	0.3693E+01
29	185	5	0.1096E+12	0.2034E+10	0.9674E+06	0.7915E+06	0.1925E+02
29	157	5	0.3940E+13	0.6451E+10	0.3062E+10	0.2547E+10	0.1438E+02
29	129	5	0.1778E+13	0.2572E+10	0.3695E+07	0.3075E+07	0.1200E+02
29	88	7	0.1827E+14	0.1068E+10	0.4316E+06	0.5035E+06	0.7535E+01
29	186	7	0.1096E+12	0.2034E+10	0.7006E+07	0.8025E+07	0.1925E+02
29	103	5	0.1632E+10	0.8727E+09	0.1557E+06	0.8454E+05	0.9684E+01
29	187	9	0.1096E+12	0.2035E+10	0.6826E+06	0.1005E+07	0.1925E+02
29	106	5	0.1897E+13	0.7257E+09	0.3362E+08	0.2801E+08	0.9720E+01
29	137	5	0.8649E+13	0.2479E+10	0.2949E+06	0.2457E+06	0.1275E+02
29	155	7	0.1092E+14	0.5593E+10	0.7682E+07	0.8958E+07	0.1437E+02
29	158	7	0.4280E+13	0.6400E+10	0.2941E+09	0.3426E+09	0.1438E+02
29	89	5	0.2437E+15	0.6289E+09	0.1006E+06	0.8383E+05	0.8057E+01
29	118	5	0.4812E+12	0.1046E+10	0.1872E+07	0.1557E+07	0.9838E+01
29	148	5	0.5411E+13	0.5470E+10	0.5043E+09	0.4198E+09	0.1431E+02
29	125	5	0.3264E+13	0.4998E+10	0.1657E+06	0.1379E+06	0.1106E+02
29	130	7	0.5235E+13	0.2687E+10	0.1750E+09	0.2041E+09	0.1202E+02
29	159	5	0.6236E+13	0.6741E+10	0.7082E+07	0.5895E+07	0.1446E+02
29	152	5	0.1245E+12	0.7287E+10	0.2431E+09	0.1914E+09	0.1436E+02
29	110	7	0.7500E+12	0.9517E+09	0.1018E+06	0.1186E+06	0.9765E+01
29	105	7	0.1898E+13	0.7251E+09	0.2640E+09	0.3079E+09	0.9720E+01
29	182	5	0.1818E+11	0.2155E+10	0.1287E+07	0.9588E+06	0.1919E+02
29	104	9	0.1899E+13	0.7241E+09	0.6451E+07	0.9673E+07	0.9720E+01
29	149	7	0.5423E+13	0.5472E+10	0.3169E+10	0.3693E+10	0.1431E+02
29	111	7	0.5648E+13	0.5241E+09	0.3761E+08	0.4387E+08	0.9781E+01
29	150	9	0.5406E+13	0.5473E+10	0.3580E+09	0.5365E+09	0.1432E+02
29	112	9	0.5648E+13	0.5236E+09	0.4422E+09	0.6632E+09	0.9781E+01
29	183	7	0.1833E+11	0.2155E+10	0.2872E+06	0.2998E+06	0.1919E+02
29	114	9	0.4348E+11	0.4563E+09	0.1247E+07	0.1851E+07	0.9794E+01
29	217	5	0.3536E+12	0.4456E+10	0.2827E+07	0.2327E+07	0.2157E+02
29	191	5	0.2938E+12	0.2316E+10	0.1124E+06	0.9293E+05	0.1993E+02
30	183	7	0.1833E+11	0.2155E+10	0.1502E+07	0.1568E+07	0.1919E+02

K_J	S_J	g_{sJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
30	187	9	0.1096E+12	0.2035E+10	0.8139E+07	0.1199E+08	0.1925E+02
30	149	7	0.5423E+13	0.5472E+10	0.4050E+09	0.4720E+09	0.1431E+02
30	155	7	0.1092E+14	0.5593E+10	0.9059E+08	0.1056E+09	0.1437E+02
30	130	7	0.5235E+13	0.2687E+10	0.1402E+10	0.1635E+10	0.1202E+02
30	113	11	0.5648E+13	0.5227E+09	0.4753E+09	0.8713E+09	0.9781E+01
30	150	9	0.5406E+13	0.5473E+10	0.3776E+10	0.5658E+10	0.1432E+02
30	88	7	0.1827E+14	0.1068E+10	0.1083E+08	0.1263E+08	0.7535E+01
30	104	9	0.1899E+13	0.7241E+09	0.2758E+09	0.4135E+09	0.9720E+01
30	158	7	0.4280E+13	0.6400E+10	0.3234E+10	0.3767E+10	0.1438E+02
30	105	7	0.1898E+13	0.7251E+09	0.2347E+08	0.2737E+08	0.9720E+01
30	111	7	0.5648E+13	0.5241E+09	0.5946E+06	0.6936E+06	0.9781E+01
30	218	7	0.3534E+12	0.4455E+10	0.2804E+07	0.3231E+07	0.2157E+02
30	110	7	0.7500E+12	0.9517E+09	0.5423E+08	0.6319E+08	0.9765E+01
30	186	7	0.1096E+12	0.2034E+10	0.7278E+06	0.8336E+06	0.1925E+02
30	112	9	0.5648E+13	0.5236E+09	0.2939E+08	0.4408E+08	0.9781E+01
31	221	3	0.8295E+12	0.4408E+10	0.3917E+07	0.1948E+07	0.2198E+02
31	109	5	0.7493E+12	0.9525E+09	0.7748E+08	0.6448E+08	0.9765E+01
31	82	5	0.1662E+13	0.2147E+09	0.3579E+06	0.2982E+06	0.5335E+01
31	191	5	0.2938E+12	0.2316E+10	0.2011E+06	0.1663E+06	0.1993E+02
31	222	1	0.8271E+12	0.4407E+10	0.1429E+08	0.2369E+07	0.2198E+02
31	125	5	0.3264E+13	0.4998E+10	0.5985E+06	0.4980E+06	0.1106E+02
31	45	5	0.3122E+15	0.2926E+09	0.4060E+06	0.3383E+06	0.3693E+01
31	157	5	0.3940E+13	0.6451E+10	0.5910E+08	0.4917E+08	0.1438E+02
31	134	3	0.1206E+14	0.5956E+10	0.1184E+07	0.5917E+06	0.1214E+02
31	216	3	0.3538E+12	0.4457E+10	0.1352E+07	0.6676E+06	0.2157E+02
31	153	3	0.9593E+11	0.7294E+10	0.1101E+10	0.5116E+09	0.1437E+02
31	131	5	0.5221E+13	0.2690E+10	0.1003E+09	0.8354E+08	0.1202E+02
31	117	3	0.4812E+12	0.1047E+10	0.7296E+08	0.3640E+08	0.9838E+01
31	108	3	0.7489E+12	0.9532E+09	0.3563E+09	0.1779E+09	0.9765E+01
31	154	1	0.2803E+09	0.7315E+10	0.5535E+10	0.3404E+08	0.1437E+02
31	167	3	0.3217E+11	0.5691E+10	0.2843E+07	0.1208E+07	0.1743E+02
31	185	5	0.1096E+12	0.2034E+10	0.1056E+07	0.8640E+06	0.1925E+02
31	67	1	0.1707E+13	0.1437E+09	0.3412E+06	0.5686E+05	0.5191E+01
31	115	1	0.9614E+13	0.1421E+10	0.2870E+07	0.4783E+06	0.9816E+01
31	78	5	0.2038E+13	0.1960E+09	0.6283E+07	0.5235E+07	0.5259E+01
31	217	5	0.3536E+12	0.4456E+10	0.1116E+06	0.9184E+05	0.2157E+02
31	168	1	0.3236E+11	0.5692E+10	0.1258E+08	0.1783E+07	0.1743E+02
31	129	5	0.1778E+13	0.2572E+10	0.1418E+07	0.1180E+07	0.1200E+02
31	86	3	0.1827E+14	0.1070E+10	0.9345E+07	0.4672E+07	0.7535E+01
31	121	1	0.1191E+15	0.2289E+10	0.3630E+06	0.6050E+05	0.1029E+02
31	151	3	0.1454E+13	0.7167E+10	0.7802E+07	0.3882E+07	0.1433E+02
31	103	5	0.1632E+10	0.8727E+09	0.6069E+06	0.3295E+06	0.9684E+01
31	159	5	0.6236E+13	0.6741E+10	0.4105E+07	0.3417E+07	0.1446E+02
31	126	3	0.3238E+13	0.5001E+10	0.7530E+07	0.3759E+07	0.1107E+02
31	132	3	0.5213E+13	0.2693E+10	0.5288E+09	0.2643E+09	0.1202E+02
31	116	1	0.4812E+12	0.1047E+10	0.2739E+09	0.4555E+08	0.9838E+01
31	189	1	0.2990E+12	0.2316E+10	0.1707E+08	0.2823E+07	0.1993E+02
31	81	3	0.1660E+13	0.2147E+09	0.9899E+06	0.4949E+06	0.5334E+01
31	118	5	0.4812E+12	0.1046E+10	0.3308E+07	0.2751E+07	0.9838E+01
31	181	3	0.1813E+11	0.2155E+10	0.2166E+07	0.9679E+06	0.1919E+02
31	127	1	0.3226E+13	0.5003E+10	0.1917E+08	0.3190E+07	0.1107E+02

K_J	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
31	133	1	0.1205E+14	0.5955E+10	0.3698E+07	0.6160E+06	0.1214E+02
31	43	1	0.3123E+15	0.2926E+09	0.4678E+08	0.7797E+07	0.3683E+01
31	87	5	0.1827E+14	0.1069E+10	0.2204E+07	0.1837E+07	0.7535E+01
31	220	5	0.8341E+12	0.4409E+10	0.1849E+06	0.1533E+06	0.2197E+02
31	156	3	0.3967E+13	0.6445E+10	0.5896E+09	0.2943E+09	0.1438E+02
31	152	5	0.1245E+12	0.7287E+10	0.3505E+08	0.2759E+08	0.1436E+02
31	190	3	0.2972E+12	0.2317E+10	0.4513E+07	0.2239E+07	0.1993E+02
31	148	5	0.5411E+13	0.5470E+10	0.1100E+10	0.9157E+09	0.1431E+02
31	44	3	0.3123E+15	0.2925E+09	0.1117E+08	0.5585E+07	0.3686E+01
31	102	3	0.1762E+14	0.2452E+10	0.1030E+06	0.5149E+05	0.9644E+01
31	182	5	0.1818E+11	0.2155E+10	0.5139E+06	0.3829E+06	0.1919E+02
31	106	5	0.1897E+13	0.7257E+09	0.3208E+09	0.2672E+09	0.9720E+01
31	119	3	0.1983E+09	0.1149E+10	0.2305E+07	0.1696E+06	0.9844E+01
32	103	5	0.1632E+10	0.8727E+09	0.1410E+06	0.7656E+05	0.9684E+01
32	132	3	0.5213E+13	0.2693E+10	0.2506E+09	0.1252E+09	0.1202E+02
32	109	5	0.7493E+12	0.9525E+09	0.3356E+09	0.2793E+09	0.9765E+01
32	221	3	0.8295E+12	0.4408E+10	0.1079E+08	0.5366E+07	0.2198E+02
32	190	3	0.2972E+12	0.2317E+10	0.1277E+08	0.6336E+07	0.1993E+02
32	83	7	0.1665E+13	0.2147E+09	0.3373E+06	0.3935E+06	0.5337E+01
32	156	3	0.3967E+13	0.6445E+10	0.1119E+08	0.5586E+07	0.1438E+02
32	152	5	0.1245E+12	0.7287E+10	0.5801E+09	0.4567E+09	0.1436E+02
32	182	5	0.1818E+11	0.2155E+10	0.1896E+07	0.1413E+07	0.1919E+02
32	148	5	0.5411E+13	0.5470E+10	0.3158E+09	0.2629E+09	0.1431E+02
32	78	5	0.2038E+13	0.1960E+09	0.1072E+07	0.8932E+06	0.5259E+01
32	130	7	0.5235E+13	0.2687E+10	0.7025E+08	0.8192E+08	0.1202E+02
32	216	3	0.3538E+12	0.4457E+10	0.2796E+06	0.1381E+06	0.2157E+02
32	82	5	0.1662E+13	0.2147E+09	0.9657E+06	0.8046E+06	0.5335E+01
32	45	5	0.3122E+15	0.2926E+09	0.6411E+07	0.5342E+07	0.3693E+01
32	191	5	0.2938E+12	0.2316E+10	0.2818E+07	0.2330E+07	0.1993E+02
32	118	5	0.4812E+12	0.1046E+10	0.4592E+08	0.3818E+08	0.9838E+01
32	166	5	0.3182E+11	0.5691E+10	0.1545E+07	0.1092E+07	0.1743E+02
32	183	7	0.1833E+11	0.2155E+10	0.4006E+06	0.4182E+06	0.1919E+02
32	106	5	0.1897E+13	0.7257E+09	0.4323E+08	0.3601E+08	0.9720E+01
32	108	3	0.7489E+12	0.9532E+09	0.1080E+09	0.5393E+08	0.9765E+01
32	149	7	0.5423E+13	0.5472E+10	0.1073E+10	0.1251E+10	0.1431E+02
32	86	3	0.1827E+14	0.1070E+10	0.2368E+07	0.1184E+07	0.7535E+01
32	157	5	0.3940E+13	0.6451E+10	0.5987E+09	0.4981E+09	0.1438E+02
32	217	5	0.3536E+12	0.4456E+10	0.1341E+07	0.1104E+07	0.2157E+02
32	110	7	0.7500E+12	0.9517E+09	0.5976E+08	0.6963E+08	0.9765E+01
32	153	3	0.9593E+11	0.7294E+10	0.4148E+10	0.1927E+10	0.1437E+02
32	102	3	0.1762E+14	0.2452E+10	0.2481E+06	0.1240E+06	0.9644E+01
32	185	5	0.1096E+12	0.2034E+10	0.4138E+06	0.3386E+06	0.1925E+02
32	125	5	0.3264E+13	0.4998E+10	0.6208E+07	0.5165E+07	0.1106E+02
32	88	7	0.1827E+14	0.1068E+10	0.1781E+07	0.2078E+07	0.7535E+01
32	167	3	0.3217E+11	0.5691E+10	0.9355E+07	0.3974E+07	0.1743E+02
32	65	3	0.1713E+13	0.1434E+09	0.2523E+06	0.1261E+06	0.5189E+01
32	131	5	0.5221E+13	0.2690E+10	0.4492E+09	0.3741E+09	0.1202E+02
32	186	7	0.1096E+12	0.2034E+10	0.1006E+07	0.1152E+07	0.1925E+02
32	134	3	0.1206E+14	0.5956E+10	0.2733E+07	0.1366E+07	0.1214E+02
32	158	7	0.4280E+13	0.6400E+10	0.2992E+08	0.3485E+08	0.1438E+02
32	107	7	0.2378E+11	0.8795E+09	0.1219E+06	0.1371E+06	0.9735E+01

K_J	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
32	111	7	0.5648E+13	0.5241E+09	0.2021E+07	0.2358E+07	0.9781E+01
32	81	3	0.1660E+13	0.2147E+09	0.3734E+06	0.1867E+06	0.5334E+01
32	87	5	0.1827E+14	0.1069E+10	0.9088E+07	0.7573E+07	0.7535E+01
32	151	3	0.1454E+13	0.7167E+10	0.2278E+08	0.1133E+08	0.1433E+02
32	155	7	0.1092E+14	0.5593E+10	0.1816E+07	0.2118E+07	0.1437E+02
32	117	3	0.4812E+12	0.1047E+10	0.2056E+09	0.1026E+09	0.9838E+01
32	220	5	0.8341E+12	0.4409E+10	0.2541E+07	0.2106E+07	0.2197E+02
32	129	5	0.1778E+13	0.2572E+10	0.2411E+06	0.2006E+06	0.1200E+02
32	105	7	0.1898E+13	0.7251E+09	0.3511E+09	0.4095E+09	0.9720E+01
32	181	3	0.1813E+11	0.2155E+10	0.8726E+06	0.3899E+06	0.1919E+02
32	79	7	0.2032E+13	0.1954E+09	0.6615E+07	0.7717E+07	0.5262E+01
32	44	3	0.3123E+15	0.2925E+09	0.3495E+08	0.1747E+08	0.3686E+01
32	135	5	0.1207E+14	0.5958E+10	0.8436E+06	0.7027E+06	0.1215E+02
32	126	3	0.3238E+13	0.5001E+10	0.1457E+08	0.7274E+07	0.1107E+02
33	130	7	0.5235E+13	0.2687E+10	0.5640E+09	0.6577E+09	0.1202E+02
33	125	5	0.3264E+13	0.4998E+10	0.2012E+08	0.1674E+08	0.1106E+02
33	158	7	0.4280E+13	0.6400E+10	0.4353E+09	0.5071E+09	0.1438E+02
33	182	5	0.1818E+11	0.2155E+10	0.6020E+06	0.4485E+06	0.1919E+02
33	107	7	0.2378E+11	0.8795E+09	0.9123E+06	0.1026E+07	0.9735E+01
33	87	5	0.1827E+14	0.1069E+10	0.1250E+07	0.1042E+07	0.7535E+01
33	217	5	0.3536E+12	0.4456E+10	0.1152E+06	0.9481E+05	0.2157E+02
33	104	9	0.1899E+13	0.7241E+09	0.3941E+09	0.5909E+09	0.9720E+01
33	152	5	0.1245E+12	0.7287E+10	0.4495E+10	0.3539E+10	0.1436E+02
33	135	5	0.1207E+14	0.5958E+10	0.3339E+07	0.2781E+07	0.1215E+02
33	80	9	0.2028E+13	0.1948E+09	0.7226E+07	0.1084E+08	0.5266E+01
33	149	7	0.5423E+13	0.5472E+10	0.2640E+09	0.3077E+09	0.1431E+02
33	159	5	0.6236E+13	0.6741E+10	0.3165E+07	0.2635E+07	0.1446E+02
33	183	7	0.1833E+11	0.2155E+10	0.2484E+07	0.2593E+07	0.1919E+02
33	218	7	0.3534E+12	0.4455E+10	0.1440E+07	0.1659E+07	0.2157E+02
33	88	7	0.1827E+14	0.1068E+10	0.1202E+08	0.1402E+08	0.7535E+01
33	110	7	0.7500E+12	0.9517E+09	0.4351E+09	0.5070E+09	0.9765E+01
33	83	7	0.1665E+13	0.2147E+09	0.1550E+07	0.1808E+07	0.5337E+01
33	150	9	0.5406E+13	0.5473E+10	0.1183E+10	0.1773E+10	0.1432E+02
33	45	5	0.3122E+15	0.2926E+09	0.3815E+08	0.3179E+08	0.3693E+01
33	79	7	0.2032E+13	0.1954E+09	0.7204E+06	0.8404E+06	0.5262E+01
33	118	5	0.4812E+12	0.1046E+10	0.2349E+09	0.1953E+09	0.9838E+01
33	106	5	0.1897E+13	0.7257E+09	0.6088E+06	0.5071E+06	0.9720E+01
33	191	5	0.2938E+12	0.2316E+10	0.1451E+08	0.1200E+08	0.1993E+02
33	131	5	0.5221E+13	0.2690E+10	0.1844E+09	0.1536E+09	0.1202E+02
33	129	5	0.1778E+13	0.2572E+10	0.4798E+07	0.3993E+07	0.1200E+02
33	62	5	0.1729E+13	0.1431E+09	0.1611E+06	0.1342E+06	0.5186E+01
33	192	5	0.5725E+12	0.2155E+10	0.1130E+06	0.9381E+05	0.2031E+02
33	220	5	0.8341E+12	0.4409E+10	0.1259E+08	0.1044E+08	0.2197E+02
33	137	5	0.8649E+13	0.2479E+10	0.3464E+06	0.2886E+06	0.1275E+02
33	111	7	0.5648E+13	0.5241E+09	0.2993E+06	0.3492E+06	0.9781E+01
33	103	5	0.1632E+10	0.8727E+09	0.1600E+06	0.8688E+05	0.9684E+01
33	109	5	0.7493E+12	0.9525E+09	0.6358E+08	0.5292E+08	0.9765E+01
33	186	7	0.1096E+12	0.2034E+10	0.3989E+06	0.4569E+06	0.1925E+02
33	157	5	0.3940E+13	0.6451E+10	0.6841E+08	0.5692E+08	0.1438E+02
33	112	9	0.5648E+13	0.5236E+09	0.3558E+07	0.5337E+07	0.9781E+01
33	89	5	0.2437E+15	0.6289E+09	0.1091E+06	0.9092E+05	0.8057E+01
33	187	9	0.1096E+12	0.2035E+10	0.1132E+07	0.1667E+07	0.1925E+02

$K_{J'}$	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
33	105	7	0.1898E+13	0.7251E+09	0.2558E+08	0.2983E+08	0.9720E+01
33	166	5	0.3182E+11	0.5691E+10	0.9916E+07	0.7010E+07	0.1743E+02
33	114	9	0.4348E+11	0.4563E+09	0.1426E+07	0.2117E+07	0.9794E+01
33	148	5	0.5411E+13	0.5470E+10	0.1787E+08	0.1488E+08	0.1431E+02
33	82	5	0.1662E+13	0.2147E+09	0.2728E+06	0.2273E+06	0.5335E+01
33	155	7	0.1092E+14	0.5593E+10	0.6896E+08	0.8041E+08	0.1437E+02
34	112	9	0.5648E+13	0.5236E+09	0.9759E+06	0.1464E+07	0.9781E+01
34	131	5	0.5221E+13	0.2690E+10	0.7897E+06	0.6577E+06	0.1202E+02
34	130	7	0.5235E+13	0.2687E+10	0.3751E+07	0.4374E+07	0.1202E+02
34	106	5	0.1897E+13	0.7257E+09	0.1013E+06	0.8438E+05	0.9720E+01
34	118	5	0.4812E+12	0.1046E+10	0.8409E+06	0.6992E+06	0.9838E+01
34	155	7	0.1092E+14	0.5593E+10	0.3896E+10	0.4543E+10	0.1437E+02
34	129	5	0.1778E+13	0.2572E+10	0.1365E+10	0.1136E+10	0.1200E+02
34	159	5	0.6236E+13	0.6741E+10	0.3875E+10	0.3226E+10	0.1446E+02
34	107	7	0.2378E+11	0.8795E+09	0.2862E+09	0.3220E+09	0.9735E+01
34	105	7	0.1898E+13	0.7251E+09	0.1221E+07	0.1424E+07	0.9720E+01
34	114	9	0.4348E+11	0.4563E+09	0.4285E+09	0.6361E+09	0.9794E+01
34	157	5	0.3940E+13	0.6451E+10	0.3752E+07	0.3122E+07	0.1438E+02
34	223	5	0.6700E+12	0.4102E+10	0.8350E+07	0.6916E+07	0.2208E+02
34	149	7	0.5423E+13	0.5472E+10	0.1556E+07	0.1814E+07	0.1431E+02
34	137	5	0.8649E+13	0.2479E+10	0.9820E+08	0.8181E+08	0.1275E+02
34	103	5	0.1632E+10	0.8727E+09	0.5289E+08	0.2872E+08	0.9684E+01
34	89	5	0.2437E+15	0.6289E+09	0.3663E+08	0.3052E+08	0.8057E+01
34	104	9	0.1899E+13	0.7241E+09	0.9724E+06	0.1458E+07	0.9720E+01
34	188	7	0.1375E+12	0.1967E+10	0.8657E+07	0.9957E+07	0.1932E+02
34	150	9	0.5406E+13	0.5473E+10	0.8568E+07	0.1284E+08	0.1432E+02
34	109	5	0.7493E+12	0.9525E+09	0.7080E+06	0.5893E+06	0.9765E+01
34	45	5	0.3122E+15	0.2926E+09	0.1333E+06	0.1111E+06	0.3693E+01
34	110	7	0.7500E+12	0.9517E+09	0.1325E+07	0.1544E+07	0.9765E+01
34	148	5	0.5411E+13	0.5470E+10	0.3846E+07	0.3202E+07	0.1431E+02
34	192	5	0.5725E+12	0.2155E+10	0.3453E+08	0.2867E+08	0.2031E+02
34	158	7	0.4280E+13	0.6400E+10	0.1413E+09	0.1646E+09	0.1438E+02
34	152	5	0.1245E+12	0.7287E+10	0.9160E+07	0.7211E+07	0.1436E+02
35	116	1	0.4812E+12	0.1047E+10	0.1267E+07	0.2107E+06	0.9838E+01
35	154	1	0.2803E+09	0.7315E+10	0.1535E+08	0.9441E+05	0.1437E+02
35	184	3	0.1194E+12	0.2365E+10	0.4819E+06	0.2363E+06	0.1923E+02
35	192	5	0.5725E+12	0.2155E+10	0.1920E+07	0.1594E+07	0.2031E+02
35	89	5	0.2437E+15	0.6289E+09	0.2649E+06	0.2207E+06	0.8057E+01
35	156	3	0.3967E+13	0.6445E+10	0.8141E+06	0.4064E+06	0.1438E+02
35	127	1	0.3226E+13	0.5003E+10	0.2588E+06	0.4307E+05	0.1107E+02
35	152	5	0.1245E+12	0.7287E+10	0.6072E+06	0.4780E+06	0.1436E+02
35	103	5	0.1632E+10	0.8727E+09	0.1833E+09	0.9953E+08	0.9684E+01
35	115	1	0.9614E+13	0.1421E+10	0.8357E+09	0.1393E+09	0.9816E+01
35	117	3	0.4812E+12	0.1047E+10	0.2599E+06	0.1297E+06	0.9838E+01
35	151	3	0.1454E+13	0.7167E+10	0.1504E+10	0.7483E+09	0.1433E+02
35	137	5	0.8649E+13	0.2479E+10	0.6495E+06	0.5411E+06	0.1275E+02
35	119	3	0.1983E+09	0.1149E+10	0.6584E+09	0.4845E+08	0.9844E+01
35	223	5	0.6700E+12	0.4102E+10	0.2982E+07	0.2470E+07	0.2208E+02
35	121	1	0.1191E+15	0.2289E+10	0.1001E+09	0.1668E+08	0.1029E+02
35	43	1	0.3123E+15	0.2926E+09	0.1100E+06	0.1833E+05	0.3683E+01

K_J,	S_J	g_{sJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
35	132	3	0.5213E+13	0.2693E+10	0.1346E+07	0.6727E+06	0.1202E+02
35	109	5	0.7493E+12	0.9525E+09	0.1231E+06	0.1025E+06	0.9765E+01
35	159	5	0.6236E+13	0.6741E+10	0.2171E+10	0.1807E+10	0.1446E+02
35	131	5	0.5221E+13	0.2690E+10	0.5079E+06	0.4230E+06	0.1202E+02
35	161	1	0.1079E+14	0.5350E+10	0.2122E+06	0.3535E+05	0.1618E+02
35	129	5	0.1778E+13	0.2572E+10	0.3740E+09	0.3112E+09	0.1200E+02
35	157	5	0.3940E+13	0.6451E+10	0.1603E+07	0.1334E+07	0.1438E+02
35	153	3	0.9593E+11	0.7294E+10	0.1874E+08	0.8708E+07	0.1437E+02
35	148	5	0.5411E+13	0.5470E+10	0.1494E+07	0.1244E+07	0.1431E+02
35	108	3	0.7489E+12	0.9532E+09	0.1385E+07	0.6916E+06	0.9765E+01
35	106	5	0.1897E+13	0.7257E+09	0.9895E+06	0.8243E+06	0.9720E+01
35	236	1	0.1610E+11	0.4127E+10	0.2279E+08	0.3023E+07	0.2306E+02
36	132	3	0.5213E+13	0.2693E+10	0.3656E+07	0.1827E+07	0.1202E+02
36	217	5	0.3536E+12	0.4456E+10	0.8620E+07	0.7094E+07	0.2157E+02
36	88	7	0.1827E+14	0.1068E+10	0.2657E+08	0.3100E+08	0.7535E+01
36	62	5	0.1729E+13	0.1431E+09	0.5005E+08	0.4170E+08	0.5186E+01
36	126	3	0.3238E+13	0.5001E+10	0.2897E+09	0.1446E+09	0.1107E+02
36	135	5	0.1207E+14	0.5958E+10	0.1008E+08	0.8396E+07	0.1215E+02
36	117	3	0.4812E+12	0.1047E+10	0.1469E+09	0.7329E+08	0.9838E+01
36	83	7	0.1665E+13	0.2147E+09	0.1183E+09	0.1380E+09	0.5337E+01
36	102	3	0.1762E+14	0.2452E+10	0.7469E+08	0.3734E+08	0.9644E+01
36	108	3	0.7489E+12	0.9532E+09	0.1553E+06	0.7755E+05	0.9765E+01
36	218	7	0.3534E+12	0.4455E+10	0.3420E+08	0.3940E+08	0.2157E+02
36	157	5	0.3940E+13	0.6451E+10	0.6423E+08	0.5344E+08	0.1438E+02
36	149	7	0.5423E+13	0.5472E+10	0.3077E+06	0.3586E+06	0.1431E+02
36	109	5	0.7493E+12	0.9525E+09	0.1601E+07	0.1332E+07	0.9765E+01
36	87	5	0.1827E+14	0.1069E+10	0.7038E+07	0.5865E+07	0.7535E+01
36	155	7	0.1092E+14	0.5593E+10	0.1529E+08	0.1783E+08	0.1437E+02
36	79	7	0.2032E+13	0.1954E+09	0.1362E+06	0.1589E+06	0.5262E+01
36	152	5	0.1245E+12	0.7287E+10	0.3967E+09	0.3123E+09	0.1436E+02
36	215	3	0.1794E+12	0.4549E+10	0.1161E+08	0.5661E+07	0.2151E+02
36	131	5	0.5221E+13	0.2690E+10	0.3187E+08	0.2654E+08	0.1202E+02
36	82	5	0.1662E+13	0.2147E+09	0.3185E+08	0.2654E+08	0.5335E+01
36	166	5	0.3182E+11	0.5691E+10	0.2388E+08	0.1688E+08	0.1743E+02
36	65	3	0.1713E+13	0.1434E+09	0.2853E+08	0.1426E+08	0.5189E+01
36	125	5	0.3264E+13	0.4998E+10	0.5092E+09	0.4237E+09	0.1106E+02
36	120	3	0.6102E+13	0.1634E+10	0.2323E+09	0.1161E+09	0.1004E+02
36	220	5	0.8341E+12	0.4409E+10	0.1032E+08	0.8555E+07	0.2197E+02
36	158	7	0.4280E+13	0.6400E+10	0.4810E+09	0.5603E+09	0.1438E+02
36	71	5	0.3999E+10	0.6784E+08	0.1045E+06	0.8563E+05	0.5206E+01
36	64	5	0.3910E+10	0.5587E+08	0.1249E+06	0.1026E+06	0.5188E+01
36	134	3	0.1206E+14	0.5956E+10	0.6201E+07	0.3099E+07	0.1214E+02
36	216	3	0.3538E+12	0.4457E+10	0.9630E+06	0.4755E+06	0.2157E+02
36	45	5	0.3122E+15	0.2926E+09	0.3929E+08	0.3274E+08	0.3693E+01
36	130	7	0.5235E+13	0.2687E+10	0.1215E+09	0.1417E+09	0.1202E+02
36	81	3	0.1660E+13	0.2147E+09	0.3728E+07	0.1864E+07	0.5334E+01
36	156	3	0.3967E+13	0.6445E+10	0.2568E+07	0.1282E+07	0.1438E+02
36	167	3	0.3217E+11	0.5691E+10	0.1299E+08	0.5519E+07	0.1743E+02
36	118	5	0.4812E+12	0.1046E+10	0.2712E+09	0.2255E+09	0.9838E+01
36	221	3	0.8295E+12	0.4408E+10	0.5905E+07	0.2937E+07	0.2198E+02
36	44	3	0.3123E+15	0.2925E+09	0.2099E+08	0.1049E+08	0.3686E+01

K_J.	S_J	g_{SJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
36	153	3	0.9593E+11	0.7294E+10	0.2143E+09	0.9958E+08	0.1437E+02
36	159	5	0.6236E+13	0.6741E+10	0.2606E+06	0.2169E+06	0.1446E+02
36	151	3	0.1454E+13	0.7167E+10	0.4923E+06	0.2449E+06	0.1433E+02
36	86	3	0.1827E+14	0.1070E+10	0.8118E+06	0.4059E+06	0.7535E+01
36	110	7	0.7500E+12	0.9517E+09	0.7744E+07	0.9023E+07	0.9765E+01
37	87	5	0.1827E+14	0.1069E+10	0.1987E+08	0.1656E+08	0.7535E+01
37	152	5	0.1245E+12	0.7287E+10	0.5181E+08	0.4079E+08	0.1436E+02
37	168	1	0.3236E+11	0.5692E+10	0.3114E+08	0.4414E+07	0.1743E+02
37	215	3	0.1794E+12	0.4549E+10	0.6942E+07	0.3385E+07	0.2151E+02
37	44	3	0.3123E+15	0.2925E+09	0.1314E+08	0.6570E+07	0.3686E+01
37	133	1	0.1205E+14	0.5955E+10	0.1411E+08	0.2351E+07	0.1214E+02
37	157	5	0.3940E+13	0.6451E+10	0.4392E+09	0.3654E+09	0.1438E+02
37	102	3	0.1762E+14	0.2452E+10	0.4413E+08	0.2206E+08	0.9644E+01
37	131	5	0.5221E+13	0.2690E+10	0.9152E+08	0.7623E+08	0.1202E+02
37	135	5	0.1207E+14	0.5958E+10	0.3370E+07	0.2807E+07	0.1215E+02
37	45	5	0.3122E+15	0.2926E+09	0.1299E+08	0.1082E+08	0.3693E+01
37	62	5	0.1729E+13	0.1431E+09	0.1923E+08	0.1602E+08	0.5186E+01
37	148	5	0.5411E+13	0.5470E+10	0.1310E+06	0.1091E+06	0.1431E+02
37	108	3	0.7489E+12	0.9532E+09	0.2943E+07	0.1470E+07	0.9765E+01
37	120	3	0.6102E+13	0.1634E+10	0.1401E+09	0.7003E+08	0.1004E+02
37	216	3	0.3538E+12	0.4457E+10	0.1427E+08	0.7046E+07	0.2157E+02
37	151	3	0.1454E+13	0.7167E+10	0.1552E+07	0.7722E+06	0.1433E+02
37	220	5	0.8341E+12	0.4409E+10	0.3387E+07	0.2808E+07	0.2197E+02
37	118	5	0.4812E+12	0.1046E+10	0.9061E+08	0.7534E+08	0.9838E+01
37	126	3	0.3238E+13	0.5001E+10	0.1680E+09	0.8387E+08	0.1107E+02
37	86	3	0.1827E+14	0.1070E+10	0.1148E+08	0.5740E+07	0.7535E+01
37	153	3	0.9593E+11	0.7294E+10	0.1580E+09	0.7342E+08	0.1437E+02
37	166	5	0.3182E+11	0.5691E+10	0.8036E+07	0.5681E+07	0.1743E+02
37	117	3	0.4812E+12	0.1047E+10	0.9119E+08	0.4550E+08	0.9838E+01
37	156	3	0.3967E+13	0.6445E+10	0.1647E+09	0.8222E+08	0.1438E+02
37	116	1	0.4812E+12	0.1047E+10	0.3574E+09	0.5944E+08	0.9838E+01
37	67	1	0.1707E+13	0.1437E+09	0.6932E+08	0.1155E+08	0.5191E+01
37	43	1	0.3123E+15	0.2926E+09	0.5090E+08	0.8483E+07	0.3683E+01
37	134	3	0.1206E+14	0.5956E+10	0.3226E+07	0.1612E+07	0.1214E+02
37	154	1	0.2803E+09	0.7315E+10	0.4774E+09	0.2936E+07	0.1437E+02
37	221	3	0.8295E+12	0.4408E+10	0.3412E+07	0.1697E+07	0.2198E+02
37	127	1	0.3226E+13	0.5003E+10	0.6866E+09	0.1143E+09	0.1107E+02
37	217	5	0.3536E+12	0.4456E+10	0.2554E+08	0.2102E+08	0.2157E+02
37	125	5	0.3264E+13	0.4998E+10	0.1705E+09	0.1419E+09	0.1106E+02
37	82	5	0.1662E+13	0.2147E+09	0.8653E+08	0.7210E+08	0.5335E+01
37	222	1	0.8271E+12	0.4407E+10	0.1392E+08	0.2308E+07	0.2198E+02
37	132	3	0.5213E+13	0.2693E+10	0.5248E+08	0.2623E+08	0.1202E+02
37	109	5	0.7493E+12	0.9525E+09	0.5983E+07	0.4980E+07	0.9765E+01
37	167	3	0.3217E+11	0.5691E+10	0.7867E+07	0.3342E+07	0.1743E+02
37	65	3	0.1713E+13	0.1434E+09	0.1624E+08	0.8119E+07	0.5189E+01
37	81	3	0.1660E+13	0.2147E+09	0.5063E+08	0.2531E+08	0.5334E+01
38	126	3	0.3238E+13	0.5001E+10	0.2267E+09	0.1132E+09	0.1107E+02
38	151	3	0.1454E+13	0.7167E+10	0.1739E+06	0.8652E+05	0.1433E+02
38	221	3	0.8295E+12	0.4408E+10	0.4537E+07	0.2257E+07	0.2198E+02
38	86	3	0.1827E+14	0.1070E+10	0.1485E+08	0.7425E+07	0.7535E+01
38	215	3	0.1794E+12	0.4549E+10	0.2310E+07	0.1126E+07	0.2151E+02

K_J.	S_J	g_{sJ}	Aa(s^{-1})	SumAr(s^{-1})	Ar(s^{-1})	F2(s^{-1})	ES(eV)
38	120	3	0.6102E+13	0.1634E+10	0.4681E+08	0.2340E+08	0.1004E+02
38	156	3	0.3967E+13	0.6445E+10	0.3412E+09	0.1703E+09	0.1438E+02
38	65	3	0.1713E+13	0.1434E+09	0.2447E+08	0.1223E+08	0.5189E+01
38	44	3	0.3123E+15	0.2925E+09	0.1723E+08	0.8615E+07	0.3686E+01
38	108	3	0.7489E+12	0.9532E+09	0.4367E+07	0.2181E+07	0.9765E+01
38	81	3	0.1660E+13	0.2147E+09	0.6413E+08	0.3206E+08	0.5334E+01
38	117	3	0.4812E+12	0.1047E+10	0.1208E+09	0.6027E+08	0.9838E+01
38	132	3	0.5213E+13	0.2693E+10	0.6846E+08	0.3421E+08	0.1202E+02
38	167	3	0.3217E+11	0.5691E+10	0.1054E+08	0.4478E+07	0.1743E+02
38	153	3	0.9593E+11	0.7294E+10	0.9510E+08	0.4419E+08	0.1437E+02
38	134	3	0.1206E+14	0.5956E+10	0.4473E+07	0.2235E+07	0.1214E+02
38	102	3	0.1762E+14	0.2452E+10	0.1460E+08	0.7299E+07	0.9644E+01
38	216	3	0.3538E+12	0.4457E+10	0.1890E+08	0.9332E+07	0.2157E+02

Table IV

Dielectronic Recombination Rate Coefficients to Excited States

$\alpha_d(cm^3s^{-1})$

T_e(eV)	$2s^22p^2\ ^3P$	$2s^22p^2\ ^1D$	$2s^22p^2\ ^1S$
1.060	0.34263D-19	0.98345D-23	0.26967D-17
1.379	0.24415D-17	0.32019D-20	0.35898D-16
1.792	0.59789D-16	0.25049D-18	0.24027D-15
2.330	0.38578D-36	0.16822D-23	0.42031D-27
3.029	0.20458D-30	0.79486D-21	0.14134D-23
3.937	0.47322D-26	0.82813D-19	0.66647D-21
5.119	0.98345D-23	0.26967D-17	0.69454D-19
6.654	0.32019D-20	0.35898D-16	0.22806D-17
8.650	0.25049D-18	0.24027D-15	0.31262D-16
11.246	0.16822D-23	0.42031D-27	0.13385D-27
14.619	0.79486D-21	0.14134D-23	0.45014D-24
19.005	0.82813D-19	0.66647D-21	0.21231D-21
24.706	0.26967D-17	0.69454D-19	0.22152D-19
32.118	0.35898D-16	0.22806D-17	0.73148D-18
41.754	0.24027D-15	0.31262D-16	0.10203D-16
54.280	0.42031D-27	0.13385D-27	0.75673D-16
70.564	0.14134D-23	0.45014D-24	0.35210D-15
91.733	0.66647D-21	0.21231D-21	0.11417D-14
119.253	0.69454D-19	0.22152D-19	0.27770D-14

	$2s2p^3\ ^5S$	$2s2p^3\ ^3D$	$2s2p^3\ ^3P$
1.060	0.69454D-19	0.22152D-19	0.27770D-14
1.379	0.22806D-17	0.73148D-18	0.54347D-14
1.792	0.31262D-16	0.10203D-16	0.91617D-14
2.330	0.13385D-27	0.75673D-16	0.13949D-13
3.029	0.45014D-24	0.35210D-15	0.19465D-13
3.937	0.21231D-21	0.11417D-14	0.24764D-13
5.119	0.22152D-19	0.27770D-14	0.28578D-13
6.654	0.73148D-18	0.54347D-14	0.30004D-13
8.650	0.10203D-16	0.91617D-14	0.28934D-13
11.246	0.75673D-16	0.13949D-13	0.25948D-13
14.619	0.35210D-15	0.19465D-13	0.21915D-13
19.005	0.11417D-14	0.24764D-13	0.17632D-13
24.706	0.27770D-14	0.28578D-13	0.13647D-13
32.118	0.54347D-14	0.30004D-13	0.10244D-13
41.754	0.91617D-14	0.28934D-13	0.75082D-14
54.280	0.13949D-13	0.25948D-13	0.54007D-14
70.564	0.19465D-13	0.21915D-13	0.38287D-14
91.733	0.24764D-13	0.17632D-13	0.26837D-14
119.253	0.28578D-13	0.13647D-13	0.18648D-14

Table IV(continued)

$\alpha_d(cm^3s^{-1})$

T_e(eV)	2s3s ^3P	2p3s ^1P	2p3p ^3D
1.060	0.76491D-28	0.48840D-23	0.22551D-23
1.379	0.24426D-24	0.52509D-21	0.17080D-21
1.792	0.11098D-21	0.17654D-19	0.49107D-20
2.330	0.60072D-34	0.23361D-33	0.16990D-30
3.029	0.27925D-29	0.43702D-29	0.57353D-27
3.937	0.99269D-26	0.77302D-26	0.27117D-24
5.119	0.48840D-23	0.22551D-23	0.28266D-22
6.654	0.52509D-21	0.17080D-21	0.92090D-21
8.650	0.17654D-19	0.49107D-20	0.12302D-19
11.246	0.23361D-33	0.16990D-30	0.53216D-31
14.619	0.43702D-29	0.57353D-27	0.18043D-27
19.005	0.77302D-26	0.27117D-24	0.85600D-25
24.706	0.22551D-23	0.28266D-22	0.89456D-23
32.118	0.17080D-21	0.92090D-21	0.29200D-21
41.754	0.49107D-20	0.12302D-19	0.39045D-20
54.280	0.16990D-30	0.53216D-31	0.27728D-19
70.564	0.57353D-27	0.18043D-27	0.18919D-18
91.733	0.27117D-24	0.85600D-25	0.21704D-17
119.253	0.28266D-22	0.89456D-23	0.21550D-16

T_e(eV)	2p3p ^1D	2p3d ^3F	2p3d ^1F
1.060	0.28266D-22	0.89456D-23	0.21550D-16
1.379	0.92090D-21	0.29200D-21	0.13845D-15
1.792	0.12302D-19	0.39045D-20	0.59770D-15
2.330	0.53216D-31	0.27728D-19	0.18325D-14
3.029	0.18043D-27	0.18919D-18	0.41780D-14
3.937	0.85600D-25	0.21704D-17	0.74111D-14
5.119	0.89456D-23	0.21550D-16	0.10690D-13
6.654	0.29200D-21	0.13845D-15	0.13054D-13
8.650	0.39045D-20	0.59770D-15	0.13968D-13
11.246	0.27728D-19	0.18325D-14	0.13472D-13
14.619	0.18919D-18	0.41780D-14	0.11982D-13
19.005	0.21704D-17	0.74111D-14	0.10007D-13
24.706	0.21550D-16	0.10690D-13	0.79602D-14
32.118	0.13845D-15	0.13054D-13	0.60973D-14
41.754	0.59770D-15	0.13968D-13	0.45363D-14
54.280	0.18325D-14	0.13472D-13	0.32999D-14
70.564	0.41780D-14	0.11982D-13	0.23592D-14
91.733	0.74111D-14	0.10007D-13	0.16644D-14
119.253	0.10690D-13	0.79602D-14	0.11621D-14

Table V

Fitting parameters for $\alpha_d(k)$ in eq.(20)

Excited state k	A_1 ($cm^3\ s^{-1}$)	E_1(eV)	A_2 ($cm^3\ s^{-1}$)	E_2(eV)
$2s^2\ 2p^3\ ^3P$	2.62(-12)	5.52	3.31(-13)	3.56
$2s^2\ 2p^3\ ^1D$	3.64(-12)	5.20	2.91(-13)	3.75
$2s^2\ 2p^3\ ^1S$	4.53(-13)	6.38	3.20(-14)	4.78
$2s2p^3\ ^5S$	1.59(-13)	3.04	-	-
$2s2p^3\ ^3D$	4.39(12)	10.5	3.44(-13)	4.05
$2s2p^3\ ^3P$	2.52(-12)	10.2	1.27(-13)	4.08
$2p3s\ ^3P$	2.25(-14)	4.17	2.00(-12)	10.9
$2p3s\ ^1P$	5.16(-14)	7.98	6.66(-13)	11.5
$2p3p\ ^1P$	4.89(-13)	11.6	6.18(-15)	5.77
$2p3p\ ^3D$	3.41(-12)	12.1	2.63(-14)	5.94
$2p3p\ ^3S$	6.25(-13)	12.1	5.85(-15)	6.19
$2p3p\ ^3P$	1.80(-12)	11.9	2.53(-14)	4.52
$2p3p\ ^1D$	1.13(-12)	11.9	1.27(-14)	6.08
$2p3p\ ^1S$	1.98(-13)	13.7	1.77(-14)	8.10
$2p3d\ ^1D$	9.82(-13)	13.3	4.40(-15)	6.21
$2p3d\ ^3F$	4.90(-12)	12.9	2.19(-15)	5.19
$2p3d\ ^3D$	2.81(-12)	12.6	1.66(-14)	3.86
$2p3d\ ^1F$	1.67(-12)	13.2	1.07(-15)	5.37
$2p3d\ ^1P$	5.15(-13)	13.2	8.00(-18)	3.83
$2p3d\ ^3P$	1.36(-12)	12.3	1.73(-14)	4.87
Total	1.11(-9)	11.5	2.28(-11)	4.09

---

* 1.11(-9) menas 1.11×10^{-9}

Figure captions

Fig.1 The dielectronic recombination rate coefficients from CII to the excited states of CI.

(a) for n = 2 levels. Total rate summing up to n = 5 and n= 500 are shown.

(b) for n = 3 levels.

Fig.2 α_d ($1s^2\ 2s^2\ 2pns\ ^3P$) as a function of the principal quantun number n for T_e = 6 eV.

Fig.3 Total dielectronic recombination rate coefficients from C II to C I at low density limit.

Fig.4 The effective recombination rate coefficients for C II -> C I.

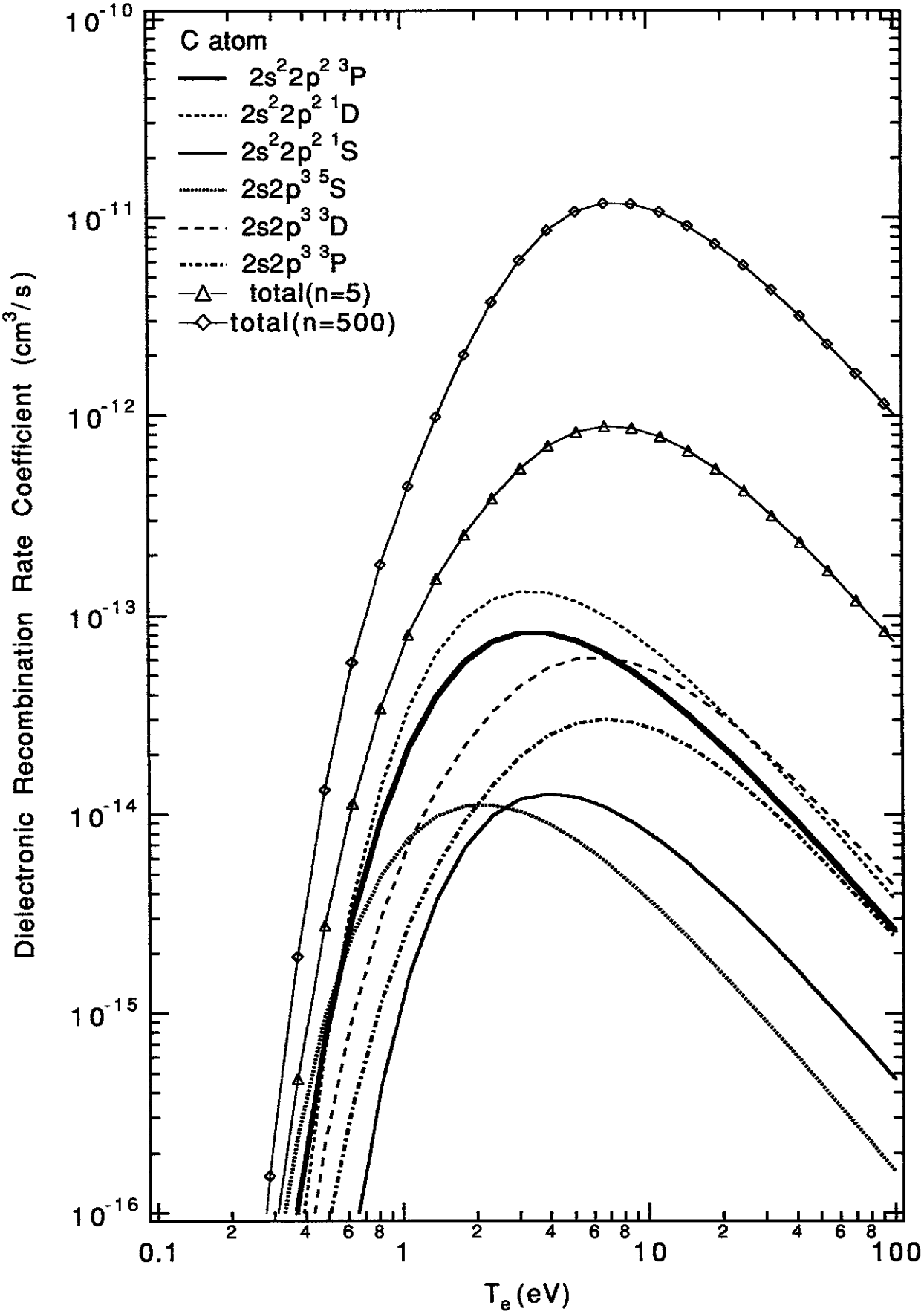
C atom
2s²2p² ³P
2s²2p² ¹D
2s²2p² ¹S
2s2p³ ⁵S
2s2p³ ³D
2s2p³ ³P
total(n=5)
total(n=500)
Dielectronic Recombination Rate Coefficient (cm³/s)
10⁻¹⁰
10⁻¹¹
10⁻¹²
10⁻¹³
10⁻¹⁴
10⁻¹⁵
10⁻¹⁶
0.1
1
10
100
T_e (eV)

Fig.1(a)

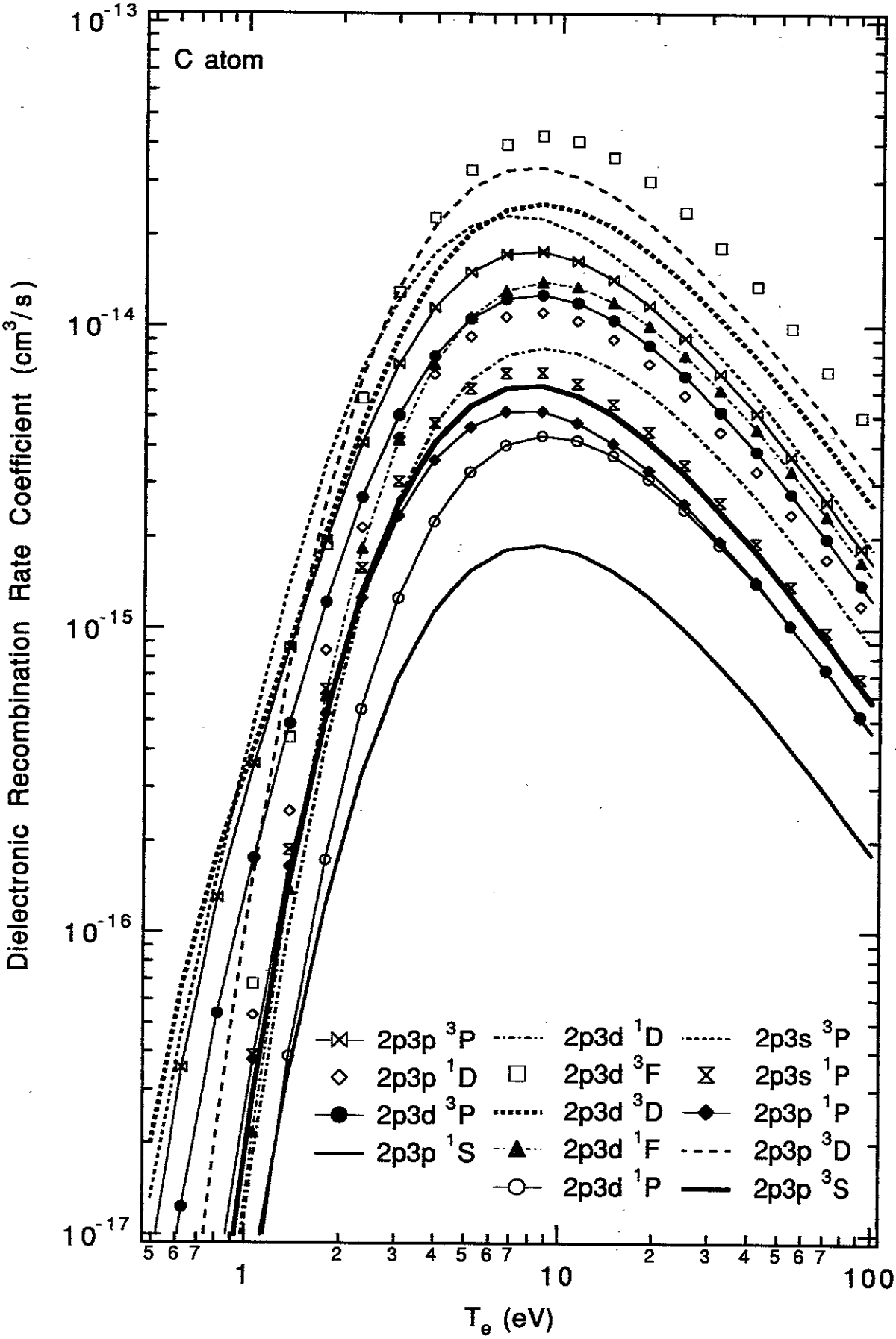
C atom
Dielectronic Recombination Rate Coefficient (cm^3/s)
10^{-13}
10^{-14}
10^{-15}
10^{-16}
10^{-17}
1
10
100
T_e (eV)
2p3p ^{3}P
2p3p ^{1}D
2p3d ^{3}P
2p3p ^{1}S
2p3d ^{1}D
2p3d ^{3}F
2p3d ^{3}D
2p3d ^{1}F
2p3d ^{1}P
2p3s ^{3}P
2p3s ^{1}P
2p3p ^{1}P
2p3p ^{3}D
2p3p ^{3}S

Fig1(b)

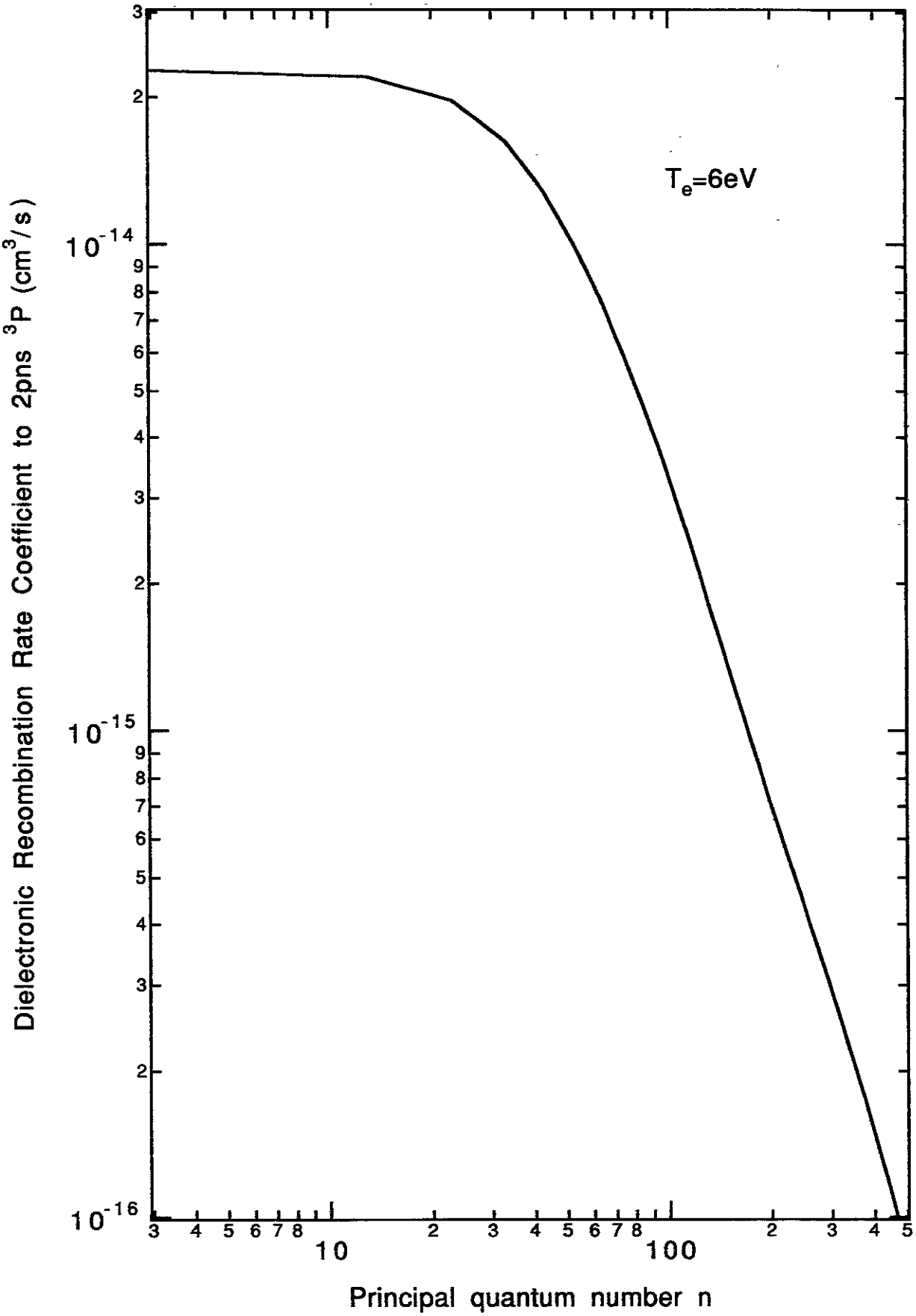
Dielectronic Recombination Rate Coefficient to 2pns ^3P (cm^3/s)
T_e=6eV
10^{-14}
10^{-15}
10^{-16}
3 4 5 6 7 8
10
2 3 4 5 6 7 8
100
2 3 4 5
Principal quantum number n

Fig.2

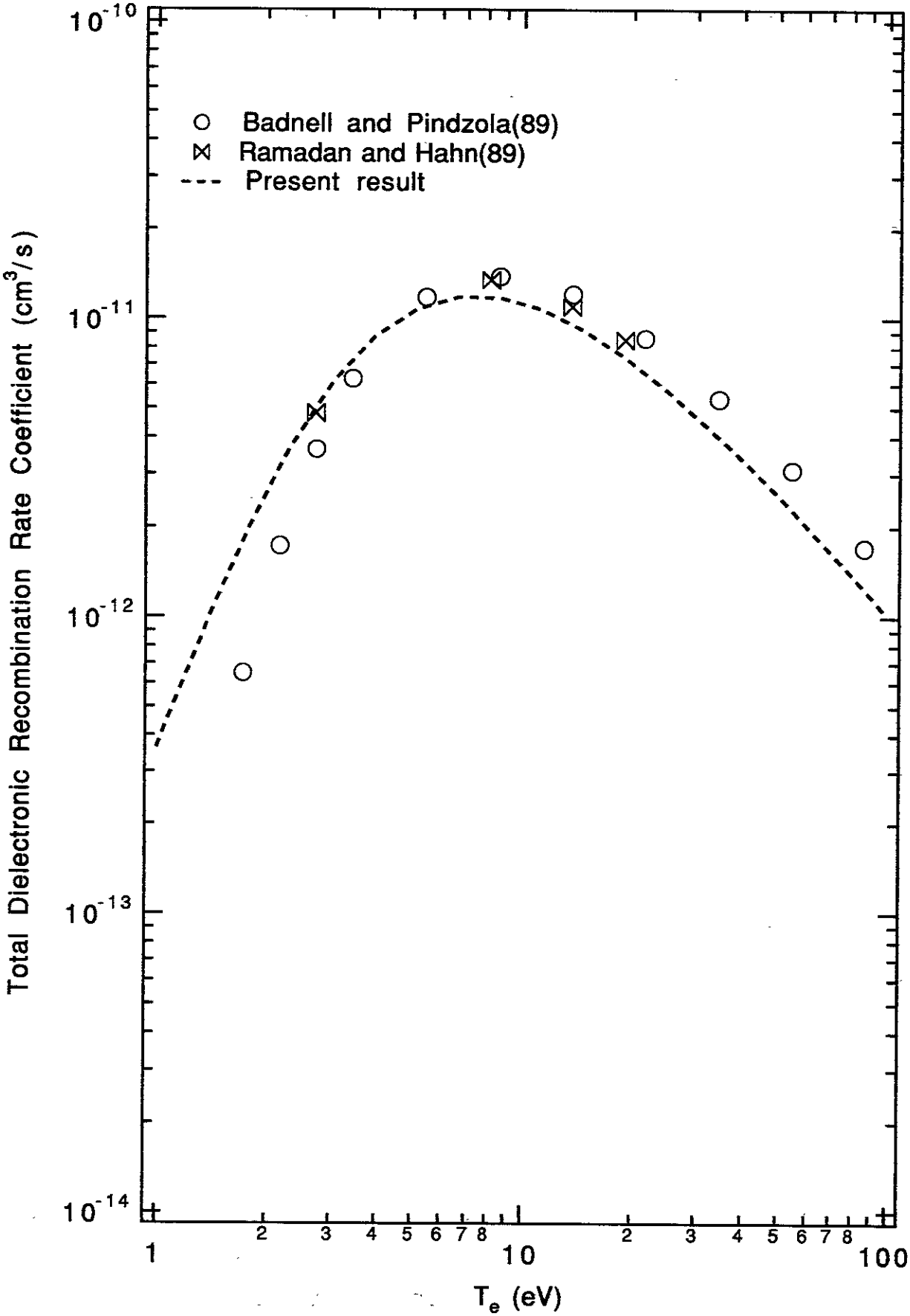
Badnell and Pindzola(89)
Ramadan and Hahn(89)
Present result
Total Dielectronic Recombination Rate Coefficient (cm³/s)
10⁻¹⁰
10⁻¹¹
10⁻¹²
10⁻¹³
10⁻¹⁴
1
2 3 4 5 6 7 8
10
2 3 4 5 6 7 8
100
Tₑ (eV)

Fig.3

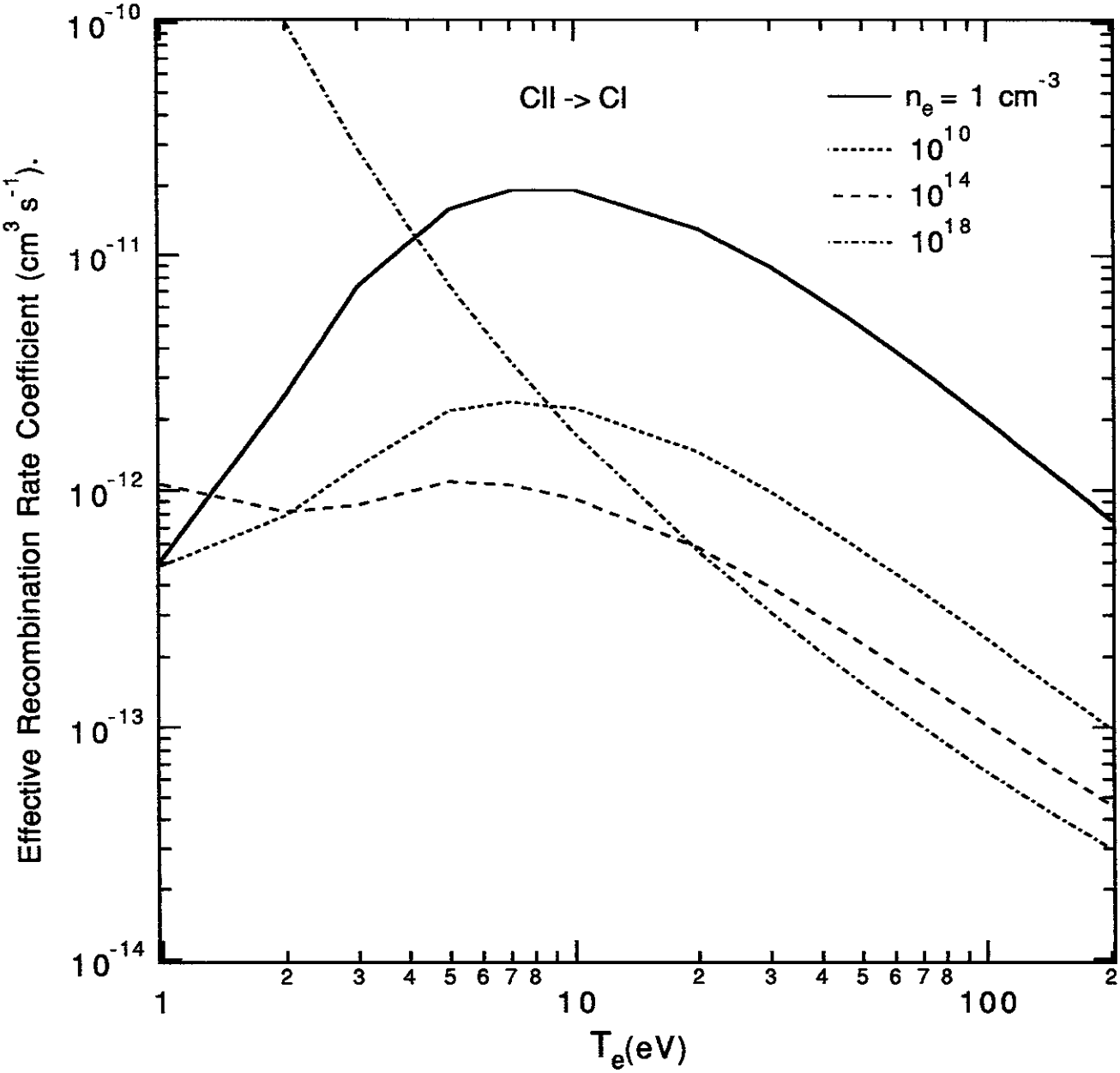
CII -> CI
n_e = 1 cm^{-3}
10^{10}
10^{14}
10^{18}
Effective Recombination Rate Coefficient (cm^3 s^{-1}).
10^{-10}
10^{-11}
10^{-12}
10^{-13}
10^{-14}
1
2
3
4
5
6
7
8
10
2
3
4
5
6
7
8
100
2
T_e(eV)

Fig. 4

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