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Ab-Initio Calculations of Level Energies, Oscillator Strengths and Radiative Rates for E1 Transitions in Beryllium-Like Iron

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Abstract: In the present work, energy levels, oscillator strengths, radiative rates and wavelengths of Be-like iron (Fe^{22+}) from *ab-initio* calculations using the multiconfiguration Dirac-Hartree-Fock method are presented. These quantities have been calculated for a set of configurations in the general form $1s^2 nl n'l'$, where $n = 2, 3$ and $n' = 2, 3, 4, 5$ and $l = s, p, d$ and $l' = s, p, d, f, g$. In addition, excitations of up to four electrons, including core-electron excitations, have been considered to improve the quality of the wave functions. This study comprises an extensive set of E1 transition rates between states with different J . The present results are compared with the available experimental and theoretical data.

Keywords: energy levels; oscillator strengths; radiative rates; be-like iron

1. Introduction

Accurate atomic data for iron ions are of interest in astrophysics, especially for the identification of solar spectra [1–4], as well as in the physics of controlled fusion [5] and plasma diagnostic [6]. From the astrophysical point of view, the importance of iron ions lies in the fact that iron is the cosmically most abundant heavy element beyond silicon [7]. The beryllium isoelectronic sequence including the Fe^{22+} ion has been studied using different theoretical approaches [8–21]. Most of the earlier calculations have

produced results for one- or two-electron excitations to low-lying levels (up to $n = 2$ or 3). Excitation to high-lying levels was studied by Moribayashi and Kato [22], including configurations up to $2pnl$ ($n \leq 20, l = s, p, d$) using Cowan's code [23].

Recently, many theoretical calculations have been carried out for Fe^{22+} to meet the needs for accurate atomic structure data. Chidichimo *et al.* have calculated level energies for $n \leq 4$, as well as wavelengths and weighted oscillator strengths using the Belfast R-matrix programs [24,25]. Del Zanna *et al.* [26] have compiled experimental observations of energy levels and wavelengths, and performed calculations of weighted oscillator strengths for Be-like iron using the non-relativistic SUPERSTRUCTURE program. Santos *et al.* [27] calculated probabilities for transitions from the $1s^2 2s 3p\ ^3P_0$ level for selected beryllium-like ions, from $Z = 5$ to 92. They used the MCDF method including relativistic effects, QED (quantum-electrodynamics) effects, and correlations up to the $4f$ subshell, however, they neglected the Breit interaction. Jian-Hui *et al.* [28] have calculated energy levels, oscillator strengths, transition probabilities and wavelengths of Fe^{22+} using the MCDF method with the inclusion of vacuum polarization and Breit interaction. Charro *et al.* [29,30] have calculated some oscillator strengths of Be-like iron up to $n = 2, 3$ using the relativistic quantum defect orbital (RQDO) method and the MCDF method, but there were no Breit corrections included in the calculations. By using the FAC code Landi and Gu [31] calculated energy levels, oscillator strengths and transition probabilities for 166 fine-structure levels of Fe^{22+} belonging to the complexes $1s^2 2l nl'$, $n = 2 - 5, l = s, p, d, f, g$. In the present work an extensive set of configuration state functions (CSF) including subshell populations up to the $5g$ subshell is used. In addition, the Breit interaction and QED effects are incorporated, which have been neglected in most of the previous calculations. The present comprehensive treatment of the Fe^{22+} atomic structure aims at providing more accurate results than hitherto available.

For the present extensive atomic structure calculations of beryllium-like iron, Fe^{22+} , we have used the multiconfiguration Dirac-Fock (MCDF) method [32] as implemented in the GRASP2K code [33]. Excitations from $n = 3$ to $n = 4, 5$ (doubly-excited levels) are included, and EOL (extended optimal level) type calculations have been performed. Wavelengths, energy levels, and E1 transition parameters (oscillator strengths, transition probabilities, and line strengths) have been computed for 182 fine-structure levels. The calculations have been divided into two main groups, with even and odd parity. The odd-parity group contains 90 levels while the even-parity group has 92 levels. The present calculations of oscillator strengths and radiative rates are generally in a good agreement with corresponding values in the NIST atomic data compilation [34]. The good agreement between our length and velocity gauge values provides some indication (although not a sufficient one) for the accuracy of the wave functions used in the present study.

2. Method of Calculation

Details of the MCDF method as implemented in the GRASP2K code can be found in References [32,33]. For the nuclear charge distribution within the ^{56}Fe nucleus, we used the default Fermi distribution parameters suggested in GRASP2K. The initial estimate for the radial orbitals is generated by solving the Dirac equation in a Thomas-Fermi potential for a single reference configuration (*i.e.*, the $2s^2$ level for even levels and the $2s2p$ level for odd levels) by allowing the single, double,

triple, and quadruple excitations to active orbital sets with $n = 2, 3, 4, 5$. The self-consistent procedure (RSCF) including EOL type calculations (extended optimal levels) is done layer by layer, at each stage the outer orbitals are optimized. The EOL type calculations construct orbitals from an average energy functional in which the fine-structure levels are given the weight $(2J + 1)$ [30]. This procedure is performed for every J -value separately. The splitting of the atomic levels into different groups has been found to be a useful compromise between two basic requirements in the atomic calculations, first, to get accurate wave functions for the radiative-rate calculations, and second, to keep the procedures manageable even with a large number of CSFs [35]. The same computational method has been applied to the even parity levels. The RSCF calculations were followed by relativistic configuration interaction (RCI) calculations including the Breit interaction Hamiltonian [36]. For the Breit interaction, we used the default low-frequency-limit approximation of the first-order perturbation theory, as implemented in the GRASP2K code. The GRASP2K procedure JJ2LSJ was used for the transformation of ASFs (atomic state functions) from a jj-coupled CSF basis into a LSJ-coupled CSF basis [37].

The beryllium-like iron atomic system has four electrons. In the ground state two electrons reside in the closed K-shell and the other two in the closed $2s$ subshell. In the first step of building the ground state wave function of the beryllium-like ion, only interactions between the two outer shell electrons were considered. In a second step the interaction with the atomic core was additionally considered since it is very important for the calculation of the wave functions of the excited states. The ground level of the Fe^{2+} ion is the $1s^2 2s^2 \ ^1S_0$ level, and the excited levels under consideration in this work belong to $1s^2 nl n'l'$ configurations, where $n = 2, 3$ and $n' = 2, 3, 4, 5$ and $l = s, p, d$ and $l' = s, p, d, f, g$ with different angular momenta and parities. The open K-shell states are already included in our calculations as admixing correlations, but not explicitly provided. We categorized these levels into groups having the same angular momentum and parity. For example the even parity states with $J = 3$ are represented by 57161 jj -coupled CSF. As shown in Table 1, the wave function expansions increase rapidly in size by increasing nl which means that we can get unpractically high numbers of CSFs for $n > 5$. The numbers of CSFs which are generated by quadruple excitations are shown in Table 1 which illustrates the degree of complexity of the present calculations.

Table 1. Number of configuration state functions (CSFs) used in the atomic state function expansion for the given angular momentum and parity (J^P) considering only quadruple excitations.

J^+	$3l$	$4l$	$5l$	J^-	$3l$	$4l$	$5l$
0	211	2149	13,592	0	180	2040	13,302
1	436	5384	36,634	1	460	5476	36,894
2	534	7250	52,481	2	516	7168	52,238
3	380	6930	57,161	3	392	6988	57,354
4	228	5588	53,512	4	222	5540	53,342
5	89	3650	43,358	5	90	3672	43,466

3. Results and Discussion

The calculated total energies (in a.u.) and energy levels (in eV) are shown in ascending order in Table 2 where also comparisons with literature values [26,34,38,39] are included. Our calculated level

Table 2. *Cont.*

Key	Configuration	J	Parity	E_{total}	Present	NIST	Reference [26]	Reference [38] Theor.	Reference [38] Exp.	Reference [39]
143	$1s^2 2p5d(^3P)$	1	-	-748.7220533	1724.9			1726.75		
144	$1s^2 2p5d(^3P)$	2	-	-748.7152748	1725.08					
145	$1s^2 2p5f(^3F)$	4	+	-748.7106954	1725.21			1727.69		
146	$1s^2 2p5d(^3D)$	3	-	-748.7069321	1725.31	1726.98		1726.34		
147	$1s^2 2p5f(^3F)$	2	+	-748.6949316	1725.64					
148	$1s^2 2p5f(^1G)$	4	+	-748.6906284	1725.75			1728.16		
149	$1s^2 2p5d(^3P)$	0	-	-748.6802854	1726.03			1726.82		
150	$1s^2 2p5f(^1F)$	3	+	-748.6721365	1726.26			1727.54		
151	$1s^2 2p5f(^1D)$	2	+	-748.6702054	1726.31			1727.89		
152	$1s^2 2p5d(^1P)$	1	-	-748.6683712	1726.36			1728.05		
153	$1s^2 2p5g(^3F)$	2	-	-748.6669093	1726.4			1728.1		
154	$1s^2 2p5f(^3D)$	1	+	-748.6651871	1726.45			1728.25		
155	$1s^2 2p5d(^3F)$	4	-	-748.658763	1726.62			1725.99		
156	$1s^2 2p5f(^3D)$	3	+	-748.6564126	1726.68					
157	$1s^2 2p5g(^3G)$	3	-	-748.6544227	1726.74					
158	$1s^2 2p5g(^3G)$	5	-	-748.6511383	1726.83			1727.75		
159	$1s^2 2p5d(^1F)$	3	-	-748.6435973	1727.03	1728.96		1727.74		
160	$1s^2 2p5g(^1H)$	5	-	-748.6425123	1727.06			1727.95		
161	$1s^2 2p5g(^3F)$	3	-	-748.63994	1727.13			1728.18		
162	$1s^2 2p5f(^3G)$	5	+	-748.6322597	1727.34			1727.98		
163	$1s^2 2p5g(^3G)$	4	-	-748.599593	1728.23			1727.87		
164	$1s^2 2p5g(^3F)$	4	-	-748.5922492	1728.43					
165	$1s^2 2p4p(^3P)$	0	+	-746.0926537	1796.45					
166	$1s^2 3s^2 (^1S)$	0	+	-729.7643403	2240.75					
167	$1s^2 3s3p(^3P)$	0	-	-729.3728951	2251.4					
168	$1s^2 3s3p(^3P)$	1	-	-729.3646407	2251.63					
169	$1s^2 3s3p(^3P)$	2	-	-729.2408485	2255					
170	$1s^2 3s3p(^1P)$	1	-	-728.8209355	2266.42					
171	$1s^2 3s3d(^1D)$	2	+	-728.7962086	2267.1					
172	$1s^2 3s3d(^3D)$	1	+	-728.6774571	2270.33					
173	$1s^2 3s3d(^3D)$	2	+	-728.667205	2270.61					
174	$1s^2 3s3d(^3D)$	3	+	-728.604182	2272.32					
175	$1s^2 3p^2 (^3P)$	0	+	-728.5677089	2273.31					
176	$1s^2 3p^2 (^3P)$	1	+	-728.5185534	2274.65					
177	$1s^2 3p^2 (^3P)$	2	+	-728.4270966	2277.14					
178	$1s^2 3p3d(^3F)$	2	-	-728.2811758	2281.11					
179	$1s^2 3p3d(^3F)$	3	-	-728.1545448	2284.56					
180	$1s^2 3p3d(^1D)$	2	-	-728.1238826	2285.39					
181	$1s^2 3p^2 (^1D)$	2	+	-728.0448765	2287.54					
182	$1s^2 3p^2 (^1S)$	0	+	-728.0435435	2287.58					

One might wonder whether quadruple excitations are really necessary. Two examples illustrate the improvement of the results when quadruple excitations are included. The first example is level 14, $1s^2 2s3p(^3P_0)$, for which the present calculation gives an energy of 1124.70 eV which agrees to within less than 0.2% with the value 1126.47 eV recorded in the CHIANTI database [38]. If only triple excitations are included in the calculations the level energy drops to 1109.07 eV with an increase of the deviation from the CHIANTI energy by as much as 1.5%. The second example, that we want to mention, is level 21, $1s^2 2p3s(^3P_0)$, which has a calculated energy of 1158.54 eV. This corresponds reasonably well to the NIST energy [34] 1152.40 eV with a relative difference of less than 0.55%. Again, when only triple excitations are considered, the level energy drops drastically, in this case to 1143.12 eV producing a difference in the resulting level energy of 15.42 eV and a relative deviation from the NIST energy

of about 0.9%. Obviously, the agreement of the calculations with the CHIANTI and NIST databases becomes considerably better with the use of 4-electron excitations.

Dirac-Fock wave functions with a minimum number of radial functions are not sufficient to represent the occupied orbitals. Extra configurations have to be added to adequately represent electron correlations (*i.e.*, mixing coefficients). These extra configurations are represented by CSFs and must have the same angular momentum and parity as the occupied orbital [40]. For instance, the level $1s^22s2p(^3P_0^-)$ is represented by 0.996 of $1s^22s2p(^3P_0^-)$ and 0.0660 of $1s^22s3p(^3P_0^-)$. The mixing coefficients for the wave functions of some calculated levels are shown in Table 3. The most important contributions to the total wave function of a given level are those from the same configuration. For example, the configuration-mixed wave function for the $1s^22p3p(^3P_0)$ level is represented as

$$|1s^22p3p(^3P_0)\rangle = 0.9501|1s^22p3p(^3P_0)\rangle + 0.3|1s^22p3p(^1S_0)\rangle - 0.0697|1s^22s3s(^1S_0)\rangle$$

where 0.9501, 0.3, and -0.0697 are the configuration mixing coefficients. Coefficients less than 0.05 were calculated but are not explicitly given. Expansion coefficients for several levels by Bhatia and Mason [10] are listed in Table 3 for comparison. Clearly, the present and the previous [10] results are very close to one another in the description of the configuration-interaction wave functions.

Table 3. The configuration mixing coefficients (> 0.05) for some levels in Fe^{22+} . The number in the bra-kets refers to the level number (the key in Table 2).

J^P Configuration	Present Work	Reference [10]
$J = 0^+$		
$1s^22s^2(^1S)$	$0.9772 1\rangle + 0.2058 10\rangle$	$0.98 1\rangle + 0.21 10\rangle$
$1s^22p^2(^3P)$	$0.9663 6\rangle + 0.2431 10\rangle - 0.075 1\rangle$	$0.97 6\rangle + 0.24 10\rangle - 0.07 1\rangle$
$1s^22p^2(^1S)$	$0.9465 10\rangle - 0.2533 6\rangle - 0.19241 1\rangle$	$0.95 10\rangle - 0.25 6\rangle - 0.19 1\rangle$
$1s^22s3s(^1S)$	$0.9814 12\rangle + 0.1688 44\rangle - 0.0708 48\rangle$	$0.99 12\rangle + 0.17 44\rangle$
$1s^22p3p(^3P)$	$0.9501 28\rangle + 0.3 44\rangle - 0.0697 12\rangle$	
$J = 1^+$		
$1s^22p^2(^3P)$	$0.9992 7\rangle$	$1.00 7\rangle$
$1s^22s3s(^3S)$	$0.9913 11\rangle + 0.1301 34\rangle$	$0.99 11\rangle + 0.13 34\rangle$
$1s^22s3d(^3D)$	$0.9896 17\rangle + 0.1399 23\rangle$	$0.99 17\rangle + 0.14 23\rangle$
$1s^22p3p(^3D)$	$0.8202 36\rangle + 0.5328 27\rangle - 0.1612 34\rangle + 0.1265 17\rangle$	
$1s^22p3p(^1P)$	$0.5302 27\rangle + 0.5204 34\rangle + 0.4903 30\rangle + 0.4449 23\rangle$	
$J = 2^+$		
$1s^22p^2(^3P)$	$0.8640 8\rangle - 0.5014 9\rangle$	
$1s^22p^2(^1D)$	$0.8637 9\rangle + 0.5016 8\rangle$	
$1s^22s3d(^3D)$	$0.9903 18\rangle - 0.1169 26\rangle$	
$1s^22s3d(^1D)$	$0.9895 20\rangle - 0.1180 37\rangle$	
$1s^22p3p(^3D)$	$0.9169 26\rangle - 0.2744 37\rangle + 0.2595 35\rangle + 0.1143 18\rangle$	

Table 3. *Cont.*

J^P Configuration	Present Work	Reference [10]
$J = 3^+$		
$1s^2 2s 3d(^3D)$	$0.9939 19\rangle - 0.0943 32\rangle$	
$1s^2 2p 3p(^3D)$	$0.9948 32\rangle + 0.0939 19\rangle$	
$1s^2 2s 4d(^3D)$	$0.9976 55\rangle$	
$1s^2 2p 4f(^3G)$	$0.8423 73\rangle + 0.4515 91\rangle + 0.2737 89\rangle$	
$J = 4^+$		
$1s^2 2p 4f(^3G)$	$0.6431 70\rangle - 0.5492 90\rangle + 0.5300 87\rangle$	
$1s^2 2p 4f(^3F)$	$0.8133 87\rangle - 0.5656 70\rangle + 0.1220 90\rangle$	
$1s^2 2p 4f(^1G)$	$0.8241 90\rangle + 0.5122 70\rangle + 0.2327 87\rangle$	
$1s^2 2s 5g(^3G)$	$0.8292 108\rangle + 0.5561 109\rangle$	
$J = 5^+$		
$1s^2 2s 5g(^3G)$	$0.9982 114\rangle$	
$1s^2 2p 5f(^3G)$	$0.9980 162\rangle$	
$J = 0^-$		
$1s^2 2s 2p(^3P)$	$0.9960 2\rangle + 0.0660 14\rangle$	$1.00 2\rangle$
$1s^2 2s 3p(^3P)$	$0.9908 14\rangle - 0.0821 43\rangle$	
$1s^2 2p 3s(^3P)$	$0.9927 21\rangle + 0.0714 43\rangle$	
$1s^2 2p 3d(^3P)$	$0.9918 43\rangle + 0.0860 14\rangle$	
$J = 1^-$		
$1s^2 2s 2p(^3P)$	$0.9840 3\rangle + 0.1564 5\rangle$	$0.99 3\rangle + 0.16 5\rangle$
$1s^2 2s 2p(^1P)$	$0.9833 5\rangle - 0.1568 3\rangle$	$0.99 5\rangle - 0.16 3\rangle$
$1s^2 2s 3p(^3P)$	$0.7772 13\rangle + 0.5935 15\rangle - 0.1644 25\rangle$	$0.80 13\rangle + 0.58 15\rangle - 0.16 25\rangle$
$1s^2 2s 3p(^1P)$	$0.7411 15\rangle - 0.6127 13\rangle - 0.238 25\rangle$	$0.76 15\rangle - 0.59 13\rangle - 0.24 25\rangle$
$J = 2^-$		
$1s^2 2s 2p(^3P)$	$0.9965 4\rangle$	
$1s^2 2s 3p(^3P)$	$0.9890 16\rangle$	
$1s^2 2p 3s(^3P)$	$0.9843 24\rangle$	
$1s^2 2p 3d(^3F)$	$0.8727 29\rangle + 0.4391 33\rangle + 0.1375 38\rangle$	
$J = 3^-$		
$1s^2 2p 3d(^3F)$	$0.8829 31\rangle + 0.3724 40\rangle - 0.2776 45\rangle$	
$1s^2 2p 3d(^3D)$	$0.8737 40\rangle - 0.4342 31\rangle - 0.2094 45\rangle$	
$1s^2 2p 3d(^1F)$	$0.9344 45\rangle + 0.3064 40\rangle + 0.1649 31\rangle$	
$1s^2 2s 4f(^3F)$	$0.9807 58\rangle + 0.1863 59\rangle$	
$J = 4^-$		
$1s^2 23d(^3F)$	$0.9970 39\rangle$	
$1s^2 2s 4f(^3F)$	$0.9983 60\rangle$	
$1s^2 2p 4d(^3F)$	$0.9973 86\rangle$	
$J = 5^-$		
$1s^2 2p 5g(^3G)$	$0.8469 158\rangle - 0.4368 2p5g(^3H)\rangle + 0.2964 160\rangle$	
$1s^2 3d 4f (^3H)$	$0.9974 268\rangle$	

A comparison between the calculated wavelengths and other published experimental and theoretical values [1,2,8,24,26,28,29,34,41] is shown in Table 4. The accuracy of calculated wavelengths (in Å) relative to measurements [24,26,34] can be assessed from Table 4, where the agreement is within <0.2% for all available transitions such as 1–5; $2s^2(^1S_0) - 2s2p(^1P_1)$ with a calculated wavelength $\lambda = 132.939$ Å which deviates from the measurements [24,26,34] by about ± 0.0248 Å and from the calculated wavelength of Reference [42] by about ± 0.091 Å. In a few cases the agreement with measurements is slightly worse such as for the transitions 2–7, 3–6, 7–21, and 10–25 with $\lambda = 147.922$, 172.469, 12.025, and 12.371 Å. In these cases the deviations from the measurements amount to 0.463%, 0.485%, 0.579%, and 0.451%, respectively, which are much greater than the experimental uncertainties. The deviations actually reflect the estimated errors in the wavelengths. In Table 6 many more Fe²²⁺ transitions in the soft X-ray region are listed than in any of the previous studies. This will help with the identification of spectral lines of the solar corona [1,2]. In particular, our calculations presented in Table 6 provide comprehensive new data for Be-like Fe with λ in the range 8 to 17 Å and at 132.85 Å which are very important in the solar spectrum [3,4].

The calculated values of transition probabilities in s⁻¹, oscillator strengths f , and line strengths S in a.u. (in both velocity and length forms) are listed in Table 6. A comparison between the present calculations of oscillator strengths (f_L) and other published data [8,24,26,29,34,41] is presented in Table 4. Most of our calculations of oscillator strengths show a good agreement with the NIST [34] values, but in a few cases the relative differences reach tens of %. Actually, the NIST values are a compilation of experimental and theoretical data from previous works [8,41,43–47], and the estimated accuracies of most oscillator strengths and transition probabilities recorded in the NIST database [34] are quoted to be between 25% and 50%. For transitions 1–5, 2–7, and 3–6 the uncertainty of the NIST data is estimated to be $\leq 10\%$. The largest deviation in our calculations of oscillator strengths is found for the transition 3–23 where the deviation from NIST is 36%. Generally, this error is still acceptable for oscillator strengths as is shown in previous publications, where the f_L values for the transition 1–49 in References [24,26] differ from the corresponding NIST [34] value by 35% and 33.25%, respectively, and for the line 5–48 the difference is 20% [26]. Our deviations for the same lines are about 6.75%, 12%, respectively. The transition 1–5 has an experimental f_L -value of 0.15 [48] with an estimated accuracy of 10%. The agreement of our calculated value with this reference [48] is within 2%. In the study by Jian-Hui *et al.* [28], significant differences compared with the NIST database [34] are revealed for several f_L values, where the deviations of the transitions 5–23, 5–27, and 7–36 are more than one order of magnitude, while our calculations agree with NIST [34] within about 17%, 21.5% and 2.8%, respectively. The precision of the theoretical calculations can be judged by the convergence between length and velocity gauge values of oscillator strengths. If exact wave functions are used then $f_L = f_V$ [49], which is convincingly fulfilled by the approximate wave functions that are used in our calculations. The average deviation between f_L and f_V values is about 30%. There are several transitions with much larger deviations such as, the transitions 2–34, 2–47, 2–97, 3–48, 4–154, 11–116, 18–143, 93–149, 134–156, and 140–152. Comparisons between our transition probabilities and values from the NIST database [34] are available for some transitions. For instance, transitions

Table 5. Comparison between the present calculations of transition probabilities (A_L in s^{-1}) and other references.

Trans.	Present	Fuhr <i>et al.</i> *	Theoretical	CHIANTI
1–5	1.91E + 10	1.95E+10	1.93E+10 ^a	1.94E+10
1–13	4.99E+12	4.90E+12	4.65E+12 ^b	4.57E+12
1–15	7.94E+12	7.90E+12	7.64E+12 ^b	7.65E+12
2–7	6.31E+09	6.59E+09	6.43E+09 ^c	6.49E+09
2–54	4.19E+12	4.30E+12	1.23E+13 ^d	4.06E+12
3–6	1.21E+10	1.23E+10	1.22E+10 ^c	1.22E+10
3–54	2.97E+12	3.20E+12	2.97E+12 ^d	2.95E+12
3–76	7.03E+11	8.30E+11	1.86E+12 ^d	4.87E+11
6–69	6.91E+12	6.80E+12	2.10E+13 ^d	7.00E+12
7–84	4.42E+12	4.40E+12	4.43E+12 ^d	4.41E+12

* Compilation of experimental and theoretical data [41]; ^a Calculated data by Cheng *et al.* [50]; ^b Calculated data by Jian-Hui *et al.* [28]; ^c Calculated data by Nussbaumer and Storey [42]; ^d Calculated data by Wyart *et al.* [51]; CHIANTI: Compilation of experimental and theoretical data by the CHIANTI atomic database [38].

Table 6. Oscillator strengths f , wavelengths (in Å), transition probabilities A (in s^{-1}) and line strengths S (in a.u.) for the transitions in Be-like iron. UL. = upper level; LL. = lower level, V and L indicate velocity and length forms.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
1	5	132.939	1.91E+10	1.55E+10	1.52E-01	1.23E-01	6.64E-02
	13	11.036	4.99E+12	5.30E+12	2.73E-01	2.90E-01	1.05E-02
	15	10.997	7.94E+12	7.44E+12	4.32E-01	4.05E-01	1.56E-02
	22	10.691	1.91E+11	2.61E+11	9.82E-03	1.34E-02	3.46E-04
	36	10.369	1.24E+11	1.20E+11	5.97E-03	5.80E-03	2.04E-04
	41	10.246	5.11E+09	4.79E+09	2.41E-04	2.26E-04	8.14E-06
	46	10.172	4.16E+11	4.21E+11	1.94E-02	1.96E-02	6.48E-04
	49	8.326	1.20E+12	1.11E+12	3.73E-02	3.47E-02	1.02E-03
	52	8.314	4.99E+12	4.69E+12	1.55E-01	1.46E-01	4.24E-03
	75	8.007	1.92E+10	1.84E+10	5.55E-04	5.30E-04	1.46E-05
	84	7.937	2.40E+09	2.33E+09	6.79E-05	6.60E-05	1.77E-06
	95	7.921	1.93E+11	1.85E+11	5.44E-03	5.22E-03	1.42E-04
	99	7.486	5.85E+11	4.64E+11	1.47E-02	1.17E-02	3.63E-04
	102	7.480	3.25E+12	2.53E+12	8.18E-02	6.38E-02	2.02E-03
	143	7.188	1.33E+09	1.09E+09	3.10E-05	2.52E-05	7.33E-07
	152	7.182	9.94E+10	8.45E+10	2.31E-03	1.96E-03	5.45E-05
2	7	147.922	6.31E+09	4.59E+09	6.21E-02	4.52E-02	2.20E-02
	11	11.705	3.85E+11	3.32E+11	2.37E-02	2.04E-02	9.14E-04

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	17	11.321	1.30E+13	1.30E+13	7.47E-01	7.51E-01	2.80E-02
	23	10.995	8.07E+11	1.05E+12	4.39E-02	5.70E-02	2.06E-03
	27	10.913	3.10E+12	3.23E+12	1.66E-01	1.73E-01	6.21E-03
	30	10.804	6.14E+11	4.51E+11	3.22E-02	2.37E-02	8.42E-04
	34	10.776	1.40E+11	7.15E+10	7.33E-03	3.74E-03	1.33E-04
	47	8.627	1.89E+11	1.21E+11	6.34E-03	4.05E-03	1.15E-04
	54	8.540	4.19E+12	4.09E+12	1.38E-01	1.34E-01	3.77E-03
	65	8.299	8.30E+11	8.07E+11	2.57E-02	2.50E-02	6.83E-04
	76	8.280	1.94E+12	1.85E+12	5.99E-02	5.69E-02	1.55E-03
	79	8.206	2.26E+10	2.18E+10	6.85E-04	6.59E-04	1.78E-05
	97	8.150	5.83E+07	2.45E+06	1.74E-06	7.33E-08	1.97E-09
	118	7.463	5.50E+11	4.57E+11	1.38E-02	1.14E-02	2.81E-04
3	6	172.469	1.21E+10	7.63E+09	1.80E-02	1.13E-02	3.06E-02
	8	143.720	4.05E+09	5.31E+09	9.89E-03	1.30E-02	8.21E-02
	11	11.736	1.17E+12	9.64E+11	2.43E-02	1.99E-02	2.31E-03
	17	11.350	9.51E+12	9.42E+12	1.82E-01	1.80E-01	2.04E-02
	18	11.348	1.71E+13	1.70E+13	2.06E-02	2.05E-02	1.64E+00
	20	11.257	1.09E+11	1.05E+11	1.27E-04	1.23E-04	9.96E-03
	23	11.022	2.08E+12	1.72E+12	3.14E-02	2.59E-02	3.41E-03
	26	10.946	4.15E+12	3.70E+12	4.48E-03	4.00E-03	3.33E-01
	27	10.940	9.30E+11	1.02E+12	1.84E-02	2.01E-02	1.99E-03
	28	10.890	8.09E+12	7.40E+12	4.80E-02	4.37E-02	5.15E-03
	30	10.830	2.07E+12	2.10E+12	3.70E-02	3.75E-02	3.95E-03
	37	10.727	2.43E+11	2.40E+11	2.47E-04	2.44E-04	2.07E-02
	44	10.626	1.20E+11	9.83E+10	6.77E-04	5.53E-04	7.08E-05
	48	8.622	5.54E+10	4.19E+10	2.06E-04	1.56E-04	1.75E-05
	53	8.557	5.47E+12	5.63E+12	2.82E-03	2.90E-03	3.09E-01
	54	8.556	2.97E+12	3.06E+12	3.37E-02	3.47E-02	2.84E-03
	56	8.540	3.34E+10	3.45E+10	1.71E-05	1.77E-05	1.89E-03
	64	8.296	2.37E+12	2.49E+12	1.12E-03	1.17E-03	1.28E-01
	65	8.295	1.32E+12	1.46E+12	1.51E-02	1.67E-02	1.24E-03
	76	8.221	7.03E+11	7.59E+11	7.83E-03	8.46E-03	6.41E-04
	79	8.213	5.66E+11	5.50E+11	5.57E-03	5.41E-03	4.53E-04
	80	8.200	2.80E+11	2.82E+11	1.27E-04	1.28E-04	1.42E-02
	82	8.183	6.22E+11	5.96E+11	2.08E-03	2.00E-03	1.68E-04
	103	7.688	2.44E+12	2.70E+12	9.12E-04	1.01E-03	1.20E-01
	105	7.681	1.70E+10	1.87E+10	6.34E-06	6.99E-06	8.29E-04
	118	7.475	7.32E+11	9.19E+11	7.70E-03	9.67E-03	5.68E-04

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	120	7.469	1.20E+12	1.41E+12	4.11E-04	4.83E-04	5.90E-02
	121	7.468	4.03E+11	5.03E+11	4.20E-03	5.24E-03	3.10E-04
	137	7.402	2.56E+11	2.53E+11	2.08E-03	2.06E-03	1.52E-04
	140	7.395	1.77E+11	1.91E+11	5.90E-05	6.35E-05	7.82E-03
4	11	11.867	1.62E+12	2.01E+12	1.03E-01	1.27E-01	4.01E-03
	17	11.472	6.20E+11	6.25E+11	3.67E-02	3.70E-02	1.39E-03
	18	11.470	5.54E+12	5.57E+12	5.46E-01	5.49E-01	2.06E-02
	20	11.377	1.90E+10	2.02E+10	1.85E-03	1.96E-03	6.91E-05
	29	10.941	5.25E+11	4.16E+11	2.83E-02	2.24E-02	1.02E-03
	34	10.912	5.71E+12	5.72E+12	3.06E-01	3.06E-01	1.10E-02
	53	8.627	1.81E+12	1.76E+12	1.01E-01	9.82E-02	2.86E-03
	54	8.626	2.01E+11	1.98E+11	6.73E-03	6.62E-03	1.91E-04
	56	8.609	1.70E+10	1.39E+10	9.47E-04	7.73E-04	2.68E-05
	76	8.285	6.84E+11	6.82E+11	2.11E-02	2.11E-02	5.76E-04
	77	8.282	2.29E+12	2.25E+12	1.18E-01	1.16E-01	3.21E-03
	79	8.276	2.48E+12	2.22E+12	7.63E-02	6.85E-02	2.08E-03
	80	8.263	7.17E+11	7.33E+11	3.67E-02	3.75E-02	9.98E-04
	93	7.744	9.80E+10	8.90E+10	2.64E-03	2.40E-03	6.73E-05
	103	7.743	8.62E+11	7.82E+11	3.88E-02	3.52E-02	9.88E-04
	104	7.742	9.80E+10	8.94E+10	2.64E-03	2.41E-03	6.73E-05
	105	7.737	8.83E+09	7.77E+09	3.96E-04	3.49E-04	1.01E-05
	121	7.520	4.71E+11	4.21E+11	1.18E-02	1.05E-02	2.89E-04
	136	7.454	1.30E+12	1.15E+12	5.43E-02	4.79E-02	1.33E-03
	137	7.450	1.46E+12	1.11E+12	3.64E-02	2.78E-02	8.92E-04
	140	7.447	4.36E+11	4.02E+11	1.81E-02	1.67E-02	4.44E-04
	154	7.431	9.06E+09	2.61E+09	2.56E-05	7.36E-06	2.36E-06
5	8	314.333	2.76E+08	3.49E+08	7.05E-03	8.91E-03	2.58E-02
	9	221.194	3.72E+09	4.43E+09	3.31E-02	3.94E-02	1.62E-01
	17	11.858	1.83E+11	1.84E+11	3.87E-03	3.89E-03	4.54E-04
	18	11.856	1.08E+11	1.08E+11	1.48E-04	1.48E-04	1.14E-02
	20	11.757	1.64E+13	1.61E+13	2.19E-02	2.15E-02	1.66E+00
	23	11.501	1.36E+12	1.25E+12	2.48E-02	2.28E-02	2.82E-03
	26	11.418	3.53E+11	4.32E+11	4.32E-04	5.28E-04	4.22E-02
	27	11.411	1.49E+12	1.33E+12	2.59E-02	2.31E-02	2.92E-03
	28	11.357	2.43E+11	2.48E+11	1.57E-03	1.60E-03	1.76E-04
	30	11.292	3.38E+12	3.13E+12	5.97E-02	5.53E-02	6.66E-03
	34	11.261	3.36E+11	3.02E+11	5.73E-03	5.15E-03	6.38E-04
	35	11.260	2.04E+12	2.23E+12	2.39E-03	2.61E-03	2.12E-01
	37	11.180	6.84E+12	7.63E+12	7.86E-03	8.77E-03	7.15E-01

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	44	11.070	7.53E+12	7.26E+12	4.60E-02	4.43E-02	5.04E-03
	47	8.935	9.40E+09	1.23E+10	1.47E-04	1.93E-04	1.30E-05
	48	8.912	1.05E+12	8.33E+11	4.17E-03	3.31E-03	3.66E-04
	53	8.843	1.44E+10	1.43E+10	8.18E-06	8.15E-06	8.40E-04
	54	8.842	6.54E+10	6.63E+10	7.77E-04	7.87E-04	6.79E-05
	56	8.825	6.25E+12	6.36E+12	3.53E-03	3.59E-03	3.71E-01
	64	8.564	4.47E+11	4.62E+11	2.31E-04	2.39E-04	2.54E-02
	65	8.563	2.83E+11	3.53E+11	3.90E-03	4.86E-03	3.29E-04
	76	8.484	1.63E+12	1.95E+12	2.10E-02	2.51E-02	1.76E-03
	77	8.481	8.04E+11	8.28E+11	4.04E-04	4.15E-04	4.46E-02
	79	8.476	4.64E+11	5.68E+11	6.10E-03	7.47E-03	5.12E-04
	80	8.462	2.28E+12	2.35E+12	1.14E-03	1.17E-03	1.26E-01
	82	8.444	2.28E+12	2.74E+12	8.13E-03	9.77E-03	6.77E-04
	89	8.432	1.07E+10	1.23E+10	5.28E-06	6.09E-06	6.58E-04
	93	8.425	5.95E+07	5.63E+07	6.00E-07	5.68E-07	4.98E-08
	94	8.425	1.73E+10	2.16E+10	8.52E-06	1.06E-05	1.15E-03
	103	7.918	3.17E+09	3.51E+09	1.29E-06	1.43E-06	1.65E-04
	105	7.911	3.11E+12	3.31E+12	1.27E-03	1.35E-03	1.55E-01
	120	7.686	3.01E+11	3.50E+11	1.12E-04	1.31E-04	1.55E-02
	121	7.684	1.09E+11	1.89E+11	1.67E-03	2.90E-03	1.27E-04
	136	7.615	3.96E+11	4.61E+11	1.44E-04	1.68E-04	2.01E-02
	140	7.608	1.09E+12	1.27E+12	3.96E-04	4.60E-04	5.51E-02
6	22	11.906	1.09E+12	9.02E+11	6.93E-02	5.75E-02	2.72E-03
	25	11.690	4.03E+10	3.58E+10	2.48E-03	2.20E-03	9.53E-05
	36	11.508	2.14E+13	2.12E+13	1.27E+00	1.26E+00	4.83E-02
	41	11.357	3.10E+10	3.25E+10	1.80E-03	1.89E-03	6.73E-05
	46	11.266	4.43E+11	4.54E+11	2.53E-02	2.59E-02	9.37E-04
	69	8.678	6.91E+12	5.51E+12	2.34E-01	1.87E-01	5.33E-03
	75	8.669	1.23E+11	1.11E+11	4.16E-03	3.76E-03	1.19E-04
	84	8.588	2.26E+09	1.95E+09	7.49E-05	6.45E-05	2.12E-06
	95	8.569	5.62E+11	5.11E+11	1.86E-02	1.69E-02	5.23E-04
	152	7.710	3.35E+11	3.09E+11	8.95E-03	8.27E-03	2.27E-04
7	21	12.025	2.87E+12	2.54E+12	2.07E-02	1.83E-02	2.18E-03
	22	12.012	5.70E+11	4.96E+11	1.42E-02	1.23E-02	1.46E-03
	24	11.857	1.01E+12	1.13E+12	3.56E-02	3.98E-02	4.66E-03
	25	11.792	1.20E+11	1.04E+11	2.89E-03	2.51E-03	2.92E-04
	29	11.707	2.44E+11	2.45E+11	8.34E-03	8.39E-03	9.70E-04
	33	11.631	1.27E+13	1.27E+13	4.29E-01	4.29E-01	4.93E-02
	36	11.607	4.53E+12	4.52E+12	9.15E-02	9.13E-02	1.05E-02

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	38	11.511	1.08E+13	1.08E+13	3.57E-01	3.57E-01	4.06E-02
	41	11.453	1.17E+13	1.17E+13	2.30E-01	2.30E-01	2.60E-02
	42	11.452	2.07E+12	2.07E+12	6.79E-02	6.77E-02	7.66E-03
	43	11.438	1.60E+13	1.62E+13	1.04E-01	1.06E-01	1.19E-02
	46	11.361	2.51E+11	2.51E+11	4.87E-03	4.87E-03	5.46E-04
	52	9.091	1.59E+07	1.60E+07	1.95E-07	1.96E-07	1.76E-08
	57	9.041	9.09E+06	8.81E+06	1.86E-07	1.80E-07	1.61E-08
	66	8.754	6.74E+10	6.59E+10	1.29E-03	1.26E-03	1.09E-04
	67	8.741	5.40E+12	5.61E+12	1.03E-01	1.07E-01	9.24E-03
	69	8.734	1.24E+12	1.22E+12	1.45E-02	1.42E-02	1.23E-03
	71	8.729	6.18E+11	4.94E+11	1.18E-02	9.40E-03	8.10E-04
	81	8.654	2.27E+12	2.30E+12	4.25E-02	4.30E-02	3.67E-03
	84	8.643	4.42E+12	4.37E+12	5.02E-02	4.97E-02	4.23E-03
	85	8.642	9.54E+11	9.80E+11	1.78E-02	1.83E-02	1.56E-03
	88	8.637	5.66E+12	5.52E+12	2.11E-02	2.06E-02	1.75E-03
	95	8.623	1.44E+11	1.41E+11	1.64E-03	1.60E-03	1.36E-04
	122	7.844	4.79E+10	5.17E+10	7.36E-04	7.94E-04	6.15E-05
	124	7.838	2.83E+12	3.14E+12	4.34E-02	4.82E-02	3.73E-03
	125	7.837	5.53E+11	4.95E+11	5.70E-03	5.10E-03	3.94E-04
	141	7.765	9.50E+11	1.05E+12	1.43E-02	1.58E-02	1.21E-03
	143	7.761	2.29E+12	2.05E+12	2.30E-02	2.06E-02	1.58E-03
	144	7.761	4.79E+11	5.35E+11	7.21E-03	8.05E-03	6.17E-04
	149	7.756	3.10E+12	2.84E+12	9.33E-03	8.53E-03	6.54E-04
	152	7.754	9.19E+10	8.10E+10	9.42E-04	8.30E-04	6.35E-05
	153	7.754	3.56E+08	3.92E+08	5.34E-06	5.89E-06	4.51E-07
8	22	12.073	1.29E+12	1.36E+12	3.35E-03	3.55E-03	8.94E-02
	24	11.917	1.97E+12	1.77E+12	2.10E-01	1.88E-01	8.22E-03
	25	11.851	1.11E+11	1.02E+11	2.73E-04	2.51E-04	6.42E-03
	29	11.765	1.60E+12	1.60E+12	1.66E-01	1.66E-01	6.41E-03
	31	11.699	6.84E+12	6.88E+12	9.82E-01	9.88E-01	3.78E-02
	33	11.689	1.55E+12	1.56E+12	1.59E-01	1.60E-01	6.12E-03
	36	11.664	1.84E+11	1.82E+11	4.31E-04	4.29E-04	1.12E-02
	38	11.567	2.15E+12	2.16E+12	2.16E-01	2.17E-01	8.21E-03
	40	11.526	2.30E+13	2.31E+13	3.21E+00	3.23E+00	1.22E-01
	41	11.508	5.61E+12	5.61E+12	1.27E-02	1.27E-02	3.34E-01
	42	11.508	1.13E+13	1.13E+13	1.12E+00	1.12E+00	4.25E-02
	45	11.419	2.19E+12	2.24E+12	3.00E-01	3.06E-01	1.13E-02
	46	11.415	1.40E+10	1.60E+10	3.07E-05	3.51E-05	9.35E-04
	57	9.075	7.03E+06	7.10E+06	4.34E-07	4.38E-07	1.30E-08

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	66	8.786	8.08E+11	7.85E+11	4.68E-02	4.54E-02	1.35E-03
	67	8.773	1.02E+12	8.87E+11	5.88E-02	5.12E-02	1.70E-03
	68	8.766	4.57E+12	4.52E+12	3.68E-01	3.64E-01	1.06E-02
	69	8.766	1.11E+11	1.18E+11	1.11E-04	1.18E-04	4.09E-03
	81	8.685	9.50E+11	9.02E+11	5.37E-02	5.10E-02	1.54E-03
	83	8.675	6.62E+12	6.53E+12	5.23E-01	5.16E-01	1.49E-02
	84	8.674	1.92E+12	1.96E+12	1.86E-03	1.89E-03	6.62E-02
	85	8.673	3.65E+12	3.67E+12	2.06E-01	2.07E-01	5.88E-03
	96	8.654	2.06E+11	2.11E+11	1.62E-02	1.66E-02	4.62E-04
	122	7.870	3.92E+11	3.63E+11	1.82E-02	1.68E-02	4.72E-04
	124	7.864	3.04E+11	2.68E+11	1.41E-02	1.24E-02	3.65E-04
	125	7.863	5.53E+10	7.19E+10	3.98E-05	5.18E-05	2.00E-03
	129	7.860	2.74E+12	2.54E+12	1.78E-01	1.65E-01	4.60E-03
	131	7.856	5.67E+09	5.19E+09	3.67E-04	3.36E-04	9.49E-06
	141	7.791	4.88E+11	4.47E+11	2.22E-02	2.03E-02	5.69E-04
	143	7.787	8.81E+11	9.93E+11	6.16E-04	6.94E-04	2.71E-02
	146	7.785	3.19E+12	2.93E+12	2.03E-01	1.86E-01	5.20E-03
	157	7.778	4.78E+08	4.48E+08	3.03E-05	2.85E-05	7.77E-07
	159	7.776	4.74E+10	4.29E+10	3.01E-03	2.73E-03	7.70E-05
	161	7.776	1.02E+10	9.31E+09	6.50E-04	5.91E-04	1.66E-05
9	24	12.110	5.12E+11	4.62E+11	5.63E-02	5.08E-02	2.24E-03
	25	12.042	2.26E+12	2.29E+12	5.83E-03	5.93E-03	1.49E-01
	29	11.953	8.02E+11	7.92E+11	8.59E-02	8.48E-02	3.38E-03
	31	11.885	2.16E+11	2.23E+11	3.21E-02	3.30E-02	1.25E-03
	33	11.875	1.83E+12	1.82E+12	1.93E-01	1.92E-01	7.56E-03
	36	11.849	3.47E+10	3.63E+10	8.55E-05	8.95E-05	2.29E-03
	38	11.750	2.42E+12	2.39E+12	2.51E-01	2.48E-01	9.70E-03
	40	11.707	1.60E+12	1.59E+12	2.30E-01	2.28E-01	8.85E-03
	41	11.688	1.51E+12	1.51E+12	3.58E-03	3.56E-03	9.25E-02
	42	11.688	7.20E+12	7.20E+12	7.37E-01	7.37E-01	2.84E-02
	45	11.597	3.44E+13	3.48E+13	4.85E+00	4.91E+00	1.85E-01
	46	11.593	9.81E+11	1.01E+12	2.26E-03	2.32E-03	6.08E-02
	52	9.239	4.45E+09	3.46E+10	5.19E-06	4.04E-05	1.33E-03
	57	9.187	1.71E+06	1.78E+06	1.08E-07	1.13E-07	3.27E-09
	58	9.182	2.16E+08	1.65E+08	1.91E-05	1.46E-05	5.78E-07
	59	9.177	8.24E+09	6.44E+09	7.28E-04	5.70E-04	2.20E-05
	66	8.891	1.87E+11	1.90E+11	1.11E-02	1.13E-02	3.24E-04
	67	8.878	2.61E+10	3.33E+10	1.54E-03	1.97E-03	4.50E-05
	68	8.870	5.02E+11	5.06E+11	4.15E-02	4.18E-02	1.21E-03

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	69	8.870	3.48E+10	4.49E+10	3.59E-05	4.64E-05	1.59E-03
	71	8.865	4.88E+11	3.99E+11	2.87E-02	2.35E-02	8.38E-04
	81	8.788	1.06E+12	1.05E+12	6.11E-02	6.06E-02	1.77E-03
	83	8.777	3.09E+11	3.00E+11	2.50E-02	2.42E-02	7.22E-04
	84	8.776	5.02E+11	4.98E+11	5.02E-04	4.99E-04	1.73E-02
	85	8.775	2.72E+12	2.66E+12	1.57E-01	1.54E-01	4.53E-03
	95	8.756	3.32E+11	3.65E+11	3.30E-04	3.63E-04	1.26E-02
	96	8.755	1.24E+13	1.23E+13	9.94E-01	9.88E-01	2.86E-02
	122	7.954	8.32E+10	8.10E+10	3.94E-03	3.84E-03	1.03E-04
	124	7.948	5.92E+10	6.00E+10	2.80E-03	2.84E-03	7.33E-05
	129	7.944	4.58E+11	4.29E+11	3.03E-02	2.84E-02	7.93E-04
	131	7.939	1.05E+09	9.36E+08	6.94E-05	6.19E-05	1.81E-06
	141	7.873	5.06E+11	4.75E+11	2.35E-02	2.21E-02	6.09E-04
	143	7.869	2.28E+11	2.34E+11	1.64E-04	1.69E-04	6.52E-03
	146	7.867	1.32E+11	1.23E+11	8.58E-03	7.98E-03	2.22E-04
	157	7.860	5.00E+09	4.59E+09	3.24E-04	2.97E-04	8.39E-06
	159	7.858	6.05E+12	5.61E+12	3.92E-01	3.64E-01	1.01E-02
	161	7.858	4.52E+11	4.19E+11	2.93E-02	2.72E-02	7.58E-04
10	22	12.614	2.80E+10	2.56E+10	2.00E-03	1.83E-03	8.32E-05
	25	12.371	9.36E+11	8.98E+11	6.44E-02	6.18E-02	2.62E-03
	36	12.168	3.47E+11	3.35E+11	2.31E-02	2.23E-02	9.27E-04
	41	11.999	1.75E+11	1.75E+11	1.13E-02	1.13E-02	4.47E-04
	46	11.898	2.00E+13	2.00E+13	1.27E+00	1.27E+00	4.99E-02
	49	9.447	2.36E+10	2.15E+10	9.48E-04	8.63E-04	2.95E-05
	52	9.432	1.19E+11	8.98E+10	4.76E-03	3.59E-03	1.48E-04
	75	9.038	4.16E+11	2.88E+11	1.53E-02	1.06E-02	4.55E-04
	84	8.950	8.92E+10	8.83E+10	3.21E-03	3.18E-03	9.47E-05
	95	8.929	6.60E+12	6.72E+12	2.37E-01	2.41E-01	6.96E-03
	125	8.089	4.44E+11	3.51E+11	1.31E-02	1.03E-02	3.48E-04
	143	8.008	4.98E+10	4.43E+10	1.44E-03	1.28E-03	3.79E-05
	152	8.001	3.34E+12	3.01E+12	9.62E-02	8.66E-02	2.53E-03
	170	5.933	3.41E+09	3.70E+09	5.40E-05	5.86E-05	1.05E-06
11	29	148.179	4.55E+06	4.05E+06	7.49E-05	6.66E-05	3.66E-05
	33	136.923	1.38E+08	1.16E+08	1.94E-03	1.63E-03	8.72E-04
	36	133.619	2.29E+07	2.47E+07	1.98E-04	2.14E-04	8.73E-05
	38	121.958	2.96E+07	2.48E+07	3.30E-04	2.76E-04	1.33E-04
	41	115.671	9.21E+07	9.34E+07	5.62E-04	5.70E-04	2.14E-04
	42	115.648	1.23E+08	1.16E+08	1.23E-03	1.16E-03	4.70E-04
	43	114.161	9.55E+07	9.61E+07	1.87E-04	1.88E-04	7.02E-05

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	46	106.935	1.50E+07	1.74E+07	8.96E-05	1.04E-04	3.16E-05
	49	32.101	7.52E+11	7.13E+11	3.30E-01	3.13E-01	3.49E-02
	51	31.950	8.52E+11	8.97E+11	6.52E-01	6.87E-01	6.86E-02
	52	31.920	1.65E+11	1.56E+11	7.14E-02	6.75E-02	7.50E-03
	57	31.310	6.52E+05	6.66E+05	4.79E-07	4.89E-07	4.94E-08
	69	27.913	2.81E+09	3.18E+09	1.12E-03	1.27E-03	1.03E-04
	81	27.110	4.73E+08	4.31E+08	2.61E-04	2.38E-04	2.33E-05
	84	27.001	9.31E+09	9.74E+09	3.19E-03	3.34E-03	2.84E-04
	85	26.992	7.18E+09	6.62E+09	3.92E-03	3.62E-03	3.48E-04
	88	26.947	1.29E+10	1.31E+10	1.40E-03	1.43E-03	1.24E-04
	95	26.814	1.23E+09	1.33E+09	4.31E-04	4.66E-04	3.80E-05
	99	22.407	4.38E+11	4.27E+11	9.64E-02	9.40E-02	7.11E-03
	100	22.379	5.56E+11	5.32E+11	4.17E-02	4.00E-02	3.08E-03
	101	22.366	4.95E+11	5.08E+11	1.85E-01	1.91E-01	1.37E-02
	102	22.356	7.52E+10	7.33E+10	1.65E-02	1.61E-02	1.21E-03
	110	22.211	3.03E+05	3.09E+05	1.12E-07	1.14E-07	8.20E-09
	116	20.695	1.55E+08	1.97E+08	3.80E-05	4.83E-05	2.59E-06
	122	20.486	2.27E+08	2.29E+08	7.15E-05	7.21E-05	4.82E-06
	124	20.447	4.28E+09	4.34E+09	1.34E-03	1.36E-03	9.02E-05
	125	20.437	1.74E+09	1.75E+09	3.28E-04	3.30E-04	2.21E-05
	134	20.153	2.70E+07	2.85E+07	5.21E-06	5.50E-06	3.46E-07
	141	19.956	1.77E+08	1.77E+08	5.30E-05	5.29E-05	3.48E-06
	143	19.932	5.36E+09	5.40E+09	9.64E-04	9.71E-04	6.33E-05
	144	19.926	3.84E+09	3.81E+09	1.14E-03	1.13E-03	7.50E-05
	149	19.896	8.31E+09	8.21E+09	4.93E-04	4.87E-04	3.23E-05
	152	19.885	8.13E+08	8.22E+08	1.46E-04	1.48E-04	9.57E-06
	153	19.884	3.84E+04	3.92E+04	1.14E-08	1.16E-08	7.45E-10
	167	10.795	7.85E+12	1.09E+13	1.37E-01	1.91E-01	4.87E-03
	178	10.523	4.33E+07	8.17E+07	3.60E-06	6.78E-06	1.25E-07
12	22	260.791	7.32E+08	5.94E+08	2.24E-02	1.82E-02	1.92E-02
	25	185.516	7.49E+09	7.10E+09	1.16E-01	1.10E-01	7.08E-02
	49	32.887	1.61E+11	1.54E+11	7.82E-02	7.51E-02	8.47E-03
	52	32.697	6.66E+11	6.32E+11	3.20E-01	3.04E-01	3.45E-02
	61	29.522	4.56E+08	4.15E+08	1.79E-04	1.63E-04	1.74E-05
	84	27.555	1.79E+08	1.54E+08	6.10E-05	5.27E-05	5.54E-06
	95	27.360	1.18E+10	1.14E+10	3.98E-03	3.83E-03	3.59E-04
	99	22.787	7.95E+10	6.65E+10	1.86E-02	1.55E-02	1.39E-03
	102	22.735	4.33E+11	3.60E+11	1.01E-01	8.36E-02	7.53E-03
	116	21.019	1.24E+08	1.74E+06	2.46E-05	3.46E-07	1.70E-06

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	125	20.753	5.65E+09	4.28E+09	1.09E-03	8.29E-04	7.47E-05
	143	20.232	1.00E+08	8.71E+07	1.84E-05	1.60E-05	1.23E-06
	152	20.184	6.64E+09	6.08E+09	1.22E-03	1.11E-03	8.09E-05
	186	10.880	1.25E+11	1.49E+11	6.65E-03	7.93E-03	2.38E-04
	170	10.741	5.17E+12	6.28E+12	2.68E-01	3.26E-01	9.48E-03
13	35	174.866	1.86E+09	2.90E+09	2.45E-02	3.83E-02	6.65E-02
	37	157.412	1.06E+08	1.32E+08	1.02E-03	1.27E-03	2.45E-03
	47	34.693	1.42E+11	1.49E+11	8.05E-02	8.45E-02	9.20E-03
	48	34.352	2.66E+11	2.36E+11	4.71E-02	4.18E-02	5.33E-03
	53	33.348	1.10E+12	1.06E+12	1.00E-01	9.72E-02	8.85E-01
	54	33.333	5.26E+11	5.11E+11	2.55E-01	2.48E-01	2.80E-02
	56	33.083	5.70E+11	5.57E+11	5.10E-02	4.98E-02	4.57E-01
	64	32.516	7.99E+11	8.06E+11	6.78E-02	6.84E-02	6.39E-01
	72	29.218	1.37E+10	1.36E+10	8.41E-04	8.36E-04	8.69E-03
	79	28.758	9.08E+09	9.87E+09	3.67E-03	3.99E-03	3.48E-04
	82	28.299	1.38E+10	1.20E+10	1.66E-03	1.44E-03	1.55E-04
	89	28.173	9.17E+09	9.82E+09	5.06E-04	5.42E-04	5.84E-03
	97	28.091	5.51E+09	5.80E+09	2.06E-03	2.17E-03	1.90E-04
	103	23.144	5.54E+11	5.74E+11	1.70E-02	1.75E-02	2.30E-01
	104	23.448	6.50E+10	8.60E+10	2.13E-02	2.82E-02	1.64E-03
	105	23.085	2.90E+11	3.03E+11	8.80E-03	9.20E-03	1.21E-01
	118	21.322	1.17E+09	1.20E+09	2.45E-04	2.51E-04	1.72E-05
	127	21.143	5.81E+09	6.55E+09	1.35E-04	1.53E-04	2.20E-03
	136	20.738	1.77E+09	1.77E+09	3.89E-05	3.89E-05	5.69E-04
	147	20.590	3.27E+09	3.96E+09	7.04E-05	8.52E-05	1.26E-03
	151	20.567	2.16E+06	2.71E+05	4.64E-08	5.81E-09	8.58E-08
	154	20.562	2.16E+09	2.58E+09	4.91E-04	5.86E-04	3.32E-05
	176	10.770	2.10E+12	2.11E+12	1.10E-01	1.11E-01	3.90E-03
14	47	34.812	7.08E+10	8.45E+10	3.86E-02	4.61E-02	4.42E-03
	54	33.442	1.14E+12	1.13E+12	5.72E-01	5.66E-01	6.30E-02
	97	28.169	1.14E+10	1.19E+10	4.08E-03	4.23E-03	3.78E-04
	106	23.184	5.71E+11	6.13E+11	1.38E-01	1.48E-01	1.05E-02
	118	21.366	7.47E+08	7.40E+07	1.53E-04	1.52E-05	1.08E-05
	176	10.782	4.56E+12	4.68E+12	2.39E-01	2.45E-01	8.47E-03
15	27	236.890	1.51E+09	1.51E+09	3.81E-02	3.81E-02	2.97E-02
	34	185.547	2.42E+09	2.72E+09	4.22E-02	4.74E-02	2.58E-02
	35	185.128	5.30E+08	4.59E+08	8.30E-03	7.18E-03	1.18E-02
	47	35.079	9.64E+10	9.82E+10	5.43E-02	5.53E-02	6.28E-03

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	48	34.730	4.31E+11	3.84E+11	7.79E-02	6.94E-02	8.90E-03
	53	33.705	4.53E+11	4.37E+11	4.28E-02	4.13E-02	3.72E-01
	56	33.434	1.27E+12	1.24E+12	1.17E-01	1.15E-01	1.04E+00
	65	30.228	1.80E+10	1.56E+10	6.42E-03	5.56E-03	6.39E-04
	72	29.491	1.67E+09	1.73E+09	1.06E-04	1.10E-04	1.13E-03
	76	29.022	9.43E+09	5.08E+09	1.19E-03	7.16E-04	3.41E-04
	80	28.765	6.61E+09	8.05E+09	3.88E-04	4.73E-04	4.99E-03
	82	28.555	1.27E+10	7.23E+09	1.56E-03	8.84E-04	1.46E-04
	93	28.343	3.17E+09	3.35E+09	1.21E-03	1.28E-03	1.13E-04
	94	28.336	1.70E+10	1.75E+10	9.57E-04	9.84E-04	1.06E-02
	97	23.623	4.32E+10	5.58E+10	1.40E-02	1.81E-02	1.09E-03
	103	23.316	2.14E+11	2.20E+11	6.70E-03	6.88E-03	8.97E-02
	105	23.255	6.51E+11	6.80E+11	2.02E-02	2.11E-02	2.75E-01
	118	21.467	1.21E+10	9.86E+09	2.04E-03	1.66E-03	1.44E-04
	120	21.411	1.48E+10	1.23E+10	3.59E-04	2.99E-04	4.24E-03
	121	21.402	6.90E+09	6.15E+09	1.27E-03	1.13E-03	8.93E-05
	127	21.285	6.58E+08	7.35E+08	1.57E-05	1.75E-05	2.50E-04
	136	20.875	2.05E+09	1.88E+09	4.60E-05	4.21E-05	6.13E-04
	137	20.874	3.64E+09	3.56E+09	6.99E-04	6.84E-04	4.80E-05
	140	20.819	4.71E+09	5.72E+09	1.05E-04	1.27E-04	1.86E-03
	151	20.702	6.34E+09	7.84E+09	1.39E-04	1.72E-04	2.52E-03
	154	20.697	1.27E+09	1.50E+09	2.88E-04	3.40E-04	1.97E-05
	171	10.879	6.12E+12	4.90E+12	1.94E-02	1.56E-02	4.35E-01
	176	10.807	1.36E+12	1.42E+12	7.46E-02	7.79E-02	2.65E-03
16	26	242.993	1.11E+09	1.15E+09	4.93E-02	5.11E-02	3.94E-02
	47	35.148	4.21E+11	4.09E+11	2.34E-01	2.27E-01	2.71E-02
	53	33.769	5.00E+11	5.12E+11	4.28E-01	4.38E-01	4.75E-02
	54	33.753	5.69E+10	5.73E+10	2.92E-02	2.94E-02	3.24E-03
	55	33.626	1.94E+12	2.07E+12	2.31E+00	2.46E+00	2.55E-01
	72	29.540	1.59E+09	1.64E+09	1.04E-03	1.07E-03	1.01E-04
	73	29.539	2.85E+08	2.78E+08	2.61E-04	2.54E-04	2.54E-05
	74	29.501	1.58E+10	1.54E+10	1.44E-02	1.40E-02	1.40E-03
	79	29.070	1.00E+09	1.13E+09	3.81E-04	4.28E-04	3.64E-05
	89	28.472	2.28E+09	2.11E+09	1.39E-03	1.28E-03	1.30E-04
	91	28.461	2.11E+07	1.99E+07	1.79E-05	1.69E-05	1.68E-06
	94	28.381	2.32E+09	2.27E+09	1.40E-03	1.37E-03	1.31E-04
	97	23.655	2.42E+11	1.85E+11	6.09E-02	4.66E-02	4.74E-03

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	103	23.346	2.59E+11	2.51E+11	1.06E-01	1.03E-01	8.14E-03
	104	23.333	2.95E+10	2.87E+10	7.22E-03	7.03E-03	5.54E-04
	105	23.286	2.49E+09	2.42E+09	1.01E-03	9.83E-04	7.76E-05
	120	21.311	7.92E+08	6.80E+08	2.70E-04	2.31E-04	1.89E-05
	176	10.814	5.92E+12	5.91E+12	3.11E-01	3.11E-01	1.11E-02
17	38	188.720	9.86E+08	8.91E+08	2.63E-02	2.38E-02	1.64E-02
	43	170.681	4.24E+09	7.57E+09	1.85E-02	3.30E-02	1.04E-02
	46	155.020	1.03E+08	9.73E+07	1.05E-03	9.92E-04	5.37E-04
	49	35.397	2.52E+10	2.92E+10	1.64E-02	1.90E-02	1.92E-03
	51	35.213	1.38E+09	1.21E+09	1.28E-03	1.13E-03	1.49E-04
	52	35.177	5.34E+09	6.07E+09	3.38E-03	3.84E-03	3.91E-04
	57	34.438	3.33E+12	3.36E+12	2.96E+00	2.99E+00	3.35E-01
	61	31.529	1.13E+09	1.03E+09	4.59E-04	4.18E-04	4.76E-05
	62	31.515	4.94E+09	6.40E+09	7.36E-04	9.53E-04	7.64E-05
	71	30.315	6.21E+08	5.38E+08	4.28E-04	3.70E-04	4.27E-05
	75	30.260	6.53E+07	6.98E+07	2.87E-05	3.07E-05	2.86E-06
	85	29.284	2.55E+09	1.45E+08	1.64E-03	9.32E-05	1.58E-04
	88	29.232	6.47E+08	6.64E+09	8.29E-05	8.51E-04	7.97E-06
	99	23.964	1.07E+10	1.36E+10	3.51E-03	4.46E-03	2.77E-04
	100	23.932	5.41E+10	7.07E+10	4.64E-03	6.07E-03	3.66E-04
	102	23.907	1.72E+09	2.24E+09	5.76E-04	7.50E-04	4.54E-05
	110	23.741	1.15E+12	1.15E+12	4.86E-01	4.87E-01	3.80E-02
	116	22.017	6.70E+08	7.10E+08	1.55E-04	1.64E-04	1.12E-05
	122	21.780	1.39E+10	1.49E+10	4.95E-03	5.28E-03	3.55E-04
	124	21.737	1.23E+09	1.34E+09	4.36E-04	4.75E-04	3.12E-05
	134	21.419	2.88E+07	3.36E+07	9.90E-06	1.16E-05	6.98E-07
	141	21.183	1.22E+09	9.18E+08	4.11E-04	3.09E-04	2.87E-05
	180	10.854	7.33E+12	6.92E+12	6.47E-01	6.11E-01	2.31E-02
18	31	231.709	4.18E+08	4.42E+08	2.35E-02	2.49E-02	1.80E-02
	33	227.876	1.15E+08	1.27E+08	4.49E-03	4.93E-03	3.37E-03
	46	155.365	6.45E+08	8.60E+08	3.58E-03	4.77E-03	9.34E-03
	49	35.415	8.14E+10	9.55E+10	5.35E-03	6.28E-03	5.39E-02
	51	35.231	2.01E+10	1.75E+10	1.87E-02	1.63E-02	2.17E-03
	52	35.195	1.19E+10	1.22E+10	7.67E-04	7.90E-04	6.82E-03
	57	34.455	6.19E+11	6.22E+11	5.50E-01	5.54E-01	6.24E-02
	58	34.386	3.53E+12	3.53E+12	4.38E+00	4.38E+00	4.96E-01
	59	34.313	4.58E+10	4.60E+10	5.66E-02	5.69E-02	6.40E-03
	68	30.386	1.13E+10	1.20E+10	1.10E-02	1.16E-02	1.10E-03
	96	29.078	1.79E+09	2.23E+09	1.59E-03	1.98E-03	1.52E-04

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	102	23.915	3.77E+09	3.55E+09	7.63E-05	7.20E-05	9.14E-04
	110	23.749	2.14E+11	2.13E+11	9.06E-02	9.01E-02	7.08E-03
	111	23.716	1.25E+12	1.24E+12	7.36E-01	7.34E-01	5.75E-02
	112	23.695	3.59E+09	3.70E+09	2.11E-03	2.18E-03	1.65E-04
	116	22.023	1.62E+09	1.45E+09	2.56E-05	2.29E-05	3.16E-04
	129	21.709	7.29E+09	7.90E+09	3.61E-03	3.91E-03	2.58E-04
	134	21.425	3.32E+08	3.67E+08	1.14E-04	1.26E-04	8.06E-06
	135	21.411	6.16E+08	3.21E+08	8.96E-06	4.66E-06	6.62E-05
	141	21.189	1.66E+09	1.97E+09	5.57E-04	6.63E-04	3.89E-05
	143	21.162	4.51E+08	8.18E+09	6.33E-06	1.15E-04	1.65E-03
	179	10.823	8.35E+12	8.07E+12	1.03E+00	9.92E-01	3.66E-02
19	24	388.614	4.13E+07	3.54E+07	4.67E-03	4.00E-03	5.98E-03
	29	273.450	2.36E+04	3.26E+05	1.32E-06	1.83E-05	1.19E-06
	45	160.530	9.31E+08	7.58E+08	2.52E-02	2.05E-02	1.33E-02
	57	34.665	1.78E+10	1.78E+10	1.61E-02	1.60E-02	1.83E-03
	58	34.597	4.27E+11	4.30E+11	5.37E-01	5.40E-01	6.11E-02
	59	34.522	1.54E+10	1.52E+10	1.92E-02	1.90E-02	2.19E-03
	66	30.792	7.09E+06	9.13E+06	5.04E-06	6.49E-06	5.11E-07
	110	23.849	6.17E+09	6.04E+09	2.63E-03	2.57E-03	2.07E-04
	111	23.816	1.53E+11	1.52E+11	9.13E-02	9.05E-02	7.16E-03
	112	23.794	2.59E+09	2.47E+09	1.54E-03	1.47E-03	1.20E-04
	134	21.507	1.60E+09	1.86E+09	5.55E-04	6.46E-04	3.93E-05
	169	11.132	2.12E+11	2.20E+11	1.97E-02	2.04E-02	7.23E-04
	178	10.877	1.34E+10	1.34E+10	1.19E-03	1.19E-03	4.27E-05
	179	10.844	1.92E+12	1.91E+12	2.36E-01	2.36E-01	8.44E-03
20	31	277.509	4.10E+07	3.31E+07	3.32E-03	2.67E-03	3.03E-03
	42	199.217	1.42E+08	1.24E+08	4.23E-03	3.69E-03	2.77E-03
	45	175.634	2.27E+09	1.91E+09	7.35E-02	6.18E-02	4.25E-02
	52	36.100	1.10E+11	1.41E+11	7.65E-03	9.82E-03	8.26E-02
	57	35.321	2.94E+09	2.81E+09	2.75E-03	2.63E-03	3.20E-04
	58	35.250	5.96E+10	5.95E+10	7.78E-02	7.76E-02	9.02E-03
	59	35.173	3.82E+12	3.82E+12	4.96E+00	4.96E+00	5.74E-01
	61	32.268	1.70E+09	1.42E+09	8.47E-05	7.07E-05	6.65E-04
	68	31.058	1.62E+10	1.68E+10	1.64E-02	1.70E-02	1.68E-03
	83	29.946	1.67E+09	1.79E+09	1.57E-03	1.68E-03	1.55E-04
	96	29.693	2.41E+10	2.54E+10	2.23E-02	2.35E-02	2.18E-03
	110	24.158	9.82E+08	9.18E+08	4.30E-04	4.02E-04	3.42E-05
	111	24.124	6.42E+09	6.20E+09	3.92E-03	3.79E-03	3.11E-04
	112	24.101	1.35E+12	1.33E+12	8.21E-01	8.09E-01	6.52E-02

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	129	22.050	1.33E+10	1.38E+10	6.77E-03	7.02E-03	4.92E-04
	131	22.018	3.53E+07	2.98E+07	1.80E-05	1.52E-05	1.30E-06
	146	21.470	1.06E+09	1.16E+09	5.12E-04	5.60E-04	3.62E-05
	157	21.417	6.90E+06	6.23E+06	3.32E-06	3.00E-06	2.34E-07
	159	21.406	1.64E+10	1.72E+10	7.88E-03	8.28E-03	5.56E-04
	161	21.402	1.26E+09	1.34E+09	6.04E-04	6.44E-04	4.26E-05
	168	11.232	8.91E+09	1.08E+10	1.87E-05	2.26E-05	6.10E-04
	179	10.907	1.82E+11	1.72E+11	2.28E-02	2.15E-02	8.18E-04
21	27	584.609	7.85E+08	6.25E+08	1.21E-01	9.61E-02	2.32E-01
	65	32.711	2.77E+11	2.91E+11	1.33E-01	1.40E-01	1.44E-02
	76	32.409	5.28E+11	5.41E+11	2.50E-01	2.55E-01	2.66E-02
	79	31.303	2.96E+09	2.40E+09	1.31E-03	1.06E-03	1.35E-04
	93	31.186	2.96E+08	2.13E+08	1.30E-04	9.30E-05	1.33E-05
	97	30.515	1.20E+10	1.19E+10	5.01E-03	4.99E-03	5.03E-04
	118	22.690	1.52E+11	1.82E+11	3.52E-02	4.22E-02	2.63E-03
	121	22.618	2.95E+11	3.48E+11	6.79E-02	8.01E-02	5.06E-03
	138	21.998	9.01E+07	6.85E+07	1.96E-05	1.49E-05	1.42E-06
	154	21.832	4.77E+09	4.85E+09	1.02E-03	1.04E-03	7.35E-05
	172	11.152	1.19E+13	1.19E+13	6.63E-01	6.63E-01	2.43E-02
22	30	392.125	5.87E+08	7.30E+08	5.05E-02	6.28E-02	6.52E-02
	48	38.176	2.32E+10	2.25E+10	5.08E-03	4.92E-03	6.38E-04
	56	36.616	5.45E+10	4.75E+10	6.60E-03	5.75E-03	4.77E-02
	63	32.806	5.11E+11	5.23E+11	2.53E-01	2.59E-01	2.73E-02
	65	32.502	2.26E+11	2.23E+11	1.07E-01	1.06E-01	1.15E-02
	72	31.939	3.12E+09	3.04E+09	2.51E-04	2.44E-04	2.32E-03
	76	31.390	5.43E+10	5.29E+10	2.35E-02	2.29E-02	2.42E-03
	79	31.272	9.70E+09	1.00E+10	4.41E-03	4.55E-03	4.54E-04
	80	31.089	1.16E+10	1.19E+10	8.63E-04	8.82E-04	8.62E-03
	82	30.844	5.64E+10	4.42E+10	8.04E-03	6.30E-03	8.17E-04
	89	30.695	4.84E+09	4.81E+09	3.46E-04	3.43E-04	3.40E-03
	93	30.597	8.29E+09	8.28E+09	3.49E-03	3.49E-03	3.51E-04
	94	30.589	8.23E+09	8.27E+09	5.81E-04	5.84E-04	5.80E-03
	105	24.751	2.97E+10	2.89E+10	1.11E-03	1.08E-03	1.33E-02
	118	22.735	2.77E+11	3.14E+11	7.30E-02	8.28E-02	5.47E-03
	120	22.673	4.29E+11	4.73E+11	1.23E-02	1.36E-02	1.82E-01
	121	22.663	1.34E+11	1.50E+11	3.48E-02	3.90E-02	2.59E-03
	127	22.532	8.69E+08	7.03E+08	2.45E-05	1.98E-05	2.68E-04
	136	22.072	1.11E+09	1.43E+09	2.94E-05	3.79E-05	5.22E-04
	137	22.071	2.41E+10	2.07E+10	4.54E-03	3.90E-03	3.30E-04

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	138	22.041	5.88E+09	5.12E+09	1.12E-03	9.75E-04	8.12E-05
	140	22.010	1.06E+10	1.12E+10	2.79E-04	2.95E-04	4.07E-03
	147	21.905	2.22E+09	2.09E+09	5.75E-05	5.41E-05	7.50E-04
	151	21.879	2.65E+09	3.06E+09	6.85E-05	7.90E-05	1.10E-03
	154	21.874	3.39E+09	3.38E+09	7.26E-04	7.24E-04	5.23E-05
	171	11.195	2.30E+12	1.87E+12	7.95E-03	6.47E-03	1.76E-01
	172	11.163	7.38E+12	7.36E+12	4.12E-01	4.11E-01	1.51E-02
	176	11.119	2.49E+10	2.40E+10	1.33E-03	1.28E-03	4.88E-05
23	38	373.023	3.05E+06	2.69E+06	3.18E-04	2.81E-04	3.90E-04
	57	37.850	3.69E+10	3.76E+10	3.96E-02	4.04E-02	4.93E-03
	61	34.366	1.29E+11	1.32E+11	7.02E-02	7.18E-02	7.94E-03
	62	34.350	2.12E+11	2.13E+11	3.76E-02	3.77E-02	4.25E-03
	66	33.279	1.72E+12	1.81E+12	1.43E+00	1.50E+00	1.56E-01
	67	33.097	7.09E+07	7.98E+07	5.82E-05	6.55E-05	6.34E-06
	69	32.995	6.08E+11	5.71E+11	2.80E-01	2.63E-01	3.04E-02
	71	32.928	2.88E+09	3.15E+09	2.34E-03	2.56E-03	2.54E-04
	75	32.866	1.06E+10	1.01E+10	4.90E-03	4.67E-03	5.30E-04
	84	31.730	4.19E+07	3.81E+08	1.73E-04	1.57E-03	1.80E-05
	95	31.471	2.29E+10	1.94E+10	8.64E-03	7.32E-03	8.95E-04
	110	25.314	1.16E+10	1.27E+10	5.58E-03	6.10E-03	4.65E-04
	116	23.363	6.49E+10	7.70E+10	1.89E-02	2.24E-02	1.45E-03
	117	23.332	1.11E+11	1.24E+11	9.03E-03	1.01E-02	6.94E-04
	122	23.097	8.76E+11	9.05E+11	3.50E-01	3.62E-01	2.66E-02
	124	23.048	4.76E+08	4.84E+08	1.90E-04	1.93E-04	1.44E-05
	125	23.035	3.33E+11	3.19E+11	7.61E-02	7.29E-02	5.77E-03
	134	22.675	1.70E+09	1.54E+09	3.56E-04	3.22E-04	2.66E-05
	141	22.426	3.69E+09	3.87E+09	1.39E-03	1.46E-03	1.03E-04
	152	22.337	8.51E+09	7.80E+09	1.75E-03	1.60E-03	1.29E-04
	180	11.171	1.79E+13	1.46E+13	1.67E+00	1.37E+00	6.16E-02
24	63	34.018	4.44E+08	4.55E+08	2.31E-04	2.37E-04	2.59E-05
	64	33.706	3.47E+09	2.99E+09	2.96E-03	2.54E-03	3.28E-04
	72	33.087	3.92E+09	3.99E+09	3.22E-03	3.28E-03	3.51E-04
	73	33.086	1.51E+09	1.52E+09	1.74E-03	1.75E-03	1.89E-04
	74	33.038	4.33E+10	4.35E+10	4.96E-02	4.98E-02	5.39E-03
	76	32.498	1.91E+11	1.90E+11	9.09E-02	9.01E-02	9.73E-03
	77	32.451	6.46E+11	6.42E+11	5.10E-01	5.07E-01	5.45E-02
	78	32.373	8.35E+11	8.35E+11	9.19E-01	9.18E-01	9.79E-02
	79	32.372	6.18E+11	6.06E+11	2.91E-01	2.85E-01	3.11E-02
	80	32.175	1.85E+11	1.86E+11	1.44E-01	1.44E-01	1.52E-02

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	89	31.753	3.40E+09	3.42E+09	2.57E-03	2.58E-03	2.68E-04
	91	31.739	1.42E+08	1.41E+08	1.50E-04	1.49E-04	1.57E-05
	93	31.649	1.08E+09	1.08E+09	4.85E-04	4.88E-04	5.06E-05
	94	31.640	4.41E+09	4.45E+09	3.31E-03	3.34E-03	3.45E-04
	105	25.435	6.88E+04	9.46E+05	3.34E-08	4.59E-07	2.79E-09
	118	23.311	1.36E+08	1.03E+08	3.32E-05	2.52E-05	2.55E-06
	120	23.245	1.09E+08	6.12E+07	8.78E-06	4.96E-06	3.37E-06
	121	23.235	3.81E+08	3.24E+08	9.25E-05	7.87E-05	7.07E-06
	127	23.097	1.92E+09	1.92E+09	1.54E-04	1.54E-04	5.83E-05
	136	22.614	1.24E+11	1.12E+11	4.73E-02	4.26E-02	3.51E-03
	137	22.548	1.24E+11	1.12E+11	9.46E-03	8.52E-03	3.51E-03
	138	22.438	1.41E+09	1.39E+09	1.06E-02	1.05E-02	3.93E-05
	154	22.406	4.78E+08	4.76E+08	1.08E-04	1.07E-04	7.97E-06
	172	11.300	5.67E+11	5.62E+11	3.25E-02	3.23E-02	1.21E-03
25	48	40.587	2.15E+10	1.68E+10	5.30E-03	4.14E-03	7.08E-04
	63	34.570	2.99E+10	3.16E+10	1.70E-02	1.80E-02	1.93E-03
	64	34.249	5.61E+09	4.93E+09	5.56E-04	4.89E-04	4.34E-03
	65	34.234	2.97E+10	3.22E+10	1.69E-02	1.83E-02	1.91E-03
	76	33.002	5.76E+11	5.94E+11	2.91E-01	3.00E-01	3.16E-02
	77	32.954	2.05E+11	2.07E+11	1.81E-02	1.82E-02	1.68E-01
	79	32.872	1.54E+11	1.62E+11	7.86E-02	8.27E-02	8.50E-03
	80	32.669	6.22E+11	6.16E+11	5.35E-02	5.30E-02	4.93E-01
	82	32.399	6.64E+11	7.56E+11	1.04E-01	1.19E-01	1.11E-02
	89	32.234	6.41E+09	6.44E+09	5.29E-04	5.32E-04	5.01E-03
	93	32.127	3.60E+09	3.60E+09	1.67E-03	1.67E-03	1.77E-04
	105	25.742	6.19E+10	5.58E+10	2.61E-03	2.35E-03	2.77E-02
	120	23.502	1.09E+10	1.20E+10	3.49E-04	3.84E-04	4.96E-03
	136	22.857	1.17E+11	1.28E+11	3.46E-03	3.76E-03	5.00E-02
	137	22.856	3.00E+11	3.64E+11	8.56E-02	1.04E-01	6.44E-03
	138	22.823	9.75E+10	1.20E+11	2.81E-02	3.46E-02	2.11E-03
	140	22.790	3.36E+11	3.68E+11	9.82E-03	1.07E-02	1.43E-01
	147	22.678	3.39E+09	3.98E+09	9.77E-05	1.15E-04	1.53E-03
	154	22.645	1.58E+09	1.65E+09	3.80E-04	3.97E-04	2.83E-05
	172	11.360	1.39E+12	1.40E+12	8.10E-02	8.16E-02	3.03E-03
26	46	312.483	2.49E+07	2.36E+07	1.12E-03	1.07E-03	1.04E-03
	52	39.719	5.32E+07	6.71E+08	4.93E-06	6.22E-05	4.76E-04
	57	38.779	5.20E+09	5.31E+09	5.86E-03	5.99E-03	7.49E-04
	61	35.130	3.47E+11	3.67E+11	2.23E-02	2.36E-02	2.04E-01
	66	33.995	2.70E+11	2.73E+11	2.34E-01	2.36E-01	2.62E-02

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	67	33.805	9.61E+10	8.39E+10	8.23E-02	7.18E-02	9.16E-03
	69	33.699	4.00E+10	4.39E+10	2.27E-03	2.49E-03	2.24E-02
	71	33.629	9.56E+10	9.34E+10	8.10E-02	7.91E-02	8.97E-03
	75	33.564	3.03E+10	2.83E+10	1.70E-03	1.59E-03	1.44E-02
	94	32.118	2.15E+08	1.96E+08	1.76E-05	1.60E-05	1.51E-04
	110	25.726	1.57E+09	1.73E+09	7.80E-04	8.60E-04	6.61E-05
	116	23.714	1.63E+11	2.01E+11	3.22E-03	3.97E-03	5.09E-02
	122	23.440	1.31E+11	1.30E+11	5.38E-02	5.37E-02	4.16E-03
	124	23.389	8.61E+10	8.64E+10	3.53E-02	3.54E-02	2.72E-03
	125	23.375	2.06E+10	2.25E+10	3.90E-04	4.26E-04	5.54E-03
	134	23.022	9.20E+09	1.02E+10	3.66E-03	4.05E-03	2.77E-04
	135	23.005	1.67E+10	1.56E+10	3.01E-04	2.81E-04	3.71E-03
	141	22.749	5.07E+10	5.91E+10	1.97E-02	2.29E-02	1.47E-03
27	36	779.462	2.61E+07	3.11E+07	8.49E-03	1.01E-02	2.18E-02
	43	390.850	2.98E+08	2.13E+08	6.82E-03	4.87E-03	8.77E-03
	49	40.079	1.43E+09	1.66E+09	1.20E-03	1.39E-03	1.58E-04
	61	35.191	5.01E+10	5.35E+10	2.98E-02	3.18E-02	3.45E-03
	62	35.174	4.48E+11	4.74E+11	8.30E-02	8.79E-02	9.62E-03
	69	33.755	1.93E+11	1.84E+11	9.44E-02	9.00E-02	1.05E-02
	75	33.620	3.06E+10	2.85E+10	1.45E-02	1.35E-02	1.60E-03
	84	32.432	6.72E+10	5.61E+10	2.65E-02	2.21E-02	2.83E-03
	95	32.162	9.52E+10	8.39E+10	3.90E-02	3.44E-02	4.13E-03
	116	23.742	2.68E+10	3.39E+10	8.58E-03	1.09E-02	6.71E-04
	117	23.710	2.32E+11	2.76E+11	1.95E-02	2.33E-02	1.52E-03
	125	23.403	1.14E+11	1.15E+11	2.83E-02	2.85E-02	2.18E-03
	134	23.032	1.13E+10	1.02E+10	2.43E-03	2.19E-03	1.84E-04
	143	22.743	3.47E+10	2.99E+10	6.97E-03	6.01E-03	5.22E-04
	152	22.682	4.72E+10	4.16E+10	9.62E-03	8.48E-03	7.18E-04
28	75	34.102	1.93E+10	1.90E+10	1.01E-02	9.91E-03	1.13E-03
	84	32.879	2.24E+08	1.93E+08	1.09E-04	9.38E-05	1.18E-05
	95	32.602	5.87E+10	4.50E+10	2.81E-02	2.15E-02	3.01E-03
	125	23.635	7.91E+11	5.46E+11	1.99E-01	1.37E-01	1.55E-02
	134	23.257	6.16E+09	4.50E+09	1.50E-03	1.09E-03	1.15E-04
	143	22.962	2.59E+08	2.77E+08	6.14E-05	6.56E-05	4.64E-06
	152	22.900	3.26E+10	3.03E+10	7.69E-03	7.15E-03	5.80E-04
	170	11.464	6.65E+10	6.96E+10	3.93E-03	4.11E-03	1.48E-04
29	64	34.984	8.93E+09	8.99E+09	8.19E-03	8.25E-03	9.43E-04
	65	34.968	2.13E+09	2.35E+09	1.17E-03	1.29E-03	1.35E-04
	67	34.960	1.23E+11	1.03E+11	1.13E-01	9.42E-02	1.30E-02

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	71	34.772	1.56E+09	1.65E+09	1.41E-03	1.50E-03	1.62E-04
	72	34.317	3.87E+11	3.89E+11	3.41E-01	3.43E-01	3.86E-02
	73	34.317	3.72E+12	3.76E+12	4.60E+00	4.64E+00	5.20E-01
	74	34.265	1.24E+08	1.30E+08	1.53E-04	1.60E-04	1.73E-05
	77	33.634	1.46E+07	1.59E+07	1.23E-05	1.35E-05	1.37E-06
	78	33.550	1.96E+08	1.57E+08	2.31E-04	1.85E-04	2.55E-05
	80	33.338	1.62E+09	1.47E+09	1.35E-03	1.23E-03	1.48E-04
	89	32.885	1.88E+09	1.91E+09	1.52E-03	1.55E-03	1.65E-04
	91	32.870	1.27E+10	1.34E+10	1.44E-02	1.52E-02	1.56E-03
	93	32.773	1.52E+09	1.31E+09	7.37E-04	6.35E-04	7.95E-05
	94	32.764	4.80E+09	4.93E+09	3.86E-03	3.96E-03	4.17E-04
	110	26.390	5.21E+08	6.10E+08	2.72E-04	3.18E-04	2.36E-05
	120	23.690	1.40E+11	1.37E+11	5.88E-02	5.75E-02	4.59E-03
	136	23.113	5.41E+08	5.14E+08	2.17E-04	2.06E-04	1.65E-05
	172	11.440	8.56E+11	7.69E+11	5.04E-02	4.53E-02	1.90E-03
30	43	613.306	4.01E+08	4.15E+07	2.26E-02	2.34E-03	4.57E-02
	61	36.379	1.73E+10	2.08E+10	1.24E-02	1.49E-02	1.48E-03
	62	36.361	3.97E+10	5.15E+10	7.86E-03	1.02E-02	9.41E-04
	63	35.320	1.08E+11	1.11E+11	6.04E-02	6.22E-02	7.02E-03
	69	34.847	1.07E+11	1.14E+11	6.22E-02	6.63E-02	7.14E-03
	75	34.703	1.55E+11	1.61E+11	8.72E-02	9.06E-02	9.96E-03
	84	33.438	1.04E+11	1.21E+11	6.06E-02	7.05E-02	6.67E-03
	88	33.355	8.24E+10	9.54E+10	1.37E-02	1.59E-02	1.51E-03
	95	33.152	6.75E+11	6.27E+11	3.10E-01	2.88E-01	3.38E-02
	102	26.595	8.91E+07	7.37E+07	2.35E-05	1.94E-05	2.05E-06
	125	23.922	2.88E+10	3.36E+10	8.65E-03	1.01E-02	6.81E-04
	134	23.535	8.51E+10	1.01E+11	2.52E-02	2.99E-02	1.95E-03
	143	23.233	5.54E+10	6.88E+10	1.67E-02	2.07E-02	1.28E-03
	149	23.184	4.50E+10	5.17E+10	3.62E-03	4.16E-03	2.77E-04
	152	23.170	3.66E+11	3.54E+11	8.55E-02	8.27E-02	6.52E-03
31	64	35.585	1.06E+11	8.75E+10	1.01E-01	8.31E-02	1.18E-02
	72	34.895	1.53E+10	1.56E+10	1.40E-02	1.42E-02	1.61E-03
	73	34.894	1.97E+11	1.99E+11	2.51E-01	2.54E-01	2.89E-02
	74	34.841	1.84E+11	1.83E+11	2.34E-01	2.33E-01	2.68E-02
	77	34.189	4.18E+09	4.11E+09	3.66E-03	3.60E-03	4.12E-04
	80	33.882	1.96E+09	2.19E+09	1.69E-03	1.89E-03	1.88E-04
	89	33.414	7.82E+09	7.65E+09	6.54E-03	6.40E-03	7.20E-04
	91	33.399	1.07E+11	1.08E+11	1.25E-01	1.26E-01	1.38E-02
	92	33.318	7.21E+08	7.88E+08	8.40E-04	9.19E-04	9.22E-05

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	128	23.954	6.99E+10	6.89E+10	4.21E-02	4.15E-02	3.32E-03
	130	23.941	6.49E+10	6.28E+10	3.91E-02	3.78E-02	3.08E-03
	150	23.229	3.73E+10	3.81E+10	2.11E-02	2.16E-02	1.62E-03
	174	11.482	3.91E+11	3.38E+11	5.42E-02	4.68E-02	2.05E-03
32	42	716.687	6.30E+07	5.90E+07	2.43E-02	2.27E-02	5.72E-02
	57	40.507	9.53E+07	9.76E+07	1.17E-04	1.20E-04	1.56E-05
	58	40.413	2.24E+09	2.35E+09	3.85E-03	4.03E-03	5.12E-04
	59	40.312	8.43E+07	8.20E+07	1.44E-04	1.40E-04	1.91E-05
	68	34.998	2.62E+09	2.50E+09	3.37E-03	3.21E-03	3.88E-04
	71	34.921	2.37E+11	2.15E+11	2.16E-01	1.96E-01	2.49E-02
	83	33.591	6.46E+11	6.47E+11	7.65E-01	7.66E-01	8.46E-02
	85	33.561	1.19E+11	1.35E+11	1.00E-01	1.14E-01	1.11E-02
	95	33.274	2.83E+10	2.83E+10	3.29E-02	3.29E-02	3.60E-03
	110	26.476	2.57E+07	2.88E+07	1.35E-05	1.52E-05	1.18E-06
	111	26.435	6.25E+08	7.36E+08	4.58E-04	5.40E-04	3.99E-05
	112	26.408	1.09E+07	1.10E+07	7.94E-06	8.04E-06	6.90E-07
	131	23.928	1.65E+06	1.99E+06	9.90E-07	1.20E-06	7.80E-08
	140	23.333	8.37E+09	6.94E+09	3.41E-03	2.83E-03	2.62E-04
	144	23.292	6.72E+10	7.02E+10	2.73E-02	2.85E-02	2.10E-03
	146	23.282	3.57E+11	3.32E+11	2.03E-01	1.89E-01	1.55E-02
	153	23.234	9.26E+06	8.02E+06	3.75E-06	3.24E-06	2.87E-07
	157	23.219	1.83E+08	1.62E+08	1.04E-04	9.18E-05	7.93E-06
	159	23.207	1.93E+10	1.74E+10	1.09E-02	9.86E-03	8.33E-04
	161	23.202	6.16E+08	5.70E+08	3.48E-04	3.22E-04	2.66E-05
	169	11.672	1.38E+12	1.33E+12	1.41E-01	1.36E-01	5.42E-03
	174	11.392	2.68E+10	2.75E+10	2.61E-03	2.68E-03	9.79E-05
	179	11.356	1.09E+12	1.10E+12	1.48E-01	1.49E-01	5.53E-03
33	64	35.677	5.71E+09	6.14E+09	5.45E-03	5.86E-03	6.40E-04
	65	35.660	1.24E+11	1.03E+11	7.12E-02	5.87E-02	8.36E-03
	72	34.983	2.19E+11	2.23E+11	2.01E-01	2.04E-01	2.31E-02
	73	34.983	1.12E+10	1.15E+10	1.43E-02	1.48E-02	1.65E-03
	74	34.929	3.53E+12	3.53E+12	4.52E+00	4.52E+00	5.20E-01
	77	34.274	2.89E+09	2.45E+09	2.54E-03	2.16E-03	2.87E-04
	79	34.185	2.53E+09	2.75E+09	1.33E-03	1.45E-03	1.49E-04
	80	33.966	4.30E+09	5.22E+09	3.72E-03	4.52E-03	4.16E-04
	89	33.496	1.62E+10	1.69E+10	1.36E-02	1.42E-02	1.50E-03
	91	33.481	1.61E+11	1.61E+11	1.89E-01	1.89E-01	2.08E-02
	93	33.380	5.17E+07	6.30E+07	2.59E-05	3.16E-05	2.85E-06
	94	33.370	4.85E+10	4.80E+10	4.05E-02	4.00E-02	4.45E-03

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	103	26.620	5.34E+08	4.65E+08	2.83E-04	2.47E-04	2.48E-05
	106	26.603	6.45E+07	6.52E+07	2.05E-05	2.08E-05	1.80E-06
	118	24.237	5.26E+09	5.51E+09	1.30E-03	1.37E-03	1.01E-04
	120	24.155	7.81E+10	7.77E+10	3.37E-02	3.35E-02	2.67E-03
	121	24.155	2.08E+06	2.54E+07	1.69E-07	2.06E-06	3.87E-08
	136	23.485	2.93E+09	2.41E+09	1.20E-03	9.89E-04	9.29E-05
34	51	41.788	2.44E+09	2.78E+09	3.19E-03	3.63E-03	4.39E-04
	52	41.737	2.76E+08	2.39E+08	1.88E-04	1.63E-04	2.58E-05
	57	40.701	2.49E+06	2.31E+06	3.09E-06	2.87E-06	4.13E-07
	62	36.681	1.13E+10	1.68E+10	2.28E-03	3.38E-03	2.75E-04
	66	35.463	4.26E+08	3.90E+08	4.01E-04	3.68E-04	4.68E-05
	71	35.065	5.42E+10	5.63E+10	5.00E-02	5.18E-02	5.77E-03
	75	34.995	6.66E+09	5.52E+09	3.04E-03	2.52E-03	3.50E-04
	84	33.709	1.34E+12	1.31E+12	6.71E-01	6.56E-01	7.44E-02
	85	33.693	7.75E+11	8.13E+11	6.60E-01	6.92E-01	7.32E-02
	95	33.418	1.50E+11	1.34E+11	6.72E-02	6.00E-02	7.39E-03
	100	26.798	3.48E+09	3.66E+09	3.75E-04	3.94E-04	3.31E-05
	101	26.780	4.24E+09	3.24E+09	2.28E-03	1.74E-03	2.01E-04
	110	26.559	3.83E+05	4.00E+05	2.03E-07	2.11E-07	1.77E-08
	122	24.129	1.27E+09	1.11E+09	5.56E-04	4.83E-04	4.41E-05
	143	23.364	6.71E+11	6.91E+11	1.70E-01	1.75E-01	1.30E-02
	144	23.356	4.13E+11	4.14E+11	1.69E-01	1.69E-01	1.30E-02
	149	23.314	1.03E+12	1.03E+12	8.41E-02	8.38E-02	6.45E-03
	152	23.300	8.03E+10	7.41E+10	1.81E-02	1.67E-02	1.39E-03
	153	23.298	1.25E+07	1.06E+07	5.08E-06	4.31E-06	3.90E-07
	167	11.728	7.39E+11	7.23E+11	1.52E-02	1.49E-02	5.89E-04
	168	11.725	4.19E+11	5.34E+11	3.30E-02	4.21E-02	1.27E-03
	178	11.407	1.56E+11	1.44E+11	1.53E-02	1.40E-02	5.73E-04
35	38	1222.229	1.14E+07	1.40E+07	1.28E-02	1.57E-02	5.15E-02
	45	515.564	1.27E+08	1.26E+08	3.55E-02	3.51E-02	6.02E-02
	57	40.721	3.96E+08	4.09E+08	4.92E-04	5.08E-04	6.60E-05
	58	40.626	4.64E+09	4.70E+09	8.04E-03	8.14E-03	1.08E-03
	59	40.523	1.10E+10	1.09E+10	1.90E-02	1.88E-02	2.53E-03
	61	36.716	4.37E+10	5.77E+10	3.20E-03	4.23E-03	3.50E-02
	66	35.478	3.21E+10	2.82E+10	3.03E-02	2.66E-02	3.53E-03
	67	35.271	1.35E+11	1.09E+11	1.26E-01	1.02E-01	1.47E-02
	68	35.158	1.04E+11	8.59E+10	1.35E-01	1.11E-01	1.56E-02
	71	35.080	1.19E+11	1.09E+11	1.10E-01	1.00E-01	1.26E-02
	75	35.010	3.33E+10	3.92E+10	2.11E-03	2.49E-03	2.16E-02

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	81	33.893	3.04E+11	3.00E+11	2.62E-01	2.59E-01	2.92E-02
	84	33.723	3.81E+11	3.83E+11	2.16E-02	2.17E-02	1.96E-01
	85	33.707	6.15E+11	6.13E+11	5.24E-01	5.22E-01	5.81E-02
	83	33.738	1.26E+12	1.22E+12	1.51E+00	1.46E+00	1.67E-01
	96	33.419	9.74E+10	1.01E+11	1.14E-01	1.18E-01	1.26E-02
	110	26.567	9.61E+07	1.14E+08	5.09E-05	6.04E-05	4.45E-06
	111	26.526	9.01E+08	1.03E+09	6.65E-04	7.61E-04	5.81E-05
	112	26.499	2.10E+09	2.16E+09	1.55E-03	1.59E-03	1.35E-04
	129	24.040	8.70E+10	6.97E+10	5.28E-02	4.23E-02	4.18E-03
	131	24.002	3.08E+08	2.54E+08	1.86E-04	1.53E-04	1.47E-05
	141	23.404	1.64E+11	1.49E+11	6.75E-02	6.10E-02	5.20E-03
	143	23.370	1.92E+11	1.99E+11	3.63E-03	3.77E-03	4.89E-02
	146	23.352	6.54E+11	6.12E+11	3.74E-01	3.50E-01	2.88E-02
	152	23.306	1.09E+08	2.67E+07	2.04E-06	5.01E-07	6.53E-06
	157	23.290	3.54E+07	3.37E+07	2.02E-05	1.92E-05	1.55E-06
	159	23.277	3.89E+10	3.83E+10	2.21E-02	2.18E-02	1.69E-03
	161	23.272	5.76E+09	5.54E+09	3.27E-03	3.15E-03	2.51E-04
	168	11.727	5.01E+11	4.39E+11	1.20E-03	1.05E-03	2.72E-02
	179	11.373	5.10E+12	4.65E+12	6.92E-01	6.31E-01	2.59E-02
36	54	41.358	1.29E+09	1.09E+09	8.40E-04	7.10E-04	1.14E-04
	63	36.262	3.17E+10	3.81E+10	2.25E-02	2.70E-02	2.69E-03
	64	35.908	2.33E+08	1.96E+08	2.66E-05	2.24E-05	1.90E-04
	65	35.891	1.18E+10	1.53E+10	8.88E-03	1.15E-02	1.05E-03
	72	35.206	3.17E+12	3.16E+12	3.42E-01	3.40E-01	2.94E+00
	76	34.540	3.90E+09	4.39E+09	2.35E-03	2.65E-03	2.68E-04
	77	34.487	3.52E+09	2.86E+09	3.56E-04	2.89E-04	2.55E-03
	80	34.176	3.23E+09	2.69E+09	3.19E-04	2.65E-04	2.36E-03
	82	33.880	5.18E+09	3.94E+09	8.91E-04	6.78E-04	9.94E-05
	89	33.700	2.64E+10	2.59E+10	2.49E-03	2.45E-03	2.21E-02
	93	33.582	8.91E+09	9.52E+09	4.83E-03	5.16E-03	5.34E-04
	94	33.573	8.77E+10	8.82E+10	8.19E-03	8.23E-03	7.45E-02
	127	24.110	1.03E+12	1.05E+12	3.56E-02	3.64E-02	4.59E-01
	136	23.585	3.68E+08	3.88E+08	1.19E-05	1.26E-05	1.62E-04
	147	23.394	1.29E+10	1.34E+10	4.08E-04	4.24E-04	5.51E-03
	151	23.364	3.46E+10	3.51E+10	1.09E-03	1.10E-03	1.44E-02
	154	23.358	3.12E+09	3.35E+09	8.23E-04	8.84E-04	6.33E-05
	171	11.572	2.78E+10	3.39E+10	1.06E-04	1.30E-04	3.41E-03
	172	11.537	3.26E+11	3.49E+11	2.09E-02	2.24E-02	7.94E-04
37	58	41.700	1.58E+09	1.59E+09	2.88E-03	2.89E-03	3.96E-04

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	59	41.592	2.59E+10	2.58E+10	4.70E-02	4.68E-02	6.43E-03
	66	36.295	1.22E+10	1.10E+10	1.20E-02	1.09E-02	1.43E-03
	68	35.959	8.63E+09	7.74E+09	1.17E-02	1.05E-02	1.39E-03
	71	35.878	9.72E+10	8.02E+10	9.37E-02	7.74E-02	1.11E-02
	75	35.804	3.06E+11	3.64E+11	2.08E-02	2.47E-02	2.10E-01
	81	34.637	1.96E+11	1.71E+11	1.77E-01	1.54E-01	2.01E-02
	83	34.476	4.36E+10	3.90E+10	5.44E-02	4.86E-02	6.17E-03
	84	34.459	6.23E+10	6.85E+10	3.78E-03	4.15E-03	3.66E-02
	85	34.444	4.16E+11	3.60E+11	3.70E-01	3.20E-01	4.19E-02
	95	34.155	4.42E+10	3.96E+10	2.61E-03	2.33E-03	2.08E-02
	96	34.142	1.75E+12	1.68E+12	2.14E+00	2.06E+00	2.40E-01
	111	26.980	1.57E+08	1.79E+08	1.20E-04	1.37E-04	1.07E-05
	112	26.952	3.94E+09	4.21E+09	3.00E-03	3.21E-03	2.67E-04
	129	24.412	1.72E+10	1.48E+10	1.07E-02	9.26E-03	8.64E-04
	131	24.373	1.18E+08	9.88E+07	7.35E-05	6.16E-05	5.90E-06
	141	23.756	9.92E+10	8.26E+10	4.20E-02	3.49E-02	3.28E-03
	143	23.722	2.99E+10	3.48E+10	5.91E-04	6.87E-04	8.80E-03
	146	23.703	1.77E+10	1.54E+10	1.05E-02	9.06E-03	8.16E-04
	157	23.639	9.06E+08	8.11E+08	5.31E-04	4.75E-04	4.13E-05
	159	23.625	8.84E+11	8.12E+11	5.18E-01	4.75E-01	4.03E-02
	161	23.621	6.88E+10	6.30E+10	4.03E-02	3.69E-02	3.13E-03
38	72	36.116	2.82E+10	2.77E+10	2.75E-02	2.71E-02	3.27E-03
	73	36.115	1.47E+10	1.44E+10	2.02E-02	1.98E-02	2.40E-03
	74	36.058	1.87E+11	1.85E+11	2.56E-01	2.53E-01	3.03E-02
	76	35.415	8.01E+10	7.09E+10	4.52E-02	4.00E-02	5.27E-03
	77	35.360	1.75E+10	1.49E+10	1.64E-02	1.40E-02	1.91E-03
	79	35.265	9.27E+09	9.93E+09	5.18E-03	5.56E-03	6.02E-04
	80	35.032	8.73E+06	1.06E+07	8.03E-06	9.71E-06	9.26E-07
	89	34.532	5.29E+11	5.33E+11	4.73E-01	4.77E-01	5.37E-02
	91	34.516	2.87E+12	2.88E+12	3.59E+00	3.60E+00	4.08E-01
	93	34.409	3.30E+10	3.25E+10	1.76E-02	1.73E-02	1.99E-03
	94	34.399	1.87E+11	1.88E+11	1.66E-01	1.67E-01	1.88E-02
	120	24.533	5.10E+09	4.83E+09	2.30E-03	2.18E-03	1.86E-04
	138	23.952	6.32E+09	4.76E+09	1.63E-03	1.23E-03	1.29E-04
	154	23.755	1.29E+10	1.08E+10	3.27E-03	2.75E-03	2.56E-04
	172	11.633	4.93E+11	4.54E+11	3.00E-02	2.77E-02	1.15E-03
39	91	34.627	2.24E+10	2.26E+10	2.81E-02	2.85E-02	3.21E-03
	92	34.540	3.52E+10	3.46E+10	4.41E-02	4.33E-02	5.02E-03
	150	23.817	7.70E+09	7.56E+09	4.58E-03	4.50E-03	3.59E-04

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	156	23.797	1.40E+10	1.20E+10	8.34E-03	7.15E-03	6.53E-04
	174	11.624	1.35E+12	1.04E+12	1.92E-01	1.47E-01	7.35E-03
40	73	36.523	1.79E+10	1.78E+10	2.51E-02	2.50E-02	3.02E-03
	74	36.464	3.41E+09	3.38E+09	4.75E-03	4.72E-03	5.71E-04
	77	35.751	7.07E+10	5.89E+10	6.77E-02	5.64E-02	7.97E-03
	80	35.416	8.14E+09	7.45E+09	7.65E-03	7.00E-03	8.92E-04
	89	34.905	1.21E+11	1.21E+11	1.11E-01	1.10E-01	1.27E-02
	91	34.889	4.86E+11	4.88E+11	6.21E-01	6.23E-01	7.14E-02
	92	34.800	6.56E+11	6.56E+11	8.34E-01	8.34E-01	9.55E-02
	94	34.769	2.97E+10	2.98E+10	2.69E-02	2.70E-02	3.08E-03
	128	24.711	5.28E+09	5.04E+09	3.38E-03	3.23E-03	2.75E-04
	130	24.697	2.87E+09	2.77E+09	1.84E-03	1.77E-03	1.50E-04
	150	23.940	1.61E+11	1.59E+11	9.71E-02	9.54E-02	7.65E-03
	156	23.920	2.35E+11	2.29E+11	1.41E-01	1.37E-01	1.11E-02
	174	11.653	4.37E+11	3.81E+11	6.22E-02	5.44E-02	2.39E-03
41	64	37.470	4.00E+09	5.21E+09	5.20E-04	6.77E-04	5.49E-03
	65	37.452	1.50E+09	1.38E+09	8.69E-04	7.99E-04	1.07E-04
	72	36.707	4.50E+09	4.57E+09	5.49E-04	5.58E-04	4.61E-03
	76	35.983	5.15E+09	6.52E+09	3.79E-03	4.80E-03	4.49E-04
	77	35.926	1.80E+10	2.24E+10	2.06E-03	2.57E-03	2.17E-02
	79	35.829	5.11E+10	6.10E+10	3.52E-02	4.20E-02	4.16E-03
	82	35.267	4.00E+09	3.39E+09	7.46E-04	6.33E-04	8.66E-05
	89	35.072	1.86E+12	1.85E+12	1.98E-01	1.97E-01	1.70E+00
	93	34.945	1.83E+12	1.84E+12	1.01E+00	1.02E+00	1.16E-01
	94	34.935	3.44E+11	3.42E+11	3.62E-02	3.60E-02	3.13E-01
	127	24.804	4.62E+09	4.58E+09	1.74E-04	1.72E-04	2.11E-03
	147	24.047	6.28E+11	6.39E+11	2.16E-02	2.19E-02	2.77E-01
	151	24.016	1.01E+11	1.01E+11	3.44E-03	3.46E-03	4.37E-02
	154	24.009	6.22E+11	6.34E+11	1.64E-01	1.67E-01	1.30E-02
	172	11.693	3.24E+11	4.02E+11	2.47E-02	3.06E-02	9.51E-04
42	65	37.455	1.34E+09	1.37E+09	8.48E-04	8.63E-04	1.05E-04
	72	36.709	2.04E+09	1.91E+09	2.06E-03	1.93E-03	2.49E-04
	73	36.708	1.31E+10	1.30E+10	1.85E-02	1.83E-02	2.24E-03
	74	36.649	7.08E+09	6.85E+09	9.98E-03	9.65E-03	1.20E-03
	78	35.832	3.03E+10	2.47E+10	4.08E-02	3.33E-02	4.82E-03
	79	35.831	9.15E+10	7.82E+10	5.28E-02	4.52E-02	6.23E-03
	80	35.590	9.78E+09	8.20E+09	9.29E-03	7.78E-03	1.09E-03
	89	35.074	8.44E+11	8.46E+11	7.78E-01	7.80E-01	8.98E-02
	91	35.058	2.08E+11	2.08E+11	2.68E-01	2.69E-01	3.09E-02

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	93	34.947	2.32E+11	2.33E+11	1.28E-01	1.28E-01	1.47E-02
	94	34.937	6.18E+11	6.20E+11	5.65E-01	5.67E-01	6.50E-02
	106	27.589	6.34E+07	6.37E+07	2.17E-05	2.18E-05	1.97E-06
	118	24.965	5.35E+08	4.37E+08	1.50E-04	1.23E-04	1.23E-05
	120	24.805	2.01E+09	1.76E+09	9.26E-04	8.11E-04	7.56E-05
	154	24.010	8.20E+10	7.86E+10	2.13E-02	2.04E-02	1.68E-03
	172	11.694	1.72E+11	1.51E+11	1.06E-02	9.28E-03	4.08E-04
43	63	38.020	5.45E+08	5.92E+08	1.64E-02	1.78E-02	1.39E-02
	65	37.613	3.17E+07	1.99E+07	8.27E-04	5.18E-04	6.55E-04
	76	36.132	1.58E+09	1.91E+09	2.59E-02	3.12E-02	1.62E-02
	79	35.976	1.01E+09	1.37E+09	1.58E-02	2.14E-02	9.71E-03
	93	35.085	4.56E+07	3.74E+07	5.57E-04	4.57E-04	3.02E-04
	97	28.129	2.48E+10	2.87E+10	6.49E-02	7.50E-02	1.63E-02
	104	27.675	2.30E+11	2.32E+11	5.52E-01	5.55E-01	1.32E-01
	138	24.278	3.37E+08	4.02E+08	4.15E-04	4.95E-04	7.16E-05
	154	24.076	4.38E+08	3.07E+08	4.97E-05	3.48E-05	2.60E-06
	172	11.709	3.03E+09	2.53E+09	3.40E-04	2.84E-04	1.77E-05
44	73	37.052	2.52E+10	2.51E+10	3.74E-02	3.73E-02	4.63E-03
	74	36.993	2.34E+10	2.36E+10	3.47E-02	3.49E-02	4.29E-03
	84	35.543	1.39E+10	1.33E+10	7.88E-03	7.58E-03	9.22E-04
	95	35.219	9.70E+11	9.39E+11	5.41E-01	5.24E-01	6.28E-02
	128	25.217	7.11E+09	6.92E+09	4.75E-03	4.62E-03	3.94E-04
	130	25.202	5.51E+09	5.42E+09	3.67E-03	3.62E-03	3.05E-04
	143	24.230	8.31E+09	6.80E+09	2.19E-03	1.80E-03	1.75E-04
	152	24.161	5.36E+11	4.47E+11	1.41E-01	1.17E-01	1.12E-02
45	94	35.779	1.41E+10	1.33E+10	1.35E-02	1.27E-02	1.60E-03
46	72	37.683	9.88E+10	9.83E+10	1.30E-02	1.30E-02	1.05E-01
	80	36.506	1.24E+10	1.47E+10	1.49E-03	1.77E-03	1.47E-02
	82	36.168	1.12E+11	7.97E+10	2.20E-02	1.56E-02	2.62E-03
	89	35.963	5.34E+11	5.30E+11	6.13E-02	6.08E-02	5.13E-01
	93	35.829	1.06E+10	1.04E+10	5.98E-03	5.87E-03	7.05E-04
	94	35.818	2.57E+12	2.55E+12	2.91E-01	2.90E-01	2.46E+00
	127	25.247	4.04E+10	4.24E+10	1.60E-03	1.69E-03	2.03E-02
	147	24.463	1.43E+11	1.47E+11	5.15E-03	5.29E-03	6.57E-02
	151	24.430	8.60E+11	8.62E+11	3.10E-02	3.10E-02	3.86E-01
	154	24.424	3.44E+09	3.35E+09	8.99E-04	8.75E-04	7.23E-05

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	171	11.827	4.90E+10	5.80E+10	2.00E-04	2.37E-04	6.08E-03
	172	11.791	2.75E+10	2.73E+10	1.71E-03	1.70E-03	6.63E-05
47	49	1504.950	1.36E+08	1.49E+08	1.52E-01	1.67E-01	7.54E-01
	51	1231.018	3.37E+08	2.94E+08	3.83E-01	3.34E-01	1.55E+00
	52	1188.480	6.69E+07	6.95E+07	4.41E-02	4.58E-02	1.73E-01
	57	688.833	2.79E+02	2.16E+02	9.94E-08	7.69E-08	2.25E-07
	61	242.111	1.11E+09	1.38E+09	3.64E-02	4.53E-02	2.90E-02
	62	241.304	1.24E+09	1.90E+09	1.08E-02	1.66E-02	8.57E-03
	66	196.828	8.76E+06	9.12E+06	2.54E-04	2.65E-04	1.65E-04
	67	190.626	8.93E+08	8.37E+08	2.43E-02	2.28E-02	1.53E-02
	71	185.158	3.32E+09	2.78E+09	8.52E-02	7.15E-02	5.20E-02
	75	183.220	1.13E+09	1.22E+09	1.84E-02	1.99E-02	1.11E-02
	99	70.707	1.63E+11	1.68E+11	3.78E-01	3.90E-01	8.80E-02
	100	70.431	2.08E+11	2.07E+11	1.54E-01	1.54E-01	3.58E-02
	101	70.307	1.92E+11	1.86E+11	7.11E-01	6.91E-01	1.65E-01
	102	70.211	2.75E+10	2.84E+10	6.29E-02	6.50E-02	1.45E-02
	110	68.800	8.82E+04	8.94E+04	3.13E-07	3.17E-07	7.09E-08
	122	54.565	1.30E+07	1.24E+07	2.90E-05	2.77E-05	5.21E-06
	124	54.292	2.93E+08	2.73E+08	6.47E-04	6.04E-04	1.16E-04
	125	54.217	1.04E+08	1.04E+08	1.37E-04	1.37E-04	2.45E-05
	141	50.962	1.15E+07	1.11E+07	2.23E-05	2.16E-05	3.75E-06
	143	50.804	2.42E+08	2.51E+08	2.91E-04	3.02E-04	4.87E-05
	144	50.765	1.84E+08	1.79E+08	3.55E-04	3.45E-04	5.93E-05
	149	50.568	3.66E+08	3.78E+08	1.40E-04	1.45E-04	2.33E-05
	152	50.501	4.13E+07	4.18E+07	4.80E-05	4.86E-05	7.98E-06
	153	50.493	4.32E+03	4.54E+03	8.26E-09	8.67E-09	1.37E-09
48	52	1801.170	8.38E+07	7.43E+07	1.22E-01	1.08E-01	7.25E-01
	75	193.360	4.23E+09	3.51E+09	7.11E-02	5.90E-02	4.53E-02
	99	72.168	3.21E+10	3.00E+10	7.51E-02	7.02E-02	1.78E-02
	102	71.651	1.70E+11	1.61E+11	3.93E-01	3.71E-01	9.26E-02
	152	51.242	2.48E+08	2.69E+08	2.93E-04	3.18E-04	4.94E-05
49	64	239.155	2.13E+08	2.36E+08	7.20E-03	7.97E-03	1.01E-02
	72	211.113	1.05E+07	9.29E+06	2.45E-04	2.16E-04	3.11E-04
	77	187.659	3.36E+09	3.89E+09	5.48E-02	6.34E-02	1.03E-01
	82	170.982	1.01E+08	7.05E+07	4.43E-04	3.09E-04	2.49E-04
	89	166.487	6.64E+07	6.16E+07	7.56E-04	7.02E-04	1.28E-03
	97	75.994	6.24E+10	7.07E+10	1.84E-01	2.08E-01	4.60E-02
	103	72.897	2.76E+11	2.79E+11	2.64E-01	2.67E-01	1.11E+00
	105	72.309	5.03E+10	5.00E+10	4.69E-02	4.67E-02	1.96E-01

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	127	56.151	4.47E+08	4.80E+08	1.95E-04	2.10E-04	1.13E-03
	147	52.415	2.45E+08	2.92E+08	8.71E-05	1.04E-04	6.02E-04
	151	52.266	1.94E+07	2.21E+07	6.83E-06	7.78E-06	4.52E-05
	154	52.236	2.04E+08	2.45E+08	3.00E-04	3.60E-04	5.16E-05
51	56	1694.597	2.67E+05	2.42E+05	5.75E-04	5.20E-04	3.21E-03
	80	183.648	1.92E+09	1.54E+09	4.85E-02	3.89E-02	2.93E-02
	89	170.689	1.35E+07	1.48E+07	2.94E-04	3.23E-04	1.65E-04
	97	76.858	1.51E+11	1.32E+11	4.01E-01	3.52E-01	1.02E-01
	103	73.691	1.04E+11	1.03E+11	4.23E-01	4.18E-01	1.03E-01
	104	73.561	1.18E+10	1.17E+10	2.88E-02	2.86E-02	6.98E-03
	105	73.090	1.00E+09	9.70E+08	4.01E-03	3.89E-03	9.64E-04
	120	57.523	6.65E+07	5.76E+07	1.60E-04	1.39E-04	2.98E-05
	138	53.622	2.06E+07	1.72E+07	2.56E-05	2.14E-05	4.44E-06
52	64	249.722	3.59E+08	4.28E+08	1.38E-02	1.64E-02	2.00E-02
	72	219.305	1.29E+07	1.62E+07	3.35E-04	4.21E-04	5.83E-04
	80	184.634	1.49E+09	1.62E+09	2.31E-02	2.51E-02	4.14E-02
	82	176.316	6.02E+09	4.01E+09	2.81E-02	1.87E-02	1.63E-02
	89	171.540	2.37E+07	2.87E+07	2.96E-04	3.57E-04	6.33E-04
	93	168.548	6.96E+06	5.87E+06	7.50E-05	6.33E-05	4.16E-05
	94	168.300	1.73E+08	1.81E+08	2.04E-03	2.13E-03	3.84E-03
	97	77.030	1.52E+10	1.71E+10	4.55E-02	5.12E-02	1.15E-02
	103	73.849	3.28E+10	3.35E+10	3.26E-02	3.33E-02	1.37E-01
	105	73.246	3.58E+11	3.58E+11	3.47E-01	3.47E-01	1.44E+00
	127	56.714	1.87E+08	1.81E+08	8.42E-05	8.16E-05	4.37E-04
	147	52.905	8.96E+06	1.04E+07	3.27E-06	3.81E-06	2.19E-05
	154	52.723	4.82E+07	5.56E+07	6.95E-05	8.02E-05	1.21E-05
53	67	244.871	5.59E+07	5.14E+07	2.51E-03	2.31E-03	2.02E-03
	68	239.492	3.60E+08	2.96E+08	2.17E-02	1.78E-02	1.71E-02
	96	176.811	6.76E+07	8.48E+07	2.22E-03	2.78E-03	1.29E-03
	99	77.038	4.11E+10	5.47E+10	2.78E-02	3.70E-02	1.46E-01
	102	76.449	3.53E+09	4.37E+09	2.33E-03	2.89E-03	1.15E-02
	110	74.779	1.15E+11	1.14E+11	4.81E-01	4.79E-01	1.19E-01
	111	74.455	6.76E+11	6.71E+11	3.93E+00	3.90E+00	9.63E-01
	112	74.240	6.30E+08	6.08E+08	3.64E-03	3.52E-03	8.90E-04
	125	57.863	7.30E+07	7.73E+07	2.09E-05	2.22E-05	1.16E-04
	131	57.488	1.05E+08	8.83E+07	3.64E-04	3.06E-04	6.89E-05
	146	53.895	1.01E+08	1.16E+08	3.08E-04	3.53E-04	5.47E-05
	157	53.562	7.16E+07	6.23E+07	2.16E-04	1.88E-04	3.80E-05

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	179	15.708	1.01E+08	9.31E+07	2.63E-05	2.41E-05	1.36E-06
54	62	336.919	7.47E+06	9.72E+06	1.27E-04	1.65E-04	1.41E-04
	66	256.115	5.65E+08	5.38E+08	2.78E-02	2.64E-02	2.34E-02
	81	191.453	1.12E+09	1.01E+09	3.07E-02	2.78E-02	1.94E-02
	85	185.688	8.19E+08	6.23E+08	2.12E-02	1.61E-02	1.29E-02
	95	177.607	1.01E+08	1.03E+08	1.46E-03	1.49E-03	8.51E-04
	99	77.121	1.25E+10	1.65E+10	4.40E-02	5.81E-02	1.12E-02
	100	76.791	6.26E+10	8.05E+10	5.54E-02	7.11E-02	1.40E-02
	101	76.644	7.55E+08	5.69E+08	3.32E-03	2.51E-03	8.39E-04
	110	74.857	6.22E+11	6.20E+11	2.61E+00	2.61E+00	6.44E-01
	122	58.306	2.77E+08	4.98E+08	7.06E-04	1.27E-03	1.35E-04
55	125	57.910	1.19E+08	1.09E+08	1.65E-04	1.51E-04	3.14E-05
	169	16.323	2.84E+08	2.28E+08	6.13E-04	4.93E-04	1.08E-04
	71	243.133	2.31E+08	1.90E+08	1.02E-02	8.41E-03	8.20E-03
	110	75.489	3.23E+09	3.26E+09	1.38E-02	1.39E-02	3.43E-03
	111	75.158	8.14E+10	8.18E+10	4.83E-01	4.85E-01	1.19E-01
	112	74.940	1.35E+09	1.32E+09	7.93E-03	7.80E-03	1.96E-03
	129	58.128	4.25E+06	2.40E+06	1.51E-05	8.53E-06	2.88E-06
	131	57.906	1.44E+07	1.33E+07	5.06E-05	4.67E-05	9.65E-06
	153	54.005	1.37E+06	1.13E+06	3.01E-06	2.47E-06	5.34E-07
	159	53.856	5.36E+06	5.51E+06	1.63E-05	1.68E-05	2.89E-06
56	161	53.833	1.62E+07	2.12E+07	4.92E-05	6.44E-05	8.73E-06
	179	15.739	2.33E+08	2.45E+08	6.06E-05	6.38E-05	3.14E-06
	68	254.120	1.82E+08	1.90E+08	1.23E-02	1.29E-02	1.03E-02
	96	184.659	1.72E+09	1.85E+09	6.15E-02	6.62E-02	3.74E-02
	101	77.997	1.04E+08	8.35E+07	4.73E-04	3.81E-04	1.21E-04
	110	76.148	9.55E+08	9.77E+08	4.15E-03	4.25E-03	1.04E-03
	111	75.811	1.56E+09	1.57E+09	9.39E-03	9.48E-03	2.34E-03
	112	75.589	7.62E+11	7.54E+11	4.57E+00	4.52E+00	1.14E+00
	131	58.293	1.95E+06	1.64E+06	6.94E-06	5.85E-06	1.33E-06
	157	54.261	5.96E+05	5.36E+05	1.84E-06	1.66E-06	3.29E-07
57	77	220.189	6.08E+06	7.19E+06	2.21E-04	2.61E-04	1.60E-04
	78	216.621	2.21E+05	2.72E+05	1.09E-05	1.34E-05	7.77E-06
	80	208.081	7.46E+06	6.50E+06	2.42E-04	2.11E-04	1.66E-04
	91	191.108	1.53E+09	1.24E+09	5.85E-02	4.76E-02	3.68E-02
	120	59.717	3.99E+07	4.37E+07	1.03E-04	1.13E-04	2.00E-05
	150	54.521	2.28E+08	1.93E+08	1.10E-03	6.01E-04	2.47E-04
	58	73	256.883	5.41E+08	6.44E+08	3.75E-02	4.46E-02

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	74	254.025	1.26E+08	1.53E+08	8.56E-03	1.04E-02	7.16E-03
	113	76.179	9.39E+10	9.35E+10	5.72E-01	5.69E-01	1.43E-01
59	64	305.390	3.01E+07	2.79E+07	2.11E-03	1.95E-03	2.12E-03
	73	261.050	1.88E+08	1.84E+08	1.35E-02	1.32E-02	1.16E-02
	74	258.099	3.56E+08	3.70E+08	2.49E-02	2.59E-02	2.11E-02
	78	222.384	1.43E+06	1.37E+06	7.42E-05	7.13E-05	5.43E-05
	113	76.541	3.40E+09	3.38E+09	2.09E-02	2.08E-02	5.26E-03
61	63	2252.530	3.18E+07	3.52E+07	8.04E-02	8.90E-02	5.96E-01
	64	1397.564	1.93E+08	2.43E+08	1.30E+00	1.64E+00	3.55E-01
	65	1372.700	5.98E+07	7.61E+07	6.45E-02	8.21E-02	2.91E-01
	89	393.605	1.44E+06	1.68E+06	2.17E-04	2.53E-04	1.95E-04
	93	378.197	4.06E+06	5.35E+06	3.44E-04	4.53E-04	4.29E-04
	105	96.491	1.64E+09	1.75E+09	3.64E-03	3.87E-03	1.22E-02
	118	71.704	1.27E+11	1.35E+11	3.11E-01	3.31E-01	7.35E-02
	120	71.090	1.88E+11	1.96E+11	1.67E-01	1.73E-01	7.41E-01
	121	70.992	5.98E+10	6.24E+10	1.42E-01	1.48E-01	3.31E-02
	127	69.719	6.32E+08	5.94E+08	5.28E-04	4.97E-04	2.16E-03
	140	64.952	2.29E+07	1.92E+07	1.55E-05	1.29E-05	6.06E-05
	147	64.050	2.75E+08	2.52E+08	1.78E-04	1.63E-04	7.75E-04
	151	63.828	1.48E+08	1.64E+08	9.50E-05	1.05E-04	5.02E-04
	154	63.783	3.38E+08	3.16E+08	5.78E-04	5.40E-04	1.21E-04
	171	16.868	1.29E+10	1.52E+10	1.53E-04	1.80E-04	3.25E-03
62	63	2324.900	2.02E+07	1.71E+07	4.91E-02	4.16E-02	3.76E-01
	65	1399.240	1.46E+08	1.60E+08	1.29E-01	1.41E-01	5.94E-01
	76	554.033	6.91E+06	1.55E+07	9.54E-04	2.14E-03	1.74E-03
	79	519.545	1.41E+05	1.15E+06	1.72E-05	1.40E-04	2.93E-05
	93	380.184	7.95E+06	9.61E+06	5.17E-04	6.24E-04	6.47E-04
	106	97.443	5.65E+07	4.73E+07	2.41E-04	2.02E-04	7.75E-05
	118	71.775	6.66E+10	6.95E+10	1.54E-01	1.61E-01	3.64E-02
	121	71.062	1.24E+11	1.27E+11	2.81E-01	2.89E-01	6.57E-02
	154	63.840	5.99E+08	5.58E+08	1.10E-03	1.02E-03	2.31E-04
63	66	1975.128	7.04E+07	5.29E+07	2.06E-01	1.55E-01	1.34E+00
	67	1488.989	1.03E+05	9.90E+04	1.71E-04	1.65E-04	8.38E-04
	71	1209.902	2.59E+05	2.67E+05	2.84E-04	2.93E-04	1.13E-03
	110	100.396	6.49E+08	7.49E+08	4.90E-03	5.66E-03	1.62E-03
	122	72.714	3.44E+11	3.39E+11	1.36E+00	1.35E+00	3.27E-01
	124	72.231	2.62E+06	2.63E+06	1.03E-05	1.03E-05	2.44E-06
	141	66.454	1.37E+08	1.55E+08	4.55E-04	5.12E-04	9.96E-05

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	153	65.658	1.27E+07	1.39E+07	4.10E-05	4.49E-05	8.86E-06
	169	17.282	7.27E+06	1.37E+07	1.63E-06	3.07E-06	9.25E-08
64	110	103.210	8.41E+07	9.78E+07	6.71E-04	7.81E-04	2.28E-04
	111	102.593	3.52E+08	4.17E+08	3.89E-03	4.61E-03	1.31E-03
	112	102.187	8.22E+08	7.69E+08	9.01E-03	8.43E-03	3.03E-03
	116	76.993	1.29E+11	1.51E+11	8.75E-02	1.02E-01	4.03E-01
	122	74.179	6.33E+10	6.14E+10	2.61E-01	2.53E-01	6.37E-02
	124	73.676	3.99E+10	3.93E+10	1.63E-01	1.60E-01	3.94E-02
	125	73.538	8.71E+09	8.86E+09	5.13E-03	5.21E-03	2.15E-02
	129	73.286	4.27E+11	4.24E+11	2.41E+00	2.39E+00	5.81E-01
	131	72.933	1.69E+09	1.68E+09	9.44E-03	9.36E-03	2.27E-03
	134	70.147	5.32E+08	6.99E+08	1.96E-03	2.58E-03	4.53E-04
	141	67.675	2.45E+09	2.76E+09	8.41E-03	9.48E-03	1.87E-03
	146	67.245	5.71E+08	5.60E+08	2.71E-03	2.66E-03	6.00E-04
	157	66.728	1.54E+07	1.54E+07	7.20E-05	7.20E-05	1.58E-05
	159	66.623	6.83E+08	5.84E+08	3.18E-03	2.72E-03	6.97E-04
	161	66.587	2.87E+07	3.35E+07	1.33E-04	1.56E-04	2.92E-05
65	84	591.986	7.98E+06	9.23E+06	1.46E-03	1.69E-03	2.84E-03
	99	107.719	3.79E+07	3.48E+07	1.71E-04	1.57E-04	5.88E-05
	100	107.077	2.69E+06	3.36E+07	4.36E-06	5.44E-05	1.49E-06
	102	106.566	9.30E+06	9.95E+06	5.08E-05	5.44E-05	1.78E-05
	110	103.348	8.21E+07	9.67E+07	6.57E-04	7.74E-04	2.24E-04
	116	77.071	4.34E+10	4.71E+10	1.21E-01	1.31E-01	2.99E-02
	117	76.737	7.81E+10	8.25E+10	6.61E-02	6.98E-02	1.63E-02
	122	74.250	7.53E+09	7.35E+09	3.11E-02	3.04E-02	7.61E-03
	124	73.747	3.74E+11	3.70E+11	1.52E+00	1.51E+00	3.70E-01
	125	73.612	1.15E+11	1.14E+11	2.68E-01	2.66E-01	6.35E-02
	134	70.210	9.54E+08	1.12E+09	3.52E-03	4.14E-03	8.15E-04
	141	67.735	6.79E+08	6.19E+08	2.33E-03	2.13E-03	5.20E-04
	143	67.455	5.19E+08	5.41E+08	1.11E-03	1.16E-03	2.46E-04
	152	66.924	8.63E+08	7.11E+08	1.38E-03	1.14E-03	2.98E-04
	169	66.908	2.39E+06	2.64E+06	8.02E-06	8.85E-06	1.77E-06
	180	16.754	4.06E+08	3.44E+08	8.53E-05	7.23E-05	4.71E-06
66	118	76.947	6.51E+10	5.16E+10	1.73E-01	1.37E-01	4.39E-02
	120	76.242	9.00E+08	7.16E+08	2.35E-03	1.87E-03	5.88E-04
	127	74.666	7.10E+10	7.04E+10	2.97E-01	2.94E-01	7.30E-02
	137	69.848	4.47E+08	3.68E+08	1.63E-03	1.35E-03	3.76E-04
	138	69.533	2.78E+08	3.35E+08	6.05E-04	7.29E-04	1.39E-04

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
67	76	1422.019	1.46E+07	1.59E+07	1.33E-02	1.45E-02	6.21E-02
	80	988.463	2.42E+07	1.99E+07	1.77E-02	1.45E-02	5.76E-02
	118	77.938	4.34E+07	3.38E+07	1.19E-04	9.22E-05	3.04E-05
	120	77.213	2.42E-09	1.23E+09	2.16E-03	1.55E-03	2.75E-03
	127	75.599	3.26E+10	3.23E+10	1.40E-01	1.39E-01	3.48E-02
	137	70.650	1.07E+10	9.89E+09	2.39E-02	2.22E-02	5.57E-03
	138	70.341	2.97E+10	2.99E+10	6.60E-02	6.65E-02	1.53E-02
68	94	691.769	3.32E+05	2.88E+05	1.19E-04	1.03E-04	2.71E-04
	113	107.543	1.83E+07	1.98E+07	2.23E-04	2.40E-04	7.88E-05
	128	76.033	4.40E+10	4.41E+10	2.67E-01	2.67E-01	6.68E-02
	130	75.901	3.63E+10	3.61E+10	2.19E-01	2.18E-01	5.48E-02
	150	69.178	2.76E+09	2.87E+09	1.39E-02	1.44E-02	3.15E-03
69	76	1639.060	3.11E+06	3.88E+06	4.68E-03	5.84E-03	2.53E-02
	79	696.640	5.55E+05	5.20E+05	1.13E-04	1.06E-04	2.60E-04
	94	692.438	4.57E+06	5.29E+06	3.75E-03	4.33E-03	1.90E-03
	120	77.773	3.29E+08	4.31E+08	3.82E-04	5.00E-04	1.95E-03
	127	76.135	6.02E+11	6.10E+11	6.55E-01	6.65E-01	2.65E+00
	137	71.118	1.40E+09	1.30E+09	2.95E-03	2.74E-03	6.92E-04
	138	70.805	3.76E+08	3.21E+08	7.24E-04	6.18E-04	1.69E-04
	147	69.425	5.52E+08	6.20E+08	4.56E-04	5.12E-04	2.24E-03
	151	69.164	3.20E+09	3.26E+09	2.61E-03	2.66E-03	1.17E-02
	154	69.111	2.02E+08	2.19E+08	4.71E-04	5.11E-04	1.07E-04
	171	17.219	2.70E+09	2.99E+09	3.40E-05	3.77E-05	6.65E-04
71	80	1167.194	9.48E+07	7.59E+07	9.68E-02	7.75E-02	3.72E-01
	103	111.337	5.59E+07	4.97E+07	5.19E-04	4.62E-04	1.90E-04
	118	78.890	2.38E+07	1.79E+07	6.65E-05	5.01E-05	1.73E-05
	120	78.150	1.16E+10	1.14E+10	5.07E-02	5.00E-02	1.28E-02
	136	71.446	1.19E+11	1.12E+11	4.56E-01	4.30E-01	1.07E-01
	137	71.432	4.37E+10	4.29E+10	1.00E-01	9.83E-02	2.36E-02
	138	71.116	1.10E+11	1.04E+11	2.49E-01	2.37E-01	5.84E-02
	154	69.408	1.58E+08	1.53E+08	3.42E-04	3.31E-04	7.81E-05
	176	17.058	2.17E+10	2.09E+10	2.84E-03	2.74E-03	1.59E-04
72	99	114.397	1.93E+07	1.84E+07	4.27E-05	4.09E-05	1.09E-04
	110	109.486	9.32E+06	9.54E+06	8.37E-05	8.57E-05	3.02E-05
	129	76.395	1.93E+09	1.99E+09	1.18E-02	1.22E-02	2.97E-03
	131	76.012	1.11E+12	1.11E+12	6.75E+00	6.71E+00	1.69E+00
	134	72.990	2.10E+07	1.71E+07	8.38E-05	6.83E-05	2.01E-05
	135	72.827	1.25E+08	1.14E+08	7.13E-05	6.54E-05	2.73E-04

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	141	70.318	2.14E+08	2.58E+08	7.94E-04	9.56E-04	1.84E-04
	146	69.854	8.01E+07	7.48E+07	4.10E-04	3.83E-04	9.43E-05
	157	69.297	2.43E+09	2.29E+09	1.22E-02	1.15E-02	2.79E-03
	159	69.183	6.45E+08	6.80E+08	3.24E-03	3.41E-03	7.38E-04
	161	69.144	1.50E+08	1.41E+08	7.53E-04	7.07E-04	1.71E-04
73	81	1002.770	5.73E+05	5.91E+05	4.32E-04	4.45E-04	1.43E-03
	83	883.312	4.08E+05	4.03E+05	3.34E-04	3.30E-04	9.72E-04
	85	862.507	5.44E+05	5.77E+05	3.03E-04	3.22E-04	8.62E-04
	95	712.144	1.82E+06	1.72E+06	9.55E-04	9.01E-04	2.22E-03
	101	113.362	6.33E+04	2.10E+05	6.10E-07	2.02E-06	2.28E-07
	110	109.496	2.43E+08	5.04E+07	2.19E-03	4.53E-04	7.88E-04
	131	76.016	5.51E+10	5.45E+10	3.34E-01	3.31E-01	8.36E-02
	134	72.994	9.87E+05	8.45E+05	3.94E-06	3.37E-06	9.47E-07
	146	69.858	6.20E+05	6.17E+05	3.17E-06	3.16E-06	7.30E-07
	157	69.300	1.37E+08	1.26E+08	6.89E-04	6.35E-04	1.57E-04
	159	69.186	7.17E+06	8.35E+06	3.60E-05	4.19E-05	8.20E-06
	161	69.148	2.32E+07	2.92E+07	1.16E-04	1.46E-04	2.65E-05
74	95	734.939	2.28E+06	2.05E+06	1.27E-03	1.14E-03	3.05E-03
	131	76.270	4.27E+10	4.26E+10	2.61E-01	2.60E-01	6.55E-02
	153	69.644	5.28E+07	5.88E+07	1.92E-04	2.14E-04	4.40E-05
	157	69.511	1.27E+08	1.26E+08	6.44E-04	6.37E-04	1.47E-04
	159	69.397	7.74E+07	8.48E+07	3.91E-04	4.29E-04	8.93E-05
	161	69.358	6.27E+08	6.05E+08	3.17E-03	3.05E-03	7.23E-04
75	76	2035.960	5.14E+07	5.40E+07	1.01E-01	1.06E-01	6.75E-01
	79	1636.710	2.66E+07	2.67E+07	3.21E-02	3.22E-02	1.73E-01
	105	110.667	1.80E+09	1.97E+09	6.03E-03	6.58E-03	1.81E-02
	127	76.830	1.60E+09	1.65E+09	1.79E-03	1.84E-03	7.28E-03
	136	71.739	5.07E+10	5.22E+10	4.62E-02	4.76E-02	2.02E-01
	137	71.724	1.37E+11	1.48E+11	3.42E-01	3.69E-01	8.07E-02
	138	71.406	4.30E+10	4.70E+10	1.08E-01	1.18E-01	2.53E-02
	140	71.081	1.45E+11	1.49E+11	1.28E-01	1.32E-01	5.65E-01
	147	70.003	7.84E+08	8.06E+08	6.64E-04	6.82E-04	2.96E-03
	151	69.738	5.08E+08	4.18E+08	4.25E-04	3.50E-04	1.52E-03
	154	69.684	6.84E+08	6.79E+08	1.48E-03	1.47E-03	3.40E-04
	171	17.254	1.27E+10	1.56E+10	1.61E-04	1.98E-04	3.49E-03
76	125	80.031	3.03E+09	3.44E+09	9.90E-03	1.12E-02	2.61E-03
	134	75.854	5.44E+10	5.92E+10	1.53E-01	1.67E-01	3.83E-02
	143	72.809	8.37E+10	8.53E+10	2.03E-01	2.07E-01	4.88E-02

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	149	72.327	9.60E+10	9.31E+10	7.53E-02	7.30E-02	1.79E-02
	152	72.190	1.13E+11	1.11E+11	2.60E-01	2.55E-01	6.18E-02
	167	17.793	4.12E+06	4.65E+08	1.96E-07	2.21E-05	1.15E-08
	168	17.788	9.75E+08	9.26E+08	1.32E-04	1.25E-04	7.72E-06
77	110	117.075	2.47E+07	2.96E+07	2.54E-04	3.04E-04	9.79E-05
	111	116.282	2.13E+08	2.43E+08	3.02E-03	3.45E-03	1.16E-03
	112	115.760	3.17E+08	2.75E+08	4.46E-03	3.87E-03	1.70E-03
	122	81.080	9.20E+08	7.99E+08	4.53E-03	3.94E-03	1.21E-03
	129	80.014	1.83E+09	1.88E+09	1.23E-02	1.26E-02	3.24E-03
	131	79.593	6.80E+08	6.72E+08	4.52E-03	4.47E-03	1.18E-03
	134	76.287	7.46E+10	6.37E+10	3.25E-01	2.78E-01	8.17E-02
	135	76.109	2.42E+10	2.98E+10	1.58E-02	1.95E-02	7.76E-02
	141	73.373	8.72E+10	8.42E+10	3.52E-01	3.40E-01	8.50E-02
	143	73.044	8.31E+10	8.27E+10	4.79E-02	4.77E-02	1.98E-01
	146	72.868	2.78E+11	2.75E+11	1.55E+00	1.53E+00	3.72E-01
	152	72.421	2.87E+08	1.89E+08	1.62E-04	1.07E-04	4.47E-04
	157	72.261	4.98E+08	4.96E+08	2.73E-03	2.72E-03	6.49E-04
	159	72.137	3.53E+10	3.57E+10	1.93E-01	1.95E-01	4.58E-02
	161	72.095	6.29E+09	6.30E+09	3.43E-02	3.44E-02	8.14E-03
	168	17.802	8.90E+07	1.01E+08	7.44E-07	8.41E-07	1.43E-05
78	110	118.109	1.96E+06	2.34E+06	2.05E-05	2.45E-05	7.96E-06
	111	117.302	4.88E+07	5.87E+07	7.05E-04	8.47E-04	2.72E-04
	112	116.771	8.25E+05	8.34E+05	1.18E-05	1.19E-05	4.54E-06
	129	80.496	9.64E+07	9.12E+07	6.55E-04	6.20E-04	1.74E-04
	131	80.070	1.77E+07	1.71E+07	1.19E-04	1.15E-04	3.13E-05
	134	76.724	1.15E+11	1.01E+11	5.09E-01	4.47E-01	1.29E-01
	140	73.778	2.80E+09	2.62E+09	1.14E-02	1.07E-02	2.78E-03
	144	73.366	2.83E+10	2.97E+10	1.14E-01	1.20E-01	2.76E-02
	146	73.267	1.34E+11	1.33E+11	7.55E-01	7.50E-01	1.82E-01
	157	72.654	1.46E+07	1.41E+07	8.08E-05	7.78E-05	1.93E-05
	159	72.528	6.22E+09	6.17E+09	3.43E-02	3.41E-02	8.19E-03
	161	72.486	4.23E+08	4.23E+08	2.33E-03	2.33E-03	5.57E-04
	180	17.101	4.03E+06	4.80E+06	8.83E-07	1.05E-06	4.97E-08
79	122	81.580	3.33E+07	3.71E+07	1.66E-04	1.85E-04	4.46E-05
	124	80.973	2.79E+08	2.36E+08	1.37E-03	1.16E-03	3.65E-04
	134	76.549	1.17E+10	1.27E+10	3.33E-02	3.61E-02	8.40E-03
	141	73.782	1.83E+10	1.79E+10	7.48E-02	7.31E-02	1.82E-02
	143	73.450	2.17E+11	2.20E+11	5.33E-01	5.40E-01	1.29E-01
	144	73.370	1.71E+11	1.69E+11	6.89E-01	6.83E-01	1.66E-01

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	149	72.959	3.39E+11	3.34E+11	2.71E-01	2.67E-01	6.50E-02
	152	72.820	6.09E+10	6.08E+10	1.45E-01	1.45E-01	3.48E-02
	153	72.803	1.67E+06	1.72E+06	6.65E-06	6.85E-06	1.59E-06
	170	17.454	5.75E+08	5.50E+08	7.53E-05	7.20E-05	4.33E-06
80	101	125.536	1.06E+07	1.31E+07	1.25E-04	1.55E-04	5.17E-05
	110	120.813	8.90E+05	1.07E+06	9.74E-06	1.17E-05	3.87E-06
	111	119.968	3.77E+07	4.00E+07	5.70E-04	6.04E-04	2.25E-04
	112	119.413	8.09E+08	7.07E+08	1.21E-02	1.06E-02	4.76E-03
	131	81.303	5.15E+08	5.05E+08	3.57E-03	3.50E-03	9.56E-04
	134	77.856	2.98E+10	2.51E+10	1.35E-01	1.14E-01	3.47E-02
	135	77.671	1.02E+11	1.26E+11	7.07E-02	8.77E-02	3.43E-01
	141	74.823	3.29E+10	3.07E+10	1.38E-01	1.29E-01	3.40E-02
	146	74.298	1.62E+10	1.57E+10	9.41E-02	9.09E-02	2.30E-02
	157	73.668	4.69E+09	4.64E+09	2.67E-02	2.64E-02	6.47E-03
	159	73.539	3.37E+11	3.36E+11	1.91E+00	1.91E+00	4.63E-01
	161	73.496	4.47E+10	4.45E+10	2.53E-01	2.52E-01	6.13E-02
81	120	84.764	7.78E+08	6.76E+08	4.00E-03	3.48E-03	1.09E-03
	121	84.625	4.86E+10	3.72E+10	1.29E-01	9.90E-02	3.28E-02
	136	76.934	9.06E+09	6.56E+09	8.04E-03	5.82E-03	1.02E-02
	137	76.552	5.34E+09	4.28E+09	1.41E-02	1.13E-02	3.55E-03
	154	74.576	5.12E+09	5.30E+09	1.28E-02	1.33E-02	3.14E-03
82	99	131.066	9.36E+07	9.31E+07	7.23E-04	7.19E-04	3.12E-04
	134	79.244	5.12E+10	3.53E+10	1.45E-01	9.98E-02	3.77E-02
	143	75.927	3.65E+09	3.47E+09	9.47E-03	9.01E-03	2.37E-03
	152	75.254	2.31E+11	2.18E+11	5.89E-01	5.54E-01	1.46E-01
83	113	124.258	5.57E+06	6.19E+06	8.90E-05	9.90E-05	3.62E-05
	128	84.023	5.54E+08	5.12E+08	4.06E-03	3.76E-03	1.12E-03
	130	83.864	4.84E+07	4.90E+07	3.54E-04	3.58E-04	9.72E-05
	150	75.729	1.06E+11	1.05E+11	6.33E-01	6.27E-01	1.57E-01
	156	75.536	1.14E+11	1.12E+11	6.77E-01	6.68E-01	1.68E-01
	174	17.468	4.41E+08	4.21E+08	1.41E-04	1.35E-04	8.10E-06
84	127	85.014	9.02E+07	7.43E+07	1.31E-04	1.08E-04	3.92E-04
	136	78.825	7.77E+09	1.02E+10	9.04E-03	1.18E-02	4.62E-02
	147	76.732	3.64E+11	3.68E+11	3.91E-01	3.95E-01	1.58E+00
	151	76.416	4.23E+10	4.24E+10	4.49E-02	4.49E-02	1.81E-01
	154	76.350	3.38E+11	3.42E+11	8.75E-01	8.85E-01	2.17E-01
85	91	8156.857	4.05E+04	4.26E+04	2.81E-03	2.96E-03	7.54E-02
	118	86.848	1.32E+08	1.01E+08	4.36E-04	3.33E-04	1.23E-04

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	120	85.945	3.98E+07	3.31E+07	2.10E-04	1.75E-04	5.80E-05
	138	77.519	4.35E+10	4.31E+10	1.11E-01	1.11E-01	2.77E-02
88	137	78.261	4.50E+09	5.50E+09	1.24E-02	1.51E-02	3.19E-03
	138	77.883	9.34E+09	1.18E+10	2.55E-02	3.22E-02	6.53E-03
	154	75.839	3.40E+11	3.39E+11	8.80E-01	8.76E-01	2.20E-01
89	129	84.601	4.52E+07	4.00E+07	3.40E-04	3.01E-04	9.46E-05
	131	84.131	2.60E+09	2.67E+09	1.93E-02	1.99E-02	5.34E-03
	157	75.982	9.62E+11	9.55E+11	5.83E+00	5.79E+00	1.46E+00
	159	75.845	1.47E+09	1.40E+09	8.88E-03	8.43E-03	2.22E-03
	161	75.799	5.56E+09	5.51E+09	3.35E-02	3.32E-02	8.36E-03
91	146	76.732	1.43E+08	1.36E+08	1.06E-03	1.01E-03	2.94E-04
	153	76.218	6.14E+09	5.92E+09	2.67E-02	2.58E-02	6.70E-03
	157	76.059	1.66E+11	1.65E+11	1.00E+00	1.00E+00	2.52E-01
	161	75.876	2.76E+08	3.05E+08	1.67E-03	1.84E-03	4.17E-04
	179	17.200	3.49E+07	4.63E+07	1.08E-05	1.44E-05	6.14E-07
92	131	84.750	1.05E+08	1.06E+08	7.91E-04	7.97E-04	2.21E-04
	157	76.486	5.48E+10	5.46E+10	3.36E-01	3.35E-01	8.47E-02
	159	76.347	1.75E+10	1.54E+10	1.07E-01	9.42E-02	2.68E-02
	161	76.300	1.34E+11	1.34E+11	8.16E-01	8.21E-01	2.05E-01
93	124	85.879	1.61E+06	1.86E+06	8.88E-06	1.03E-05	2.51E-06
	125	85.691	1.33E+07	1.43E+07	4.72E-05	5.07E-05	1.33E-05
	141	77.834	4.19E+08	3.27E+08	1.90E-03	1.49E-03	4.87E-04
	149	76.918	1.22E+10	2.21E+10	1.08E-02	1.96E-02	2.73E-03
	153	76.745	9.17E+11	9.14E+11	4.05E+00	4.03E+00	1.02E+00
	168	18.053	1.48E+08	1.95E+08	2.86E-05	3.77E-05	1.70E-06
	180	17.310	1.81E+07	1.61E+07	4.06E-06	3.62E-06	2.32E-07
94	102	134.057	5.65E+07	7.05E+07	2.02E-04	2.52E-04	5.70E-04
	129	85.412	1.12E+08	1.03E+08	8.56E-04	7.91E-04	2.41E-04
	131	84.933	3.98E+08	4.08E+08	3.01E-03	3.09E-03	8.43E-04
	135	80.977	1.22E+08	1.52E+08	9.59E-05	1.20E-04	4.49E-04
	146	77.318	9.39E+08	7.62E+08	5.89E-03	4.78E-03	1.50E-03
	157	76.635	1.90E+10	1.88E+10	1.17E-01	1.16E-01	2.95E-02
	159	76.496	9.13E+10	9.12E+10	5.61E-01	5.60E-01	1.41E-01
	161	76.449	9.54E+11	9.46E+11	5.85E+00	5.80E+00	1.47E+00
95	113	127.904	8.38E+05	9.63E+05	1.44E-05	1.65E-05	6.06E-06
	127	85.711	4.13E+09	4.27E+09	6.41E-03	6.63E-03	2.35E-02
	128	85.675	1.17E+09	1.09E+09	8.98E-03	8.39E-03	2.53E-03

Table 6. Cont.

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	130	85.508	1.13E+09	1.05E+09	8.67E-03	8.09E-03	2.44E-03
	136	79.422	9.86E+07	1.21E+08	1.22E-04	1.50E-04	5.74E-04
	140	78.617	3.20E+09	3.87E+09	3.83E-03	4.64E-03	1.79E-02
	147	77.300	7.81E+10	7.95E+10	8.90E-02	9.06E-02	3.56E-01
	150	77.070	2.78E+10	2.70E+10	1.73E-01	1.68E-01	4.40E-02
	151	76.977	5.17E+11	5.22E+11	5.82E-01	5.87E-01	2.32E+00
	154	76.912	3.51E+09	3.47E+09	9.23E-03	9.12E-03	2.34E-03
	156	76.865	6.17E+10	6.05E+10	3.83E-01	3.75E-01	9.68E-02
	171	17.665	1.82E+09	2.19E+09	2.48E-05	2.97E-05	5.11E-04
	174	17.538	1.89E+08	1.55E+08	6.10E-05	5.02E-05	3.52E-06
99	103	4170.843	1.27E+07	1.66E+07	2.27E+00	2.97E+00	2.16E-01
	104	3791.567	4.28E+07	4.43E+07	1.95E-01	2.02E-01	2.01E+00
	120	246.660	1.04E+08	1.32E+08	3.86E-03	4.89E-03	6.03E-03
	127	230.901	2.12E+07	1.99E+07	6.43E-04	6.04E-04	7.94E-04
	136	190.307	3.26E+09	3.78E+09	5.55E-02	6.42E-02	1.03E-01
	140	185.748	1.50E+07	5.37E+06	2.37E-04	8.49E-05	1.39E-04
	147	178.561	8.45E+07	7.89E+07	1.19E-03	1.11E-03	1.89E-03
100	118	257.851	4.74E+08	5.50E+08	1.42E-02	1.64E-02	1.20E-02
	137	192.241	1.59E+09	1.88E+09	2.64E-02	3.13E-02	1.67E-02
	138	189.973	7.96E+08	1.05E+09	1.29E-02	1.70E-02	8.08E-03
	154	178.253	8.62E+07	7.01E+07	1.23E-03	1.00E-03	7.23E-04
101	103	6293.616	1.73E+06	1.61E+06	5.11E-02	4.75E-02	1.06E+00
	104	5461.860	1.03E+08	8.81E+07	4.81E-01	4.13E-01	3.96E+00
	121	250.423	2.85E+08	2.28E+08	4.79E-03	3.83E-03	3.05E-03
	136	193.272	1.93E+09	1.60E+09	5.14E-02	4.27E-02	3.19E-02
	176	20.080	2.14E+08	2.43E+08	3.88E-05	4.40E-05	2.56E-06
102	104	6107.597	1.76E+07	1.79E+07	4.57E-02	4.65E-02	3.59E-01
	120	252.893	3.97E+08	4.73E+08	1.58E-02	1.89E-02	2.27E-02
	151	180.029	2.13E+08	2.03E+08	3.07E-03	2.93E-03	4.94E-03
	154	179.672	1.08E+07	9.39E+06	1.36E-04	1.18E-04	8.06E-05
103	129	243.394	3.27E+08	2.77E+08	2.03E-02	1.72E-02	1.63E-02
	131	239.543	4.06E+06	3.45E+06	2.44E-04	2.08E-04	1.93E-04
	157	183.504	5.74E+06	4.66E+06	2.03E-04	1.65E-04	1.23E-04
	159	182.707	8.27E+07	1.09E+08	2.90E-03	3.80E-03	1.74E-03
	161	182.440	4.32E+07	4.48E+07	1.51E-03	1.56E-03	9.07E-04
104	116	291.728	9.43E+08	1.14E+09	3.19E-02	3.86E-02	2.62E-02
	117	287.001	1.13E+09	1.71E+09	1.02E-02	1.55E-02	8.26E-03

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	134	212.995	1.14E+09	1.22E+09	1.95E-02	2.09E-02	1.21E-02
105	116	299.399	3.81E+07	3.10E+07	1.51E-03	1.23E-03	1.25E-03
	129	250.183	3.25E+08	3.71E+08	2.13E-02	2.44E-02	1.76E-02
	135	215.595	1.17E+08	9.91E+07	1.73E-03	1.47E-03	2.07E-03
106	122	255.082	6.90E+08	6.61E+08	3.36E-02	3.22E-02	2.82E-02
	124	249.236	1.84E+05	1.86E+05	8.57E-06	8.68E-06	7.03E-06
	141	191.725	1.24E+09	1.12E+09	3.41E-02	3.10E-02	2.15E-02
	144	188.967	8.21E+08	6.17E+08	2.20E-02	1.65E-02	1.37E-02
	153	185.251	1.70E+07	1.60E+07	4.37E-04	4.12E-04	2.66E-04
107	179	19.870	3.23E+07	3.64E+07	1.34E-05	1.51E-05	8.75E-07
110	136	205.651	6.19E+06	7.54E+06	1.96E-04	2.39E-04	1.33E-04
	139	201.864	3.20E+05	3.20E+05	2.49E-04	1.37E-05	7.06E-04
	140	200.337	7.48E+06	6.53E+06	2.25E-04	1.97E-04	1.48E-04
	172	20.350	4.69E+09	3.62E+09	8.73E-04	6.74E-04	5.85E-05
111	128	256.624	5.49E+08	6.80E+08	3.80E-02	4.70E-02	3.21E-02
112	128	259.202	2.18E+08	2.03E+08	1.54E-02	1.43E-02	1.31E-02
	130	257.677	3.12E+08	3.15E+08	2.17E-02	2.19E-02	1.84E-02
	139	205.896	1.37E+06	1.16E+06	6.09E-05	5.18E-05	4.13E-05
116	118	4132.808	1.35E+07	1.44E+07	1.10E-01	1.17E-01	1.50E+00
	120	2755.630	7.41E+07	7.92E+07	3.82E+00	4.09E+00	4.51E-01
	121	2615.280	2.25E+07	2.85E+07	8.78E-02	1.11E-01	7.56E-01
	147	523.819	1.12E+06	1.36E+06	3.96E-04	4.83E-04	2.80E-04
	172	21.814	1.64E+08	1.57E+08	3.37E-05	3.23E-05	2.42E-06
117	154	521.441	4.10E+06	5.56E+06	5.01E-04	6.80E-04	8.60E-04
118	122	3996.219	2.30E+07	1.82E+07	2.76E-01	2.18E-01	3.63E+00
	124	2922.453	3.13E+02	2.78E+02	2.00E-06	1.78E-06	1.93E-05
120	179	21.447	1.40E+07	1.17E+07	6.76E-06	5.65E-06	4.77E-07
125	154	733.063	3.15E+05	3.83E+05	9.25E-05	1.12E-04	2.23E-04
	172	22.108	1.39E+08	1.30E+08	2.85E-05	2.67E-05	2.08E-06
127	134	1593.628	3.26E+07	3.28E+07	2.80E-01	2.81E-01	3.11E+00
131	139	1073.552	1.17E+03	1.02E+03	1.41E-06	1.24E-06	4.98E-06
134	136	3378.317	2.26E+07	2.20E+07	1.38E-01	1.34E-01	1.69E+00
	138	2773.696	1.53E+07	1.26E+07	5.22E-02	4.30E-02	5.21E-01
	140	2354.678	3.49E+07	3.23E+07	1.45E-01	1.34E-01	1.12E+00
	156	1377.586	1.24E+06	1.63E+06	3.10E-02	3.25E-03	4.97E-01

Table 6. *Cont.*

LL.	UL.	λ	A_L	A_V	f_L	f_V	S_L
	172	22.450	7.31E+07	7.29E+07	1.65E-05	1.65E-05	1.22E-06
135	140	2537.653	5.86E+07	7.69E+07	2.36E+00	3.10E+00	3.71E-01
	151	1503.726	1.23E+04	1.36E+04	1.03E-04	1.14E-04	2.31E-05
137	143	3528.800	7.96E+06	8.68E+06	4.86E-02	5.30E-02	5.65E-01
	168	23.382	1.24E+08	1.02E+08	2.51E-05	2.06E-05	1.93E-06
138	141	6247.764	4.59E+05	3.86E+05	1.34E-02	1.13E-02	2.76E-01
	143	4518.690	8.43E+06	9.93E+06	9.12E-02	1.07E-01	1.36E+00
140	143	6363.023	2.19E+05	2.22E+05	8.34E-02	8.48E-02	4.05E-03
	152	3636.691	2.35E+05	1.37E+06	1.67E-02	9.72E-02	8.12E-03
152	176	22.613	4.36E+07	5.72E+07	1.31E-05	1.72E-05	9.79E-07
153	176	22.615	5.83E+08	5.05E+08	1.33E-04	1.16E-04	9.91E-06
154	178	22.353	6.09E+06	6.74E+06	1.79E-03	1.98E-03	4.77E-03
156	178	22.362	5.32E+04	6.07E+04	2.00E-08	2.51E-08	1.47E-09
167	172	655.182	2.54E+08	2.09E+08	4.89E-02	4.04E-02	1.06E-01
	176	533.321	7.51E+08	6.83E+08	9.61E-02	8.74E-02	1.69E-01
168	172	663.050	1.66E+08	1.55E+08	3.06E-02	2.86E-02	6.67E-02
	176	538.524	4.44E+08	4.80E+08	6.26E-02	6.77E-02	1.11E-01
172	180	823.268	7.29E+07	8.43E+07	7.22E-02	8.35E-02	2.73E-01
174	179	1013.347	3.90E+07	3.27E+07	4.20E-02	3.53E-02	1.40E-01
176	180	1154.415	4.28E+04	4.76E+04	1.18E-04	1.31E-04	7.48E-04

4. Conclusions

In the present study, fine structure energy levels, oscillator strengths, line strengths, transition probabilities and wavelengths for transitions among levels belonging to Be-like iron are presented. We have used extensive CI wave functions based on large CSF expansions to produce 182 LSJ-coupling levels with various J -values. The self-consistent field approximation and the Breit interaction Hamiltonian as well as QED effects have been included in the calculations to improve the generated wave functions. The calculated energy levels and weighted oscillator strengths show a good agreement with both theoretical and experimental data from the literature. In addition, we have obtained some new and previously unpublished energy levels for this ion. Our results are useful for many applications such as controlled thermonuclear fusion, laser and plasma physics as well as astrophysics.

Author Contributions

Ahmed Abou El-Maaref suggested the main idea of the paper, performed the calculations, and wrote the great part of the manuscript. Alfred Müller and Stefan Schippers were involved in the discussion, particularly, of the astrophysical data needs, provided the required computer hardware, searched the literature and wrote parts of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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