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Tables of Atomic Wave Functions

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LOS ALAMOS SCIENTIFIC LABORATORY
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Tables of Atomic Wave Functions

by

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USSR Academy of Science

TABLES OF ATOMIC WAVE FUNCTIONS

by

V. F. Brattsev

ABSTRACT

Atomic wave functions have been calculated and tabulated for the elements helium through argon, singly and doubly ionized, by the Hartree-Fock-Slater self-consistent-field approximation. The development and applications of that approximation are described.

INTRODUCTION

Quantum mechanics serves as the basis for fundamental modern theories of physical and chemical properties of atoms, molecules, and condensed systems. The task of theoretical calculations of these properties comes, in the final analysis, to the solution of Schrödinger's equation. For the majority of specific problems of atomic physics, knowledge of the ground-state energy of a system and the corresponding wave functions of stationary states is necessary. These data have already made it relatively easy to calculate the entire combination of the optical, electrical, magnetic, and chemical characteristics of these systems.

Unfortunately, the mathematical difficulties of the solution of Schrödinger's equation are such that its exact solution in a final form is practically unattainable. Therefore, in specific calculations we are forced to limit ourselves to approximate solutions with a greater or lesser degree of accuracy. By these means, one can determine the greater value of different types of approximation methods for quantum mechanics.

In approximation methods, specific physical concepts ordinarily are used to permit one to introduce greater or lesser simplification into the general equations of the theory. Because of this, the use of the approximations in comparison with the general theory is limited to the smaller sphere of objectives or phenomena in which the corresponding simplification is permissible.

Obviously, the simplest class of structured objects of the microcosm accessible to theoretical calculation is that formed by free atoms (we do not take into account atomic nuclei and elementary particles, the theory of which enters into the framework of quantum mechanics). Therefore, in the first year of development, the application and, later, the verification of quantum mechanics were tested on the simplest atoms.

The atomic-wave-function calculations represent the central problem of the theory of atoms and its numerous applications. Atoms, to a considerable degree, retain their individuality in the complex formations of molecules and crystals. Therefore, atomic wave functions are also used in the theory of these complex objects. Hence we understand the scientific interest and also the significance of methods for deriving atomic wave functions.

The stationary equation for atomic hydrogen and its solution were given in 1926 in the initial pages of Schrödinger's first report[1] concerning quantum mechanics. In the same year, Heisenberg[2] formulated the approximate theory for the helium atom, showing how to treat the cases of ortho- and para-electron states. Later, there appeared a series of articles devoted to the calculation of helium-like atoms, ending with the computation of Hylleraas,[3] which was record breaking for that time. There was interest in similar calculations, particularly the questions

in connection with the broad program of experimental research begun by Herzberger, for the determination of the magnitude of radiation displacement of the basic energy levels of the two-electron atom and ions. If it is taken into account that radiation corrections are very small (for example, for the 1^1s state of helium it is 2×10^{-6} of the energy of that state), it becomes clear that the appropriate calculation becomes exceedingly complicated and laborious.[4,5]

In 1927, Pauling[6] made a theoretical estimation of the radii and polarizabilities of many-electron atoms and ions, attributing to each electron a hydrogen-like wave function with a properly selected screening constant. There then followed the calculation of analytical hydrogen-like functions with varying exponential indices.[7,8] On the basis of such calculations, Slater[9] constructed empirical rules for the selection of parameters for nodeless, radial, one-electron functions of any atom and molecule. These Slater functions were extensively used in basic calculations for atoms and molecules. Interest in analytical hydrogen-like functions has continued.[10,11]

The general quantum mechanics method of calculation of one-electron atomic functions and atomic fields was introduced in 1927 by Hartree.[12] Hartree's method is based on the fact that every electron in an atom is represented by its own wave function $\psi_n(q)$, and the contribution $V_n(q)$ to the effective electrostatic field of the atom is defined by the integral:

$$V_n(q) = e \int \frac{|\psi_n(q')|^2}{|q - q'|} \, dq'.$$

Then the Schrödinger equation for the wave function of the atom is replaced by a system of nonlinear integro-differential equations for one-electron functions, in each of which the operator of the interaction of a given electron, along with all the rest, is given by sums of the integrals of the indicated type. The one-electron wave functions obtained as the result of a solution of a system of equations determines the character of the field in which the electrons are located, i.e., the coefficient of the equations. This characteristic of Hartree's equation is reflected in the name "equations of a self-consistent field." From the hypothesis of a spherical symmetry of the atomic field after integration over angular variables, the Hartree equations represent a system of ordinary integro-differential equations for radial functions.

In connection with the determination of one-electron wave functions, there is also the problem of constructing general wave functions of a system made up of one-electron functions. In general, this question is connected with the Pauli principle and with the symmetry properties of wave-function coordinates. In 1930, Fock[13] demonstrated that Hartree's equations could be obtained by modifying the variational derivative of the Schrödinger equation for the many-electron system, if one represents the wave functions of that system in terms of the product of one-electron functions and varies the latter. The product of one-electron functions, generally speaking, does not satisfy requirements of Pauli's proper symmetry principle. Utilizing in the variation principle the wave-function system constructed from the one-electron functions and taking into account Pauli's principle, Fock obtained a system of equations different from Hartree's equations by the presence of supplementary so-called exchange members in the operator of the Coulomb interaction of electrons. These exchange members also determine the separation into terms distinguished by the values of the total spin S and angular momentum L of the electrons.

The equations of the self-consistent field with the Fock exchange give the best description of many-electron systems within the framework of a one-electron approximation as they are derived by variational means with this single simplifying assumption. Therefore, beginning in 1930, a significant number of atomic calculations were carried out by Hartree,[14,15] his students, and others, using Fock's integral equations. The construction of high-speed calculating machines exerted an influence on the general direction of the calculation of atomic structures. After 15 years, almost all endeavors in this field are devoted to the calculation of analytical wave-function parameters. As Löwdin[16] demonstrated, radial wave functions can be accurately approximated by a linear combination of Slater's functions without node with properly selected indices of exponents and coefficients. Therefore, this form of analytic wave func-

tions was selected by most authors.[17-23] Such a change in the general direction is apparently connected with the fact that until recently, computers possessed a highly restricted memory. The analytic form of the functions permits one to use relatively few data, which is its advantage. As with numerical integration, one has to deal with rather cumbersome tables. However, with increased numbers of shells in the atom, the number of parameters quickly increases and the amount of work necessary for obtaining them also increases, quickly exhausting the capacity of the most powerful computers.

In connection with what has been said in the literature, we again observe the tendency toward the numerical integration of the Hartree and Hartree-Fock equations.[24] This is contributed to by the growth in capacity of the memory storage of contemporary computers and also to the development of more perfect methods of numerical integration of differential equations, for example, the method of "dispersion" by elimination of fluctuation.[25] Some of the first work devoted to numerical integration of the equation of the self-consistent field done on electronic computers is related in articles cited as Refs. 26-30. Work for the following years is noted in Refs. 31 and 32 and the article cited as Ref. 24.

The Hartree-Fock equations for the structure of heavy atoms contain very unwieldy exchange terms. Their solution demands considerable computer working time, where about 80% of the time is expended on the calculation of exchange interaction. This calculation in heavy atoms plays a comparatively minor role compared with the uncalculated relativistic, spin-orbit-interaction terms. In this case, the value of an energy level is determined to a greater degree by the relativistic terms in the energy operator rather than by the Coulomb exchange interaction. Therefore, in the framework of a nonrelativistic approximation, it would be possible to limit oneself to the solution of the self-consistent field equations without exchange or try to take into account the exchange by a simplified method.

Such an approximate variant of the exchange factors was proposed by Slater.[33] Making use of Slater's simple approximations, Herman and Skillman[34] produced voluminous wave-function calculations of the basic states of all the elements from Z=2 to Z=103. The results of these calculations are published in a separate volume, which, apparently, is the sole extensive publication of atomic wave functions.

However, with the progression to heavy atoms on the basis of the calculations, we must now adopt the one-electron equation of the Dirac type with the self-consistent potential. As we know, only the first steps have been ventured in this direction.

As far as medium and light atoms are concerned, the solution of Hartree-Fock's equation is fully justified. But, at the present time, there do not exist voluminous publications on the wave functions of these atomic calculations in the Hartree-Fock approximation. These tables, to a certain degree, fill that gap.

The tables contain the normalized radial wave functions, $P(n\ell|r)$, of stationary states of atoms and ions and are related to the three-dimensional one-electron wave functions, $\psi(n\ell m|r)$, by the equation

$$\psi(n\ell m|r) = \frac{1}{r} P(n\ell|r)Y(\ell m|\vartheta, \varphi).$$

The functions $P(n\ell|r)$ are obtained by a numerical solution of the Hartree-Fock equations.

This article contains the results of calculations for all terms of the principal elemental configurations of singly- and doubly-ionized atoms from helium to argon, inclusive.

The form of the tables is traditional. The functions $P(n\ell|r)$ are cited separately for each state of the atom or ion. For the sake of simplicity in the use of the tables, we did not include the columns containing the functions coinciding in limits of accuracy but pertaining to a different state. At the end of each column are given the values of the Lagrange diagonal multipliers $\lambda(n\ell)$ and the mean values of the powers of the variable r,

$$\langle r^{\alpha} \rangle = \int_0^{\infty} r^{\alpha} P^2(n\ell|r)dr,$$

for $\alpha = -2, -1, 1$, and 2. All numbers are cited with an accuracy up to the last significant figure.

The method of Hartree-Fock is set forth at length in Ref. 15. We stopped at its last stage; that is, at the numerical determination of the equations of the self-consistent field.

For the atom with the nuclear charge Z in a state belonging to the configuration $(n_1\ell_1)^{q_1}\ldots(n_s\ell_s)^{q_s}$ and to any single term, the equations have the form:

$$\left\{\frac{d^2}{dr^2} + \frac{2(Z-Y)_\sigma}{r} - \frac{\ell_\sigma(\ell_\sigma+1)}{r^2} - \lambda_{\sigma\sigma}\right\}P_\sigma$$

$$= -\frac{1}{r}\sum_{\sigma'\neq\sigma}\left(\sum_k \gamma_{\sigma\sigma'k}Y_{\sigma\sigma'k} - \lambda_{\sigma\sigma'}\right)P_{\sigma'}, \qquad (1)$$

$$0 \le r < \infty,\ 1 \le \sigma \le s,$$

where

$$Y_\sigma = \sum_{\sigma'}(q_{\sigma'} - \delta_{\sigma\sigma'})\,Y_{\sigma'\sigma'0} - \sum_{k>0}\gamma_{\sigma\sigma k}Y_{\sigma\sigma k},$$

$$Y_{\sigma\sigma'k} = \int_0^r\left(\frac{r'}{r}\right)^k P_\sigma P_{\sigma'}dr' + \int_r^\infty\left(\frac{r}{r'}\right)^{k+1} P_\sigma P_{\sigma'}dr'.$$

The coefficients $\gamma_{\sigma\sigma'k}$ are determined by the configuration and the term. The function $P(n_\sigma\ell_\sigma|r)$ are briefly designated by P_σ.

Equation (1) represents the condition that the expected value of the total energy be stationary with respect to variations of the functions P_σ and be subject to the supplementary conditions:

$$P_\sigma(0) = P_\sigma(\infty) = 0, \qquad (2)$$

$$\int_0^\infty P_\sigma^2\,dr = 1, \qquad (3)$$

$$\int_0^\infty P_\sigma P_{\sigma'}\,dr = 0, \text{ then } \ell_\sigma = \ell_{\sigma'},\ n_\sigma \neq n_{\sigma'}. \qquad (4)$$

The parameters, $\lambda_{\sigma\sigma'}$ appear in the calculation of these conditions as Lagrange multipliers, whereupon the diagonal multipliers, $\lambda_{\sigma\sigma}$, correspond to normalization conditions in Eq. (3), and the nondiagonal multipliers, $\lambda_{\sigma\sigma'}$, $\sigma \neq \sigma'$, correspond to orthogonal conditions in Eq. (4). To simplify the task, we delete the last term from the calculation and assume $\lambda_{\sigma\sigma'} = 0$ with $\sigma \neq \sigma'$. As we know, it is possible, in a number of cases, to do this without any disadvantage, as when, for example, all the shells are closed in a configuration. In general, there is a basis for hoping that nondiagonal multipliers can be made so small that they can be disregarded without exerting a significant effect on the solution of the system in Eq. (1). Calculations have shown that this hope is very often (but unfortunately, not always) justified, and orthogonality conditions are fulfilled to a sufficient degree of accuracy in a natural way. Further, with reference to the system in Eq. (1) we shall always assume the absence of the nondiagonal Lagrangian multipliers.

Thus, the problem consists of searching for a solution to the system in Eq. (1), satisfying conditions in Eqs. (2) and (3), and of belonging to a given configuration. The latter means the following: neither the equations nor the supplementary conditions depend upon the principal quantum number, n_σ, entering into the configuration. It is natural that the system in Eq. (1) may have many solutions satisfying the conditions in Eqs. (2) and (3). There is the further necessity of one additional condition permitting each solution to lead to a specific configuration. To formulate it, we note that each equation of the system in Eq. (1), by obvious substitution of functions P_σ into Y_σ and into the right-hand side, could be made linear and similar with respect to the function corresponding to it:

$$\left\{\frac{d_2}{dr^2} + \frac{2(Z-Y_\sigma)}{r} - \frac{\ell_\sigma(\ell_\sigma+1)}{r^2} - \lambda_{\sigma\sigma}\right\}P_{\sigma\sigma}$$

$$= \int_0^\infty K_\sigma(r, r')P_\sigma(r')dr'. \qquad (5)$$

Let us agree that:

in order to compute the solution of the system in Eq. (1), suitable additional conditions in Eqs. (2) and (3) belong to the configurations $(n_1\ell_1)^{q_1}\ldots(n_s\ell_s)^{q_s}$, if each function P_σ of this solution is the $(n_\sigma - \ell_\sigma - 1)$th eigenfunction of the corresponding linear operator in Eqs. (5) and (2). (6)

The problem is solved by the method of successively making the functions more precise. Let there be a certain approximation $\{\tilde{P}_\sigma\}$ with a desired solution $\{P_\sigma\}$. Let us assume that the function made more precise has the index number σ_1. The used approximate function $\tilde{P}_\sigma$ made the equation linear with the index σ_1. For the new, more precise approximation we shall normalize to unity the $(n_{\sigma_1} - \ell_{\sigma_1} - 1)$th eigenfunction of the problem. Having next selected another number, σ_2, we shall define P_{σ_2}, etc. The approximate zero must be prepared beforehand and may be established by different methods as, for instance,

by means of analytical functions or the interpolative method of Hartree. It is simpler to assume that all $P_\sigma \equiv 0$. If it is agreed to begin with the functions of the inner shells and move in the direction of the outer shells, then the approximation will not be bad.

The $(n_\sigma - \ell_\sigma - 1)$th eigenfunction and the corresponding eigenvalue of the problem in Eqs. (5) and (2) in its turn is usually found by the method of successive approximation: the (m+1) approximation is $P_\sigma^{(m+1)}$, and $\lambda_\sigma^{(m+1)}$ is found through approximation from the equation (the index σ decreases):

$$\left\{\frac{d^2}{dr^2} + \frac{2(Z - Y^{(m)})}{r} - \frac{\ell(\ell+1)}{r}\right\} P^{(m+1)}$$

$$= \lambda^{(m+1)} P^{(m+1)} + \int K^{(m)}(r,r') P^{(m+1)}(r')dr' , \qquad (7)$$

provided that

$$P^{(m+1)}(0) = P^{(m+1)}(\infty) = 0$$

and for any condition of normalization. Functions $P^{(m)}$ are normalized provided that all normalizations of m are done in the same manner. If it is necessary in achieving the solution, it is possible to renormalize by virtue of the uniformity of the problem in Eqs. (5) and (2). In practice, it is convenient [Eq. (3)] to normalize functions to unity at some point r_1:

$$P(r_1) = 1.$$

Thus, at each successive approximation one must find such a λ and, corresponding to it, its solution P of the equation:

$$\frac{d^2P}{dr^2} + FP = \lambda P + Q, \qquad (8)$$

if

$$P(0) = P(\infty) = 0 \qquad (9)$$

and

$$P(r_1) = 1. \qquad (10)$$

Let $P_o(r,\lambda)$ be the solution of Eq. (8) satisfying the supplementary conditions

$$P_o(0,\lambda) = 0, \; P_o(r_1,\lambda) = 1 .$$

At the point r_2, where $r_2 > r_1$, the function P_o acquires a certain value $P_o(r_2,\lambda)$. We shall now determine the function $P_\infty(r,\lambda)$ as a solution of Eq. (8) with the conditions

$$P_\infty(r_2,\lambda) = P_o(r_2,\lambda), \; P_\infty(\infty,\lambda) = 0.$$

With $h > 0$ and fixed values r_1 and r_2, the expression

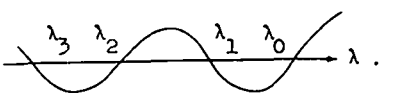
$$\omega(\lambda) = \frac{1}{h}\{P_o(r_2 + h) - P_\infty(r_2 + h)\}$$

represents a certain function λ. It is obvious that those λ's, for which the solution of Eq. (8) with zero conditions at the boundaries of Eq. (9), satisfying the conditions of normalization in Eq. (10), will be the roots of the equation

$$\omega(\lambda) = 0. \qquad (11)$$

The sought λ is distinguished from the other roots by the fact that the solution of Eq. (8) $(n - \ell - 1)$ is once converted into zero in the interval (r_1,r_2). With the corresponding choice of r_1 and r_2 (at which we later stop), this is equivalent to the condition in Eq. (6).

If the unknown root is separated from the rest by the values λ' and λ'', it is easily found to an assigned degree of accuracy by the chord method. The boundaries λ' and λ'' are found by successive trials. In the progression from one trial value to the next, one can be guided by the fact that the trial value must be increased if the number of nodes is greater than $n - \ell - 1$ at the function P_o, and decreased if the number of nodes is less than $n - \ell - 1$. If the number of nodes is equal to $n - \ell - 1$, the direction of change of the trial λ can be defined by the symbol $\omega(\lambda)$. The function $\omega(\lambda)$ is constant with respect to λ, and, if λ is sufficiently large, then $\omega(\lambda) > 0$. Thus the graph of the function $\omega(\lambda)$ appears as:



It is obvious that for a located root with an even number, the trial value λ must be increased when $\omega < 0$ and decreased when $\omega > 0$. If the sought root has an uneven number, then the process must be reversed. Roots are computed by means of numeration starting with a large number to which has been attributed a neutral number. This rule is easy to express analytically:

$$\lambda' = \lambda\left\{1 + \alpha_1 \frac{\operatorname{sign}(\xi - n + \ell + 1)}{n}\right\} , \qquad (12)$$

when $\xi \neq n - \ell - 1$ and

$$\lambda' = \lambda\left\{1 + \alpha_2 \frac{(-1)^{n-1} \operatorname{sign} \omega(\lambda)}{n}\right\}, \qquad (13)$$

if $\xi = n - \ell - 1$. Here ξ is the number-changing sign at the function P_o in the interval (r_1, r_2), but α_1 and α_2 are positive constants determining the magnitude of change of experimental λ values.

This completes one step in the sequence of making the functions more precise.

At each such step it is necessary to calculate the functions

$$F = F_\sigma = \frac{2(Z - Y_\sigma)}{r} - \frac{\ell_\sigma(\ell_\sigma + 1)}{r^2} - \lambda_{\sigma\sigma'},$$

$$Q = Q_\sigma = -\frac{1}{2}\sum_{\sigma' \neq \sigma} P_{\sigma'} \sum_k \Upsilon_{\sigma\sigma' k} Y_{\sigma\sigma' k},$$

which in the main comes down to the calculation of $Y_{\sigma\sigma' k}$. Designated by $Z_{\sigma\sigma' k}$ the first item in Eq. (1) for $Y_{\sigma\sigma' k}$ is:

$$Z_{\sigma\sigma' k} = \frac{1}{r^k}\int_0^r r^k P_\sigma P_{\sigma'} dr.$$

It is obvious that $Z_{\sigma\sigma' k}(0) = 0$ and $Y_{\sigma\sigma' k} - Z_{\sigma\sigma' k} \to 0$ as $r \to \infty$. By direct differentiation we are satisfied that

$$Z'_{\sigma\sigma' k} = -\frac{k}{r} Z_{\sigma\sigma' k} + P_\sigma P_{\sigma'},$$

$$Y'_{\sigma\sigma' k} = \frac{k+1}{r} Y_{\sigma\sigma' k} - \frac{2k+1}{r} Z_{\sigma\sigma' k}.$$

By such means, the calculation $Y_{\sigma\sigma' k}$ is arrived at by successive integrations of equations of the first order.[15] From consideration of stability, the first of these is integrated from 0 to ∞ for the beginning condition $Z_{\sigma\sigma' k} = 0$; the second, in the converse direction, whereupon $Y_{\sigma\sigma' k} = Z_{\sigma\sigma' k}$ as $r \to \infty$.

A peculiarity for $r = 0$ in Eq. (1) makes a varying r an inconvenient numerical realization of the described method. In the first place, it is complicated to use the formulas of integral equations; in the second place, the integration step has to be changed numerous times. These tend to violate the process of the operation cycles, blocking programs and significantly increasing their size.

One way to surmount these difficulties is to substitute appropriate variables. One could expect that a good variable would be

$$\rho = r + \ln r. \tag{14}$$

Actually, as $r \to \infty$ the equations for P are close to the equations for the exponents and, therefore, there is no reason to change the step of integration by means of lerger r's. Accordingly, P for the larger r's is almost equal to r. For $r \sim 0$, $P \sim r^{\ell+1}$. As in the case of $\rho \sim \ln r$, then, relative to the variable ρ, $P \sim e^{(\ell+1)\rho}$ and it is again not necessary to change the step of integration according to ρ. By such means, to make use of variable ρ, the step could be taken by means of a constant both as $\rho \to \infty$ and as $\rho \to -\infty$.

The substitution of only one independent variable in the equation for functions P would keep the first derivative, which is undesirable. Therefore, there follow substitutions by means of an independent variable to combine with substitution function P. In accordance with Ref. 14, we assume:

$$f = \left(\frac{r}{1+r}\right)^{-\frac{1}{2}} P(r).$$

It is not difficult to reason that through such a transformed equation for P,

$$\frac{d^2P}{dr} + FP = Q$$

is changed into

$$\frac{d^2f}{d\rho^2} + \frac{r^2}{(1+r)^2}\left\{r^2 F - \frac{1}{(1+r)^2}\left(r + \frac{1}{4}\right)\right\} f = \left(\frac{r}{1+r}\right)^{\frac{3}{2}} Q, \tag{15}$$

for function f, and the equations for $Z_{\sigma\sigma' k}$ and $Y_{\sigma\sigma' k}$ assume the aspect

$$\left.\begin{aligned} Z'_{\sigma\sigma' k} &= -\frac{k}{1+z} Z_{\sigma\sigma' k} + \frac{r^2}{(1+r)^2} f_\sigma f_{\sigma'}, \\ Y'_{\sigma\sigma' k} &= \frac{k+1}{1+r} Y_{\sigma\sigma' k} - \frac{2k+1}{1+r} Z_{\sigma\sigma' k} \end{aligned}\right\}. \tag{16}$$

Additional conditions are:

$$f(-\infty) = f(+\infty) = 0,$$

$$\int_{-\infty}^{+\infty}\left(\frac{r}{1+r}\right)^2 f^2 d\rho = 1.$$

The first approximation which must be done in the numerical derivation is the substitution of the numerous intervals for the final: $\rho_- \leq \rho \leq \rho_+$. Thus, it is necessary to remove the boundary condition from

$\pm\infty$ at points $\rho_{\pm}$. For us it will be sufficient to know the rough equations

$$q_+ = \frac{f_\infty(\rho_+ + h)}{f_\infty(\rho_+)}, \quad q_- = \frac{f_o(\rho_-)}{f_o(\rho_- - h)} . \qquad (17)$$

To find them, it is possible to take advantage of the method suggested by Hartree.[15]

The boundary condition $Z(-\infty) = 0$ could similarly be removed. But inasmuch as Z decreases significantly more rapidly than f as $\rho \to -\infty$, it is possible, without disadvantage, simply to assume $Z(\rho_-) = 0$. For the function Y, the initial value pertains to the point ρ_+:

$$Y(\rho_+) = Z(\rho_+).$$

The second approximation consists of substituting a different differential equation. For the solution of equations of the first order, we take advantage of the formula

$$Y_{i+3} = Y_{i+2} + \frac{h}{24}(9Y'_{i+3} + 19Y'_{i+2} - 5Y'_{i+1} + Y'_i),$$

and for the second equation, the formula

$$Y_{i+1} - 2Y_i + Y_{i-1} = \frac{h^2}{12}(Y''_{i+1} + 10Y''_i + Y''_{i+1}). \qquad (18)$$

Substituting in their derivatives, given in the equations, we obtain a convenient form for programming formulas:

$$Z_i = \frac{1}{1+\frac{9kh}{24(1+r_i)}}\left\{\left[1 - \frac{19kh}{25(1+r_{i-1})}\right] Z_{i-1}\right.$$

$$+ \frac{5khZ_{i-2}}{24(1+r_{i-2})} - \frac{khZ_{i-3}}{24(1+r_{i-3})} + \frac{9hr_i^2R_i}{24(1+r_{i-1})^2} \qquad (19)$$

$$\left. + \frac{19hr_{i-1}^2R_{i-1}}{24(1+r_{i-1})^2} - \frac{5hr_{i-2}^2R_{i-2}}{24(1+r_{i-2})^2} + \frac{hr_{i-3}^2R_{i-3}}{24(1+r_{i-3})^2}\right\},$$

$$Y_i = \frac{1}{1+\frac{9h(k+1)}{24(1+r_i)}}\left\{\left[1 - \frac{19h(k+1)}{24(1+r_{i+1})}\right] Y_{i+1}\right.$$

$$+ \frac{5h(k+1)Y_{i+2}}{24(1+r_{i+2})} - \frac{h(k+1)Y_{i+3}}{24(1+r_{i+3})} + \frac{9h(k+1)Z_i}{24(1+r_i)} \qquad (20)$$

$$\left. + \frac{19h(2k+1)Z_{i+1}}{24(1+r_{i+1})} - \frac{5h(2k+1)Z_{i+2}}{24(1+r_{i+2})} + \frac{h(2k+1)Z_{i+3}}{24(1+r_{i+3})}\right\},$$

where

$$R_i = R_{\sigma,\sigma',i} = f_{\sigma,i}f_{\sigma',i}$$

and

$$\left(1 + \frac{h^2F_{i+1}}{12}\right)f_{i+1} - \left(2 - \frac{5h^2F_i}{6}\right)f_i + \left(1 + \frac{h^2F_{i-1}}{12}\right)f_{i-1}$$

$$= -\frac{h^2}{12}(\bar{Q}_{i+1} + 10\bar{Q}_i + \bar{Q}_{i+1}), \qquad (21)$$

$$\bar{Q}_i = \left(\frac{r_i}{1+r_i}\right)^{\frac{3}{2}} Q_i .$$

Formulas in Eqs. (19) and (20) requires knowledge of the three initial values of Z and Y. In accordance with the accepted method of eliminating boundary conditions,

$$Z_{-3} = Z_{-2} = Z_{-1} = 0$$

and

$$Y_N = Z_N, \; Y_{N-1} = Z_{N-1}, \; Y_{N-2} = Z_{N-2},$$

where the zero index corresponds to point ρ_-, and index N, to point ρ_+.

For the construction of functions f_o and f_∞ (corresponding to P_o and P_∞), it is necessary first of all to choose points ρ_1 and ρ_2 corresponding to points r_1 and r_2. For such points it is convenient to take those values of the argument ρ for which the f coefficient in Eq. (15) is reduced to zero. It can be demonstrated that there are always two such values of the argument.

In the interval $[\rho_1,\rho_2]$, both solutions of Eq. (15) oscillate, but in the interval $[\rho_-,\rho_1]$ and $[\rho_2, \rho_+]$, one increases and the other decreases. Therefore, in different intervals, the calculation of functions has to be carried out differently. In the interval $[\rho_-,\rho_1]$, the function f_o is found by the method of "dispersion"[25] in its utilization with different equations [Eq. (21)]. By induction, we see that the values for $f_{o,i}$ and $f_{o,i+1}$ are allied in the relationship:

$$f_{o,i} = \upsilon_o(i, i+1)f_{o,i+1} + u_o(i, i+1), \qquad (22)$$

in which

$$\upsilon_o(i, i+1) = \frac{A_{i+1}}{2B_i - A_i\upsilon_o(i-1, i)}, \qquad (23)$$

$$u_o(i, i+1) = \frac{A_{i+1}u_o(i-1, i) + w_i}{2B_i - A_{i-1}\upsilon_o(i-1, i)}, \qquad (24)$$

where

$$A_i = 1 + \frac{h^2 F_i}{12}, \quad 2B_i = 2 - \frac{5h^2 F_i}{6},$$

$$\omega_i = \frac{h^2}{12}(\bar{Q}_{i+1} + 10\bar{Q}_i + \bar{Q}_{i-1}).$$

According to the method of removal of boundary conditions in Eq. (17),

$$v_o(-1, 0) = q_-,$$
$$u_o(-1, 0) = 0.$$

From these initial equations, we calculate $v_o(i, i+1)$ and $u_o(i, i+1)$ according to the recurrence formulas in Eqs. (23) and (24) down to point ρ_1; more precisely, until the ρ_1 is near the node point. Since $f_o(\rho_1) = 1$, in all points of the interval $[\rho_-, \rho_1]$, the values of the sought function can be found by means of the formula in Eq. (22). Knowing f_o at the points ρ_1 and $\rho_1 - h$, its value in the interval $[\rho_1, \rho_2]$ can be found very well through the formula

$$f_{o,i+1} = \frac{2B_i f_{o,i} - A_{i-1} f_{o,i-1} + \omega_i}{A_{i+1}}$$

down to the point $\rho_2 + h$. Along the way are located a number of step changes of function f_o. In the interval $[\rho_2, \rho_+]$, the function f_∞ is found by the dispersion method.

Having obtained $f_o(\rho_2 + h)$ and $f_2(\rho_2 + h)$ by such means, it is possible to calculate $\omega(\lambda)$, and this is all that is necessary for the solution of the equation $\omega(\lambda) = 0$.

Coefficients of Eqs. (15) and (16) are expressed by the variable r. Therefore, for their calculations at a fixed value ρ, it is necessary first of ell to calculate the corresponding $r(\rho)$, which is obviously arrived at with the solution of the equation

$$\varphi(r) = r + \ln r - \rho = 0. \qquad (25)$$

Inasmuch as it is impossible to express r by ρ analytically, we are obliged to resort to the numerical method. It is convenient to apply Newton's method to Eq. (25):

$$r^{(p+1)} = r^{(p)} - \frac{\varphi(r^{(p)})}{\varphi'(r^{(p)})}.$$

$\varphi(r)$ is substituted here and

$$\varphi'(r) = 1 + \frac{1}{r},$$

yielding

$$r^{(p+1)} = r^{(p)}\left(1 + \frac{\rho - r^{(p)} - \ln r^{(p)}}{1 + r^{(p)}}\right).$$

It is evident that

$$\frac{r^{(p+1)} - r^{(p)}}{r^{(p)}} = \frac{\rho - r^{(p)} - \ln r^{(p)}}{1 + r^{(p)}};$$

therefore, if the calculation of r is completed according to the inequality

$$\left| \frac{\rho - r^{(p)} - \ln r^{(p)}}{1 + r^{(p)}} \right| < \epsilon,$$

the sought-for value of r will be known with a fixed relative error ϵ. The initial approximation for r can be obtained from the following considerations. For sufficiently large positive ρ, $r \sim \rho + \ln \rho$. For sufficiently large negative ρ, $r \sim e^{\rho}$. For an intermediate ρ, r is approximated by $r \approx a + b\rho + c\rho^2$.

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	He ^1S	Li ^2S		Be ^1S	
r	$1s$	$1s$	$2s$	$1s$	$2s$
0.001	0.005	0.009	0.001	0.015	0.003
0.002	0.009	0.018	0.003	0.029	0.005
0.004	0.019	0.037	0.006	0.058	0.011
0.006	0.028	0.055	0.008	0.086	0.016
0.008	0.037	0.072	0.011	0.114	0.021
0.010	0.047	0.090	0.014	0.141	0.026
0.015	0.069	0.133	0.021	0.207	0.038
0.020	0.091	0.174	0.027	0.271	0.049
0.025	0.113	0.215	0.033	0.332	0.060
0.030	0.134	0.254	0.039	0.390	0.071
0.035	0.155	0.292	0.045	0.447	0.081
0.040	0.176	0.329	0.051	0.500	0.091
0.050	0.215	0.399	0.062	0.601	0.109
0.060	0.253	0.465	0.072	0.694	0.126
0.070	0.290	0.526	0.081	0.778	0.141
0.080	0.324	0.584	0.090	0.855	0.154
0.090	0.358	0.638	0.098	0.925	0.167
0.100	0.390	0.688	0.106	0.988	0.178
0.120	0.450	0.779	0.120	1.097	0.196
0.140	0.505	0.858	0.131	1.185	0.210
0.160	0.555	0.925	0.141	1.254	0.220
0.180	0.601	0.983	0.149	1.306	0.226
0.200	0.643	1.031	0.155	1.345	0.230
0.220	0.681	1.072	0.160	1.371	0.230
0.240	0.715	1.105	0.164	1.387	0.229
0.260	0.746	1.131	0.167	1.394	0.225
0.280	0.773	1.151	0.168	1.393	0.219
0.300	0.798	1.167	0.168	1.385	0.211
0.350	0.849	1.185	0.165	1.343	0.186
0.400	0.885	1.181	0.158	1.278	0.154
0.450	0.910	1.160	0.147	1.198	0.117
0.500	0.924	1.126	0.132	1.111	0.077
0.550	0.930	1.084	0.116	1.021	0.034
0.600	0.930	1.036	0.097	0.931	—0.009
0.650	0.923	0.984	0.078	0.844	—0.053
0.700	0.912	0.930	0.057	0.762	—0.096
0.750	0.898	0.875	0.035	0.684	—0.138
0.800	0.880	0.820	0.013	0.612	—0.179
0.850	0.860	0.766	—0.009	0.546	—0.219
0.900	0.837	0.714	—0.032	0.485	—0.257
0.950	0.814	0.663	—0.054	0.430	—0.293
1.000	0.789	0.615	—0.076	0.380	—0.328
1.100	0.738	0.525	—0.120	0.296	—0.390
1.200	0.686	0.446	—0.163	0.228	—0.445
1.300	0.634	0.376	—0.204	0.175	—0.491
1.400	0.584	0.316	—0.242	0.134	—0.529
1.500	0.535	0.264	—0.278	0.102	—0.561
1.600	0.489	0.220	—0.311	0.077	—0.585
1.700	0.446	0.183	—0.342	0.059	—0.604
1.800	0.405	0.152	—0.370	0.044	—0.617
1.900	0.368	0.125	—0.395	0.033	—0.625
2.000	0.333	0.103	—0.418	0.025	—0.629
2.100	0.301	0.085	—0.438	0.019	—0.629
2.200	0.272	0.070	—0.456	0.014	—0.626
2.300	0.245	0.057	—0.471	0.011	—0.620
2.400	0.221	0.047	—0.484	0.008	—0.611
2.500	0.198	0.039	—0.495	0.006	—0.601
2.600	0.178	0.031	—0.504	0.004	—0.588
2.700	0.160	0.026	—0.511	0.003	—0.575
2.800	0.143	0.021	—0.517	0.002	—0.560
2.900	0.128	0.017	—0.520	0.002	—0.544
3.000	0.115	0.014	—0.522	0.001	—0.528
3.200	0.092	0.009	—0.522	0.001	—0.494
3.400	0.073	0.006	—0.518	0.	—0.459
3.600	0.058	0.004	—0.509	0.	—0.424
3.800	0.046	0.003	—0.497	0.	—0.390
4.000	0.036	0.002	—0.482	0.	—0.357
4.200	0.029	0.001	—0.465	0.	—0.326
4.400	0.023	0.001	—0.446	0.	—0.297
4.600	0.018	0.	—0.427	0.	—0.269
4.800	0.014	0.	—0.406	0.	—0.243
5.000	0.011	0.	—0.386	0.	—0.219
5.200	0.009	0.	—0.365	0.	—0.197
5.400	0.007	0.	—0.344	0.	—0.177
5.600	0.005	0.	—0.324	0.	—0.159
5.800	0.004	0.	—0.304	0.	—0.142
6.000	0.003	0.	—0.284	0.	—0.127
6.200	0.003	0.	—0.265	—0.	—0.113
6.400	0.002	0.	—0.247	—0.	—0.101
6.600	0.002	0.	—0.230	—0.	—0.090
6.800	0.001	0.	—0.214	—0.	—0.080
7.000	0.001	0.	—0.198	—0.	—0.071
7.200	0.001	0.	—0.184	—0.	—0.063
7.400	0.001	0.	—0.170	—0.	—0.056
7.600	0.	0.	—0.157	—0.	—0.049
7.800	0.	0.	—0.145	—0.	—0.043
8.000	0.	0.	—0.133	—0.	—0.038
8.200	0.	0.	—0.123	—0.	—0.034
8.400	0.	0.	—0.113	—0.	—0.030
8.600	0.	0.	—0.103	—0.	—0.026
8.800	0.	0.	—0.095	—0.	—0.023
9.000	0.	0.	—0.087	—0.	—0.020
9.500	0.	0.	—0.070	—0.	—0.015
10.000	0.	0.	—0.055	—0.	—0.011
10.500	0.	0.	—0.044	—0.	—0.008
11.000	0.	0.	—0.035	—0.	—0.005
11.500	0.	0.	—0.027	—0.	—0.004
12.000	0.	0.	—0.021	—0.	—0.003
12.500	0.	0.	—0.017	—0.	—0.002
13.000	0.	0.	—0.013	—0.	—0.001
13.500	0.	0.	—0.010	—0.	—0.001
14.000	0.	0.	—0.008	—0.	—0.001
14.500	0.	0.	—0.006	—0.	—0.
15.000	0.	—0.	—0.005	—0.	—0.
15.500	0.	—0.	—0.004	—0.	—0.
16.000	0.	—0.	—0.003	—0.	—0.
16.500	0.	—0.	—0.002	—0.	—0.
17.000	0.	—0.	—0.002	—0.	—0.
17.500	0.	—0.	—0.001	—0.	—0.
18.000	0.	—0.	—0.001	—0.	—0.
18.500	0.	—0.	—0.001	—0.	—0.
19.000	0.	0.	—0.001	—0.	—0.
λ	1.84	4.96	0.393	9.46	0.619
$\langle r^{-2} \rangle$	5.99	14.9	0.430	27.7	1.05
$\langle r^{-1} \rangle$	1.69	2.69	0.345	3.68	0.522
$\langle r \rangle$	0.927	0.573	3.87	0.415	2.65
$\langle r^2 \rangle$	1.18	0.446	17.7	0.233	8.43

	Li$^+$ ^1S	Be$^+$ ^2S		B$^+$ ^1S	
r	$1s$	$1s$	$2s$	$1s$	$2s$
0.001	0.009	0.015	0.003	0.021	0.005
0.002	0.018	0.029	0.005	0.041	0.009
0.004	0.037	0.058	0.011	0.082	0.018
0.006	0.055	0.086	0.016	0.121	0.027
0.008	0.072	0.113	0.021	0.160	0.036
0.010	0.090	0.141	0.026	0.198	0.044

r	$1s$	$1s$	$2s$	$1s$	$2s$
0.015	0.133	0.207	0.039	0.290	0.064
0.020	0.175	0.270	0.051	0.377	0.084
0.025	0.215	0.331	0.062	0.460	0.102
0.030	0.254	0.390	0.073	0.539	0.119
0.035	0.292	0.446	0.084	0.613	0.136
0.040	0.329	0.500	0.094	0.684	0.151
0.050	0.399	0.600	0.112	0.813	0.180
0.060	0.465	0.692	0.130	0.929	0.205
0.070	0.527	0.777	0.145	1.032	0.226
0.080	0.584	0.854	0.159	1.123	0.246
0.090	0.638	0.923	0.172	1.203	0.262
0.100	0.689	0.987	0.183	1.273	0.276
0.120	0.780	1.095	0.203	1.386	0.296
0.140	0.858	1.183	0.217	1.468	0.309
0.160	0.926	1.252	0.228	1.524	0.315
0.180	0.983	1.305	0.236	1.558	0.314
0.200	1.032	1.343	0.240	1.574	0.308
0.220	1.072	1.370	0.242	1.575	0.298
0.240	1.105	1.386	0.241	1.563	0.284
0.260	1.132	1.393	0.239	1.541	0.266
0.280	1.152	1.392	0.234	1.511	0.245
0.300	1.167	1.384	0.227	1.475	0.223
0.350	1.186	1.343	0.205	1.364	0.158
0.400	1.181	1.278	0.175	1.238	0.085
0.450	1.160	1.198	0.141	1.107	0.008
0.500	1.126	1.112	0.103	0.979	—0.069
0.550	1.084	1.022	0.063	0.858	—0.145
0.600	1.036	0.933	0.021	0.747	—0.219
0.650	0.984	0.846	—0.021	0.646	—0.290
0.700	0.930	0.763	—0.063	0.555	—0.355
0.750	0.874	0.686	—0.105	0.476	—0.417
0.800	0.820	0.613	—0.145	0.406	—0.473
0.850	0.766	0.547	—0.185	0.345	—0.523
0.900	0.713	0.486	—0.223	0.292	—0.569
0.950	0.663	0.431	—0.259	0.247	—0.609
1.000	0.614	0.381	—0.294	0.208	—0.645
1.100	0.525	0.297	—0.358	0.147	—0.701
1.200	0.445	0.229	—0.414	0.104	—0.740
1.300	0.375	0.176	—0.462	0.072	—0.764
1.400	0.315	0.134	—0.503	0.050	—0.775
1.500	0.264	0.102	—0.537	0.035	—0.775
1.600	0.219	0.077	—0.565	0.024	—0.766
1.700	0.182	0.058	—0.586	0.017	—0.750
1.800	0.151	0.044	—0.602	0.011	—0.728
1.900	0.125	0.033	—0.613	0.008	—0.702
2.000	0.103	0.024	—0.619	0.005	—0.672
2.100	0.084	0.018	—0.622	0.004	—0.641
2.200	0.069	0.013	—0.621	0.003	—0.608
2.300	0.057	0.010	—0.617	0.002	—0.574
2.400	0.046	0.007	—0.610	0.001	—0.540
2.500	0.038	0.005	—0.602	0.001	—0.507
2.600	0.031	0.004	—0.591	0.001	—0.474
2.700	0.025	0.003	—0.579	0.	—0.442
2.800	0.021	0.002	—0.566	0.	—0.411
2.900	0.017	0.001	—0.551	0.	—0.382
3.000	0.014	0.001	—0.536	0.	—0.353
3.200	0.009	0.	—0.504	0.	—0.301
3.400	0.006	0.	—0.470	0.	—0.255
3.600	0.004	—0.	—0.437	0.	—0.215
3.800	0.002	—0.	—0.403	0.	—0.180
4.000	0.002	—0.	—0.371	0.	—0.150
4.200	0.001	—0.	—0.339	0.	—0.124
4.400	0.001	—0.	—0.310	0.	—0.103
4.600	0.	—0.	—0.282	0.	—0.085
4.800	0.	—0.	—0.256	0.	—0.069
5.000	0.	—0.	—0.231	0.	—0.057
5.200	0.	—0.	—0.209	—0.	—0.046
5.400	0.	—0.	—0.188	—0.	—0.038
5.600	0.	—0.	—0.169	—0.	—0.031
5.800	0.	—0.	—0.152	—0.	—0.025
6.000	0.	—0.	—0.136	—0.	—0.020
6.200	0.	—0.	—0.122	—0.	—0.016
6.400	0.	—0.	—0.109	—0.	—0.013
6.600	0.	—0.	—0.097	—0.	—0.011
6.800	0.	—0.	—0.087	—0.	—0.009
7.000	0.	—0.	—0.077	—0.	—0.007
7.200	0.	—0.	—0.068	—0.	—0.005
7.400	0.	—0.	—0.061	—0.	—0.004
7.600	0.	—0.	—0.054	—0.	—0.004
7.800	0.	—0.	—0.048	—0.	—0.003
8.000	0.	—0.	—0.042	0.	—0.002
8.200	0.	—0.	—0.037	0.	—0.002
8.400	0.	—0.	—0.033	0.	—0.001
8.600	0.	—0.	—0.029	0.	—0.001
8.800	0.	—0.	—0.026	0.	—0.001
9.000	0.	—0.	—0.023	0.	—0.001
9.500	0.	—0.	—0.017	0.	—0.
10.000	0.	—0.	—0.012	0.	—0.
10.500	0.	—0.	—0.009	0.	—0.
11.000	0.	—0.	—0.006	0.	—0.
11.500	0.	—0.	—0.005	0.	—0.
12.000	0.	—0.	—0.003	0.	—0.
12.500	0.	—0.	—0.002	0.	—0.
13.000	0.	—0.	—0.002	0.	—0.
13.500	0.	—0.	—0.001	0.	—0.
14.000	0.	—0.	—0.001	0.	—0.
14.500	0.	—0.	—0.001	0.	—0.
λ	5.58	9.48	0.600	16.4	1.75
$\langle r^{-2} \rangle$	14.9	27.6	1.10	44.4	2.41
$\langle r^{-1} \rangle$	2.69	3.68	0.517	4.68	0.780
$\langle r \rangle$	0.572	0.416	2.72	0.325	1.80
$\langle r^{2} \rangle$	0.445	0.233	8.89	0.143	3.83

	Be^{++} ^1S	B^{++} ^2S		C^{++} ^1S	
r	$1s$	$1s$	$2s$	$1s$	$2s$
0.001	0.015	0.021	0.005	0.028	0.007
0.002	0.029	0.041	0.010	0.055	0.014
0.004	0.058	0.082	0.020	0.108	0.027
0.006	0.086	0.121	0.030	0.160	0.040
0.008	0.114	0.160	0.040	0.211	0.052
0.010	0.141	0.198	0.049	0.261	0.064
0.015	0.208	0.290	0.072	0.380	0.094
0.020	0.271	0.378	0.093	0.492	0.121
0.025	0.332	0.461	0.114	0.597	0.147
0.030	0.391	0.539	0.133	0.695	0.171
0.035	0.447	0.614	0.151	0.787	0.194
0.040	0.501	0.684	0.168	0.873	0.214
0.050	0.602	0.814	0.200	1.029	0.252
0.060	0.695	0.930	0.228	1.164	0.284
0.070	0.779	1.032	0.252	1.280	0.310
0.080	0.856	1.124	0.273	1.379	0.332
0.090	0.926	1.204	0.292	1.464	0.350
0.100	0.990	1.274	0.307	1.534	0.364
0.120	1.099	1.387	0.330	1.638	0.380
0.140	1.186	1.469	0.344	1.702	0.385
0.160	1.255	1.525	0.350	1.733	0.379
0.180	1.308	1.559	0.349	1.738	0.364
0.200	1.347	1.575	0.342	1.723	0.342
0.220	1.373	1.575	0.330	1.691	0.314
0.240	1.389	1.564	0.314	1.646	0.281
0.260	1.395	1.542	0.294	1.593	0.244
0.280	1.394	1.512	0.270	1.532	0.204
0.300	1.387	1.475	0.245	1.467	0.161

r	$1s$	$1s$	$2s$	$1s$	$2s$
0.350	1.344	1.364	0.171	1.294	0.049
0.400	1.278	1.238	0.089	1.119	—0.068
0.450	1.198	1.107	0.003	0.954	—0.182
0.500	1.111	0.979	—0.084	0.804	—0.292
0.550	1.021	0.858	—0.169	0.672	—0.393
0.600	0.931	0.746	—0.252	0.557	—0.486
0.650	0.844	0.645	—0.330	0.459	—0.569
0.700	0.761	0.555	—0.403	0.376	—0.641
0.750	0.683	0.475	—0.470	0.307	—0.703
0.800	0.611	0.405	—0.531	0.250	—0.756
0.850	0.544	0.344	—0.586	0.202	—0.799
0.900	0.483	0.291	—0.634	0.164	—0.833
0.950	0.428	0.246	—0.677	0.132	—0.859
1.000	0.379	0.208	—0.713	0.106	—0.877
1.100	0.294	0.147	—0.769	0.068	—0.895
1.200	0.227	0.103	—0.805	0.044	—0.890
1.300	0.174	0.072	—0.822	0.028	—0.869
1.400	0.132	0.050	—0.825	0.018	—0.836
1.500	0.101	0.034	—0.815	0.011	—0.793
1.600	0.076	0.024	—0.795	0.007	—0.746
1.700	0.057	0.016	—0.767	0.004	—0.694
1.800	0.043	0.011	—0.734	0.003	—0.642
1.900	0.032	0.008	—0.696	0.002	—0.589
2.000	0.024	0.005	—0.656	0.001	—0.538
2.100	0.018	0.004	—0.615	0.001	—0.489
2.200	0.013	0.002	—0.572	0.	—0.442
2.300	0.010	0.002	—0.531	0.	—0.398
2.400	0.007	0.001	—0.490	0.	—0.357
2.500	0.005	0.001	—0.450	0.	—0.319
2.600	0.004	0.001	—0.412	0.	—0.284
2.700	0.003	0.	—0.376	0.	—0.253
2.800	0.002	0.	—0.342	0.	—0.224
2.900	0.002	0.	—0.311	0.	—0.198
3.000	0.001	0.	—0.281	0.	—0.175
3.200	0.001	0.	—0.229	0.	—0.135
3.400	0.	0.	—0.184	0.	—0.104
3.600	0.	0.	—0.148	0.	—0.079
3.800	0.	0.	—0.117	0.	—0.060
4.000	0.	0.	—0.093	0.	—0.045
4.200	0.	0.	—0.073	0.	—0.034
4.400	0.	0.	—0.057	—0.	—0.026
4.600	0.	0.	—0.045	—0.	—0.019
4.800	0.	0.	—0.035	—0.	—0.014
5.000	0.	0.	—0.027	—0.	—0.011
5.200	0.	0.	—0.021	—0.	—0.008
5.400	0.	0.	—0.016	—0.	—0.006
5.600	0.	0.	—0.012	—0.	—0.004
5.800	0.	0.	—0.009	—0.	—0.003
6.000	0.	0.	—0.007	—0.	—0.002
6.200	0.	0.	—0.005	0.	—0.002
6.400	0.	0.	—0.004	0.	—0.001
6.600	0.	0.	—0.003	0.	—0.001
6.800	0.	0.	—0.002	0.	—0.001
7.000	0.	0.	—0.002	0.	—0.
7.200	0.	0.	—0.001	0.	—0.
7.400	0.	0.	—0.001	0.	—0.
7.600	0.	0.	—0.001	0.	—0.
7.800	0.	0.	—0.001	0.	—0.
λ	11.3	17.6	2.78	25.3	3.39
$\langle r^{-2} \rangle$	27.7	44.5	2.93	85.2	4.27
$\langle r^{-1} \rangle$	3.69	4.68	0.860	5.68	1.03
$\langle r \rangle$	0.414	0.325	1.64	0.267	1.37
$\langle r^{2} \rangle$	0.232	0.142	3.13	0.096	2.21

B ^2P

r	$1s$	$2s$	$2p$
0.001	0.021	0.004	0.
0.002	0.041	0.008	0.
0.004	0.082	0.016	0.
0.006	0.121	0.024	0.
0.008	0.160	0.032	0.
0.010	0.198	0.040	0.
0.015	0.290	0.059	0.001
0.020	0.377	0.076	0.001
0.025	0.460	0.093	0.002
0.030	0.538	0.108	0.003
0.035	0.613	0.123	0.004
0.040	0.683	0.137	0.005
0.050	0.813	0.163	0.007
0.060	0.928	0.186	0.010
0.070	1.031	0.206	0.014
0.080	1.122	0.223	0.017
0.090	1.202	0.238	0.021
0.100	1.272	0.251	0.026
0.120	1.385	0.270	0.036
0.140	1.467	0.281	0.046
0.160	1.523	0.286	0.058
0.180	1.557	0.286	0.070
0.200	1.573	0.281	0.083
0.220	1.574	0.272	0.096
0.240	1.562	0.259	0.110
0.260	1.540	0.243	0.124
0.280	1.510	0.225	0.139
0.300	1.474	0.204	0.153
0.350	1.364	0.146	0.190
0.400	1.238	0.081	0.226
0.450	1.107	0.012	0.263
0.500	0.980	—0.058	0.298
0.550	0.859	—0.127	0.332
0.600	0.748	—0.193	0.364
0.650	0.647	—0.257	0.395
0.700	0.557	—0.317	0.423
0.750	0.477	—0.373	0.450
0.800	0.408	—0.424	0.475
0.850	0.347	—0.471	0.498
0.900	0.294	—0.514	0.519
0.950	0.249	—0.552	0.539
1.000	0.210	—0.586	0.556
1.100	0.149	—0.641	0.585
1.200	0.105	—0.681	0.608
1.300	0.074	—0.708	0.624
1.400	0.052	—0.724	0.634
1.500	0.036	—0.730	0.640
1.600	0.025	—0.728	0.642
1.700	0.018	—0.720	0.639
1.800	0.012	—0.706	0.634
1.900	0.009	—0.688	0.626
2.000	0.006	—0.668	0.615
2.100	0.004	—0.644	0.602
2.200	0.003	—0.619	0.588
2.300	0.002	—0.593	0.573
2.400	0.002	—0.566	0.557
2.500	0.001	—0.539	0.540
2.600	0.001	—0.512	0.522
2.700	0.001	—0.485	0.504
2.800	0.	—0.459	0.486
2.900	0.	—0.433	0.468
3.000	0.	—0.408	0.450
3.200	0.	—0.361	0.414
3.400	0.	—0.318	0.379
3.600	0.	—0.278	0.345

r	1s	2s	2p
3.800	0.	—0.243	0.314
4.000	0.	—0.211	0.284
4.200	0.	—0.183	0.257
4.400	0.	—0.158	0.231
4.600	0.	—0.136	0.208
4.800	0.	—0.117	0.187
5.000	0.	—0.101	0.167
5.200	0.	—0.086	0.149
5.400	0.	—0.074	0.133
5.600	0.	—0.063	0.119
5.800	0.	—0.054	0.105
6.000	0.	—0.046	0.094
6.200	0.	—0.039	0.083
6.400	0.	—0.033	0.074
6.600	0.	—0.028	0.065
6.800	0.	—0.024	0.058
7.000	0.	—0.020	0.051
7.200	0.	—0.017	0.045
7.400	0.	—0.014	0.040
7.600	0.	—0.012	0.035
7.800	0.	—0.010	0.031
8.000	0.	—0.009	0.027
8.200	0.	—0.007	0.024
8.400	0.	—0.006	0.021
8.600	0.	—0.005	0.018
8.800	0.	—0.004	0.016
9.000	0.	—0.004	0.014
9.500	0.	—0.002	0.010
10.000	0.	—0.002	0.007
10.500	0.	—0.001	0.005
11.000	0.	—0.001	0.004
11.500	0.	—0.	0.003
12.000	0.	—0.	0.002
12.500	0.	—0.	0.001
13.000	0.	—0.	0.001
13.500	0.	—0.	0.001
λ	15.4	0.989	0.620
$\langle r^{-2} \rangle$	44.4	2.02	0.530
$\langle r^{-1} \rangle$	4.67	0.713	0.605
$\langle r \rangle$	0.326	1.98	2.20
$\langle r^2 \rangle$	0.143	4.71	6.14

C ^{1}S

r	1s	2s	2p
0.001	0.027	0.006	0.
0.002	0.055	0.012	0.
0.004	0.108	0.023	0.
0.006	0.160	0.035	0.
0.008	0.211	0.046	0.
0.010	0.261	0.056	0.001
0.015	0.379	0.082	0.001
0.020	0.491	0.106	0.002
0.025	0.596	0.128	0.003
0.030	0.694	0.149	0.005
0.035	0.786	0.169	0.006
0.040	0.872	0.187	0.008
0.050	1.027	0.220	0.013
0.060	1.162	0.248	0.018
0.070	1.278	0.271	0.023
0.080	1.377	0.290	0.030
0.090	1.461	0.306	0.036
0.100	1.531	0.318	0.044
0.120	1.636	0.333	0.060
0.140	1.699	0.337	0.077
0.160	1.731	0.332	0.096
0.180	1.736	0.320	0.115
0.200	1.720	0.301	0.135
0.220	1.689	0.277	0.155
0.240	1.645	0.249	0.176
0.260	1.591	0.217	0.197
0.280	1.531	0.183	0.218
0.300	1.466	0.147	0.239
0.350	1.294	0.050	0.290
0.400	1.120	—0.050	0.340
0.450	0.956	—0.148	0.386
0.500	0.807	—0.243	0.430
0.550	0.675	—0.332	0.470
0.600	0.561	—0.413	0.506
0.650	0.463	—0.487	0.538
0.700	0.381	—0.552	0.567
0.750	0.312	—0.609	0.592
0.800	0.254	—0.658	0.614
0.850	0.207	—0.700	0.633
0.900	0.168	—0.734	0.649
0.950	0.136	—0.762	0.661
1.000	0.110	—0.784	0.672
1.100	0.071	—0.811	0.685
1.200	0.046	—0.821	0.691
1.300	0.030	—0.816	0.690
1.400	0.020	—0.800	0.684
1.500	0.013	—0.776	0.674
1.600	0.008	—0.746	0.660
1.700	0.006	—0.712	0.644
1.800	0.004	—0.676	0.625
1.900	0.003	—0.637	0.606
2.000	0.002	—0.599	0.585
2.100	0.001	—0.561	0.564
2.200	0.001	—0.523	0.543
2.300	0.001	—0.486	0.521
2.400	0.001	—0.451	0.500
2.500	0.	—0.418	0.478
2.600	0.	—0.386	0.457
2.700	0.	—0.356	0.437
2.800	0.	—0.328	0.417
2.900	0.	—0.301	0.397
3.000	0.	—0.276	0.379
3.200	0.	—0.232	0.343
3.400	0.	—0.194	0.309
3.600	0.	—0.162	0.278
3.800	0.	—0.134	0.250
4.000	0.	—0.111	0.224
4.200	0.	—0.092	0.201
4.400	0.	—0.076	0.179
4.600	0.	—0.063	0.160
4.800	0.	—0.051	0.143
5.000	0.	—0.042	0.127
5.200	0.	—0.035	0.113
5.400	0.	—0.028	0.100
5.600	0.	—0.023	0.089
5.800	0.	—0.019	0.079
6.000	0.	—0.015	0.070
6.200	0.	—0.013	0.062
6.400	0.	—0.010	0.054
6.600	0.	—0.008	0.048
6.800	0.	—0.007	0.042
7.000	0.	—0.006	0.037
7.200	0.	—0.005	0.033
7.400	0.	—0.004	0.029
7.600	0.	—0.003	0.025
7.800	0.	—0.002	0.022
8.000	0.	—0.002	0.020
8.200	0.	—0.002	0.017
8.400	0.	—0.001	0.015

r	1s	2s	2p
8.600	0.	—0.001	0.013
8.800	0.	—0.001	0.012
9.000	0.	—0.001	0.010
9.500	0.	—0.	0.007
10.000	0.	—0.	0.005
10.500	0.	—0.	0.004
11.000	0.	—0.	0.003
11.500	0.	—0.	0.002
12.000	0.	—0.	0.001
12.500	0.	—0.	0.001
13.000	0.	—0.	0.001
λ	22.8	1.48	0.620
$\langle r^{-2} \rangle$	65.0	3.32	0.820
$\langle r^{-1} \rangle$	5.67	0.907	0.741
$\langle r \rangle$	0.268	1.57	1.87
$\langle r^2 \rangle$	0.097	2.98	4.59

C ^{3}P

r	1s	2s	2p
0.001	0.027	0.006	0.
0.002	0.055	0.012	0.
0.004	0.108	0.023	0.
0.006	0.160	0.034	0.
0.008	0.211	0.045	0.
0.010	0.261	0.056	0.001
0.015	0.379	0.081	0.001
0.020	0.491	0.104	0.002
0.025	0.596	0.127	0.004
0.030	0.694	0.147	0.005
0.035	0.786	0.167	0.007
0.040	0.872	0.185	0.009
0.050	1.027	0.217	0.013
0.060	1.162	0.244	0.018
0.070	1.278	0.268	0.024
0.080	1.377	0.287	0.031
0.090	1.461	0.302	0.038
0.100	1.531	0.314	0.046
0.120	1.635	0.329	0.062
0.140	1.699	0.333	0.080
0.160	1.730	0.328	0.100
0.180	1.735	0.316	0.120
0.200	1.720	0.297	0.141
0.220	1.688	0.274	0.162
0.240	1.644	0.246	0.184
0.260	1.591	0.215	0.206
0.280	1.531	0.181	0.228
0.300	1.466	0.146	0.250
0.350	1.294	0.051	0.304
0.400	1.120	—0.048	0.356
0.450	0.956	—0.145	0.405
0.500	0.807	—0.239	0.450
0.550	0.675	—0.326	0.493
0.600	0.561	—0.407	0.532
0.650	0.464	—0.479	0.566
0.700	0.381	—0.544	0.597
0.750	0.312	—0.601	0.624
0.800	0.255	—0.649	0.647
0.850	0.207	—0.691	0.667
0.900	0.168	—0.725	0.684
0.950	0.136	—0.753	0.698
1.000	0.110	—0.775	0.708
1.100	0.072	—0.804	0.722
1.200	0.047	—0.814	0.727
1.300	0.030	—0.811	0.724
1.400	0.020	—0.796	0.716
1.500	0.013	—0.774	0.702
1.600	0.009	—0.745	0.684
1.700	0.006	—0.713	0.664
1.800	0.004	—0.678	0.641
1.900	0.003	—0.641	0.617
2.000	0.002	—0.603	0.592
2.100	0.001	—0.566	0.566
2.200	0.001	—0.529	0.540
2.300	0.001	—0.493	0.513
2.400	0.001	—0.458	0.487
2.500	0.	—0.425	0.462
2.600	0.	—0.394	0.437
2.700	0.	—0.364	0.413
2.800	0.	—0.335	0.389
2.900	0.	—0.309	0.367
3.000	0.	—0.284	0.345
3.200	0.	—0.240	0.305
3.400	0.	—0.201	0.268
3.600	0.	—0.168	0.235
3.800	0.	—0.140	0.205
4.000	0.	—0.116	0.179
4.200	0.	—0.096	0.155
4.400	0.	—0.080	0.135
4.600	0.	—0.066	0.117
4.800	0.	—0.054	0.101
5.000	0.	—0.045	0.087
5.200	0.	—0.037	0.075
5.400	0.	—0.030	0.064
5.600	0.	—0.025	0.055
5.800	0.	—0.020	0.048
6.000	0.	—0.016	0.041
6.200	0.	—0.013	0.035
6.400	0.	—0.011	0.030
6.600	0.	—0.009	0.026
6.800	0.	—0.007	0.022
7.000	0.	—0.006	0.019
7.200	0.	—0.005	0.016
7.400	0.	—0.004	0.014
7.600	0.	—0.003	0.012
7.800	0.	—0.003	0.010
8.000	0.	—0.002	0.008
8.200	0.	—0.002	0.007
8.400	0.	—0.001	0.006
8.600	0.	—0.001	0.005
8.800	0.	—0.001	0.004
9.000	0.	—0.001	0.004
9.500	0.	—0.	0.002
10.000	0.	—0.	0.002
10.500	0.	—0.	0.001
11.000	0.	—0.	0.001
λ	22.6	1.41	0.867
$\langle r^{-2} \rangle$	65.0	3.24	0.892
$\langle r^{-1} \rangle$	5.66	0.897	0.784
$\langle r \rangle$	0.268	1.59	1.71
$\langle r^2 \rangle$	0.097	3.05	3.75

C ^{1}D

r	1s	2s	2p
0.001	0.027	0.006	0.
0.002	0.055	0.012	0.

r	$1s$	$2s$	$2p$
0.004	0.108	0.023	0
0.006	0.160	0.034	0
0.008	0.211	0.045	0
0.010	0.261	0.056	0.001
0.015	0.379	0.081	0.001
0.020	0.491	0.105	0.002
0.025	0.596	0.127	0.003
0.030	0.694	0.148	0.005
0.035	0.786	0.167	0.007
0.040	0.872	0.185	0.009
0.050	1.027	0.218	0.013
0.060	1.162	0.245	0.018
0.070	1.278	0.268	0.024
0.080	1.377	0.288	0.031
0.090	1.461	0.303	0.038
0.100	1.531	0.315	0.045
0.120	1.635	0.330	0.062
0.140	1.699	0.334	0.080
0.160	1.730	0.329	0.099
0.180	1.735	0.317	0.119
0.200	1.720	0.298	0.139
0.220	1.688	0.275	0.161
0.240	1.644	0.247	0.182
0.260	1.591	0.216	0.204
0.280	1.531	0.182	0.225
0.300	1.466	0.146	0.247
0.350	1.294	0.050	0.300
0.400	1.120	—0.048	0.352
0.450	0.956	—0.146	0.400
0.500	0.807	—0.240	0.445
0.550	0.675	—0.328	0.487
0.600	0.561	—0.408	0.525
0.650	0.463	—0.481	0.559
0.700	0.381	—0.546	0.589
0.750	0.312	—0.603	0.616
0.800	0.254	—0.652	0.639
0.850	0.207	—0.693	0.658
0.900	0.168	—0.728	0.675
0.950	0.136	—0.756	0.688
1.000	0.110	—0.777	0.699
1.100	0.072	—0.806	0.712
1.200	0.047	—0.816	0.718
1.300	0.030	—0.812	0.715
1.400	0.020	—0.797	0.708
1.500	0.013	—0.774	0.695
1.600	0.009	—0.746	0.678
1.700	0.006	—0.713	0.659
1.800	0.004	—0.677	0.638
1.900	0.003	—0.640	0.615
2.000	0.002	—0.602	0.591
2.100	0.001	—0.564	0.566
2.200	0.001	—0.527	0.542
2.300	0.001	—0.491	0.517
2.400	0.001	—0.456	0.492
2.500	0.	—0.423	0.468
2.600	0.	—0.392	0.444
2.700	0.	—0.362	0.420
2.800	0.	—0.333	0.398
2.900	0.	—0.307	0.376
3.000	0.	—0.282	0.355
3.200	0.	—0.238	0.316
3.400	0.	—0.199	0.279
3.600	0.	—0.166	0.247
3.800	0.	—0.139	0.217
4.000	0.	—0.115	0.191
4.200	0.	—0.095	0.167
4.400	0.	—0.079	0.146
4.600	0.	—0.065	0.128
4.800	0.	—0.053	0.111
5.000	0.	—0.044	0.097
5.200	0.	—0.036	0.084
5.400	0.	—0.030	0.073
5.600	0.	—0.024	0.063
5.800	0.	—0.020	0.055
6.000	0.	—0.016	0.047
6.200	0.	—0.013	0.041
6.400	0.	—0.011	0.035
6.600	0.	—0.009	0.030
6.800	0.	—0.007	0.026
7.000	0.	—0.006	0.023
7.200	0.	—0.005	0.019
7.400	0.	—0.004	0.017
7.600	0.	—0.003	0.014
7.800	0.	—0.003	0.012
8.000	0.	—0.002	0.011
8.200	0.	—0.002	0.009
8.400	0.	—0.001	0.008
8.600	0.	—0.001	0.007
8.800	0.	—0.001	0.006
9.000	0.	—0.001	0.005
9.500	0.	—0.	0.003
10.000	0.	—0.	0.002
10.500	0.	—0.	0.001
11.000	0.	—0.	0.001
11.500	0.	—0.	0.001
λ	22.7	1.43	0.797
$\langle r^{-3} \rangle$	65.0	3.26	0.873
$\langle r^{-1} \rangle$	5.66	0.899	0.772
$\langle r \rangle$	0.268	1.58	1.75
$\langle r^2 \rangle$	0.097	3.03	3.94

C^+ ^2P

r	$1s$	$2s$	$2p$
0.001	0.027	0.006	0.
0.002	0.055	0.013	0.
0.004	0.108	0.025	0.
0.006	0.160	0.037	0.
0.008	0.211	0.048	0.
0.010	0.261	0.060	0.001
0.015	0.380	0.087	0.002
0.020	0.491	0.112	0.003
0.025	0.596	0.136	0.004
0.030	0.694	0.158	0.006
0.035	0.786	0.179	0.008
0.040	0.872	0.199	0.010
0.050	1.028	0.233	0.015
0.060	1.162	0.263	0.022
0.070	1.279	0.287	0.028
0.080	1.378	0.308	0.036
0.090	1.462	0.324	0.045
0.100	1.532	0.337	0.054
0.120	1.636	0.353	0.073
0.140	1.700	0.357	0.094
0.160	1.731	0.352	0.117
0.180	1.736	0.338	0.140
0.200	1.721	0.318	0.165
0.220	1.689	0.293	0.190

r	$1s$	$2s$	$2p$
0.240	1.645	0.263	0.215
0.260	1.592	0.229	0.241
0.280	1.531	0.192	0.266
0.300	1.466	0.154	0.292
0.350	1.294	0.051	0.354
0.400	1.120	—0.056	0.414
0.450	0.956	—0.161	0.470
0.500	0.806	—0.262	0.522
0.550	0.674	—0.356	0.569
0.600	0.560	—0.442	0.612
0.650	0.462	—0.520	0.649
0.700	0.380	—0.588	0.682
0.750	0.310	—0.648	0.710
0.800	0.253	—0.699	0.734
0.850	0.206	—0.741	0.753
0.900	0.167	—0.776	0.768
0.950	0.135	—0.804	0.779
1.000	0.109	—0.824	0.787
1.100	0.071	—0.849	0.793
1.200	0.046	—0.854	0.789
1.300	0.029	—0.843	0.775
1.400	0.019	—0.821	0.755
1.500	0.012	—0.790	0.729
1.600	0.008	—0.753	0.700
1.700	0.005	—0.711	0.667
1.800	0.003	—0.668	0.633
1.900	0.002	—0.624	0.598
2.000	0.001	—0.579	0.562
2.100	0.001	—0.535	0.527
2.200	0.001	—0.493	0.492
2.300	0.001	—0.452	0.458
2.400	0.	—0.414	0.426
2.500	0.	—0.377	0.394
2.600	0.	—0.343	0.364
2.700	0.	—0.311	0.336
2.800	0.	—0.282	0.309
2.900	0.	—0.255	0.284
3.000	0.	—0.230	0.261
3.200	0.	—0.186	0.218
3.400	0.	—0.150	0.182
3.600	0.	—0.120	0.151
3.800	0.	—0.096	0.124
4.000	0.	—0.076	0.102
4.200	0.	—0.060	0.084
4.400	0.	—0.047	0.068
4.600	0.	—0.037	0.056
4.800	0.	—0.029	0.045
5.000	0.	—0.023	0.037
5.200	0.	—0.018	0.030
5.400	0.	—0.014	0.024
5.600	0.	—0.011	0.019
5.800	0.	—0.008	0.015
6.000	0.	—0.006	0.012
6.200	0.	—0.005	0.010
6.400	0.	—0.004	0.008
6.600	0.	—0.003	0.006
6.800	0.	—0.002	0.005
7.000	0.	—0.002	0.004
7.200	0.	—0.001	0.003
7.400	0.	—0.001	0.003
7.600	0.	—0.001	0.002
7.800	0.	—0.001	0.002
8.000	0.	—0.	0.001
8.200	0.	—0.	0.001
8.400	0.	—0.	0.001
8.600	0.	—0.	0.001
λ	23.8	2.31	1.81
$\langle r^{-2} \rangle$	65.0	3.70	1.10
$\langle r^{-1} \rangle$	5.67	0.961	0.885
$\langle r \rangle$	0.268	1.48	1.47
$\langle r^2 \rangle$	0.097	2.59	2.69

N ^{4}S

r	$1s$	$2s$	$2p$
0.001	0.035	0.008	0.
0.002	0.069	0.015	0.
0.004	0.137	0.030	0.
0.006	0.202	0.045	0.
0.008	0.266	0.059	0.001
0.010	0.328	0.072	0.001
0.015	0.474	0.104	0.002
0.020	0.611	0.134	0.004
0.025	0.738	0.162	0.006
0.030	0.855	0.188	0.008
0.035	0.963	0.211	0.011
0.040	1.064	0.233	0.014
0.050	1.241	0.270	0.021
0.060	1.390	0.301	0.029
0.070	1.513	0.325	0.038
0.080	1.615	0.344	0.048
0.090	1.697	0.358	0.059
0.100	1.761	0.367	0.071
0.120	1.845	0.372	0.096
0.140	1.880	0.364	0.123
0.160	1.878	0.345	0.151
0.180	1.848	0.317	0.180
0.200	1.797	0.282	0.210
0.220	1.731	0.242	0.240
0.240	1.654	0.197	0.270
0.260	1.570	0.149	0.299
0.280	1.482	0.099	0.329
0.300	1.393	0.048	0.357
0.350	1.172	—0.082	0.427
0.400	0.969	—0.209	0.490
0.450	0.789	—0.328	0.548
0.500	0.636	—0.436	0.599
0.550	0.508	—0.531	0.644
0.600	0.403	—0.614	0.682
0.650	0.319	—0.684	0.715
0.700	0.250	—0.742	0.741
0.750	0.196	—0.789	0.762
0.800	0.153	—0.826	0.778
0.850	0.120	—0.853	0.790
0.900	0.093	—0.872	0.797
0.950	0.072	—0.884	0.801
1.000	0.056	—0.889	0.801
1.100	0.034	—0.884	0.794
1.200	0.021	—0.862	0.778
1.300	0.013	—0.829	0.755
1.400	0.008	—0.788	0.727
1.500	0.005	—0.742	0.696
1.600	0.003	—0.694	0.663
1.700	0.002	—0.646	0.629
1.800	0.002	—0.597	0.594
1.900	0.001	—0.550	0.559
2.000	0.001	—0.505	0.525
2.100	0.001	—0.462	0.492
2.200	0.	—0.421	0.459
2.300	0.	—0.383	0.428
2.400	0.	—0.348	0.399
2.500	0.	—0.316	0.371
2.600	0.	—0.286	0.344
2.700	0.	—0.258	0.319
2.800	0.	—0.233	0.295
2.900	0.	—0.210	0.273
3.000	0.	—0.189	0.252
3.200	0.	—0.152	0.215
3.400	0.	—0.122	0.182
3.600	0.	—0.098	0.154

r	$1s$	$2s$	$2p$
3.800	0.	—0.078	0.130
4.000	0.	—0.063	0.110
4.200	0.	—0.050	0.092
4.400	0.	—0.039	0.077
4.600	0.	—0.031	0.065
4.800	0.	—0.025	0.054
5.000	0.	—0.020	0.045
5.200	0.	—0.015	0.038
5.400	0.	—0.012	0.031
5.600	0.	—0.010	0.026
5.800	0.	—0.008	0.022
6.000	0.	—0.006	0.018
6.200	0.	—0.005	0.015
6.400	0.	—0.004	0.012
6.600	0.	—0.003	0.010
6.800	0.	—0.002	0.009
7.000	0.	—0.002	0.007
7.200	0.	—0.001	0.006
7.400	0.	—0.001	0.005
7.600	0.	—0.001	0.004
7.800	0.	—0.001	0.003
8.000	0.	—0.001	0.003
8.200	0.	—0.	0.002
8.400	0.	—0.	0.002
8.600	0.	—0.	0.002
8.800	0.	—0.	0.001
9.000	0.	—0.	0.001
9.500	0.	—0.	0.001
λ	31.3	1.89	1.14
$\langle r^{-2} \rangle$	89.4	4.73	1.34
$\langle r^{-1} \rangle$	6.65	1.08	0.958
$\langle r \rangle$	0.228	1.33	1.41
$\langle r^2 \rangle$	0.070	2.15	2.55

N ^{2}P

r	$1s$	$2s$	$2p$
0.001	0.035	0.008	0.
0.002	0.069	0.015	0.
0.004	0.137	0.030	0.
0.006	0.202	0.045	0.
0.008	0.266	0.059	0.001
0.010	0.328	0.073	0.001
0.015	0.475	0.105	0.002
0.020	0.611	0.136	0.004
0.025	0.738	0.163	0.006
0.030	0.855	0.189	0.008
0.035	0.964	0.213	0.011
0.040	1.064	0.235	0.014
0.050	1.241	0.272	0.020
0.060	1.390	0.303	0.028
0.070	1.514	0.328	0.038
0.080	1.615	0.347	0.047
0.090	1.697	0.360	0.058
0.100	1.761	0.370	0.070
0.120	1.845	0.375	0.094
0.140	1.881	0.367	0.120
0.160	1.879	0.348	0.148
0.180	1.848	0.320	0.176
0.200	1.797	0.284	0.205
0.220	1.731	0.243	0.235
0.240	1.654	0.198	0.264
0.260	1.570	0.150	0.293
0.280	1.483	0.099	0.322
0.300	1.393	0.048	0.350
0.350	1.172	—0.084	0.417
0.400	0.968	—0.212	0.479
0.450	0.789	—0.331	0.535
0.500	0.636	—0.440	0.585
0.550	0.508	—0.536	0.628
0.600	0.403	—0.620	0.665
0.650	0.318	—0.690	0.696
0.700	0.250	—0.749	0.722
0.750	0.196	—0.796	0.742
0.800	0.153	—0.832	0.758
0.850	0.119	—0.859	0.769
0.900	0.093	—0.878	0.777
0.950	0.072	—0.889	0.781
1.000	0.056	—0.894	0.781
1.100	0.034	—0.887	0.776
1.200	0.021	—0.864	0.761
1.300	0.013	—0.830	0.741
1.400	0.008	—0.788	0.716
1.500	0.005	—0.741	0.689
1.600	0.003	—0.692	0.659
1.700	0.002	—0.643	0.628
1.800	0.002	—0.593	0.596
1.900	0.001	—0.546	0.565
2.000	0.001	—0.500	0.534
2.100	0.001	—0.457	0.503
2.200	0.	—0.416	0.473
2.300	0.	—0.378	0.445
2.400	0.	—0.343	0.417
2.500	0.	—0.310	0.391
2.600	0.	—0.280	0.366
2.700	0.	—0.253	0.342
2.800	0.	—0.228	0.319
2.900	0.	—0.205	0.298
3.000	0.	—0.184	0.278
3.200	0.	—0.148	0.241
3.400	0.	—0.119	0.208
3.600	0.	—0.095	0.180
3.800	0.	—0.076	0.155
4.000	0.	—0.060	0.133
4.200	0.	—0.048	0.114
4.400	0.	—0.038	0.097
4.600	0.	—0.030	0.083
4.800	0.	—0.024	0.071
5.000	0.	—0.019	0.061
5.200	0.	—0.015	0.052
5.400	0.	—0.012	0.044
5.600	0.	—0.009	0.037
5.800	0.	—0.007	0.032
6.000	0.	—0.006	0.027
6.200	0.	—0.004	0.023
6.400	0.	—0.003	0.019
6.600	0.	—0.003	0.016
6.800	0.	—0.002	0.014
7.000	0.	—0.002	0.012
7.200	0.	—0.001	0.010
7.400	0.	—0.001	0.008
7.600	0.	—0.001	0.007
7.800	0.	—0.001	0.006
8.000	0.	—0.	0.005
8.200	0.	—0.	0.004
8.400	0.	—0.	0.004
8.600	0.	—0.	0.003
8.800	0.	—0.	0.002
9.000	0.	—0.	0.002
9.500	0.	—0.	0.001
10.000	0.	—0.	0.001
10.500	0.	—0.	0.001

r	$1s$	$2s$	$2p$
λ	31.4	1.95	0.943
$\langle r^{-2}\rangle$	89.4	4.80	1.28
$\langle r^{-1}\rangle$	6.65	1.09	0.932
$\langle r\rangle$	0.228	1.32	1.47
$\langle r^2\rangle$	0.070	2.12	2.82

N ^{2}D

r	$1s$	$2s$	$2p$
0.001	0.035	0.008	0.
0.002	0.069	0.015	0.
0.004	0.137	0.030	0.
0.006	0.202	0.045	0.
0.008	0.266	0.059	0.001
0.010	0.328	0.073	0.001
0.015	0.474	0.105	0.002
0.020	0.611	0.135	0.004
0.025	0.738	0.163	0.006
0.030	0.855	0.189	0.008
0.035	0.963	0.212	0.011
0.040	1.064	0.234	0.014
0.050	1.241	0.271	0.021
0.060	1.390	0.302	0.029
0.070	1.514	0.327	0.038
0.080	1.615	0.346	0.048
0.090	1.697	0.359	0.059
0.100	1.761	0.368	0.070
0.120	1.845	0.374	0.095
0.140	1.880	0.366	0.121
0.160	1.879	0.347	0.149
0.180	1.848	0.319	0.178
0.200	1.797	0.284	0.207
0.220	1.731	0.243	0.237
0.240	1.654	0.198	0.266
0.260	1.570	0.150	0.296
0.280	1.483	0.099	0.324
0.300	1.393	0.048	0.353
0.350	1.172	—0.083	0.421
0.400	0.968	—0.211	0.484
0.450	0.789	—0.330	0.540
0.500	0.636	—0.438	0.591
0.550	0.508	—0.534	0.635
0.600	0.403	—0.617	0.672
0.650	0.318	—0.688	0.704
0.700	0.250	—0.746	0.730
0.750	0.196	—0.793	0.750
0.800	0.153	—0.830	0.766
0.850	0.119	—0.857	0.777
0.900	0.093	—0.875	0.785
0.950	0.072	—0.887	0.789
1.000	0.056	—0.892	0.789
1.100	0.034	—0.886	0.783
1.200	0.021	—0.863	0.768
1.300	0.013	—0.829	0.747
1.400	0.008	—0.788	0.721
1.500	0.005	—0.742	0.692
1.600	0.003	—0.693	0.661
1.700	0.002	—0.644	0.629
1.800	0.002	—0.595	0.596
1.900	0.001	—0.548	0.563
2.000	0.001	—0.502	0.531
2.100	0.001	—0.459	0.499
2.200	0.	—0.418	0.468
2.300	0.	—0.380	0.439
2.400	0.	—0.345	0.410
2.500	0.	—0.312	0.383
2.600	0.	—0.282	0.357
2.700	0.	—0.255	0.333
2.800	0.	—0.230	0.310
2.900	0.	—0.207	0.288
3.000	0.	—0.186	0.268
3.200	0.	—0.150	0.230
3.400	0.	—0.120	0.198
3.600	0.	—0.096	0.169
3.800	0.	—0.077	0.145
4.000	0.	—0.061	0.123
4.200	0.	—0.049	0.105
4.400	0.	—0.039	0.089
4.600	0.	—0.031	0.075
4.800	0.	—0.024	0.064
5.000	0.	—0.019	0.054
5.200	0.	—0.015	0.046
5.400	0.	—0.012	0.039
5.600	0.	—0.009	0.032
5.800	0.	—0.007	0.027
6.000	0.	—0.006	0.023
6.200	0.	—0.005	0.019
6.400	0.	—0.004	0.016
6.600	0.	—0.003	0.014
6.800	0.	—0.002	0.011
7.000	0.	—0.002	0.010
7.200	0.	—0.001	0.008
7.400	0.	—0.001	0.007
7.600	0.	—0.001	0.006
7.800	0.	—0.001	0.005
8.000	0.	—0.	0.004
8.200	0.	—0.	0.003
8.400	0.	—0.	0.003
8.600	0.	—0.	0.002
8.800	0.	—0.	0.002
9.000	0.	—0.	0.002
9.500	0.	—0.	0.001
10.000	0.	—0.	0.001
λ	31.3	1.93	1.02
$\langle r^{-2}\rangle$	89.4	4.77	1.30
$\langle r^{-1}\rangle$	6.65	1.08	0.942
$\langle r\rangle$	0.228	1.33	1.45
$\langle r^2\rangle$	0.070	2.13	2.71

N$^+$ ^{1}S

r	$1s$	$2s$	$2p$
0.001	0.035	0.008	0.
0.002	0.069	0.016	0.
0.004	0.137	0.032	0.
0.006	0.202	0.047	0.
0.008	0.266	0.062	0.001
0.010	0.328	0.077	0.001
0.015	0.475	0.111	0.002
0.020	0.611	0.143	0.004
0.025	0.738	0.173	0.006
0.030	0.855	0.200	0.009
0.035	0.964	0.225	0.012
0.040	1.064	0.248	0.015
0.050	1.241	0.288	0.023
0.060	1.390	0.320	0.032

r	$1s$	$2s$	$2p$
0.070	1.514	0.346	0.042
0.080	1.616	0.366	0.053
0.090	1.698	0.381	0.065
0.100	1.762	0.390	0.078
0.120	1.846	0.396	0.105
0.140	1.881	0.388	0.135
0.160	1.879	0.367	0.166
0.180	1.849	0.337	0.198
0.200	1.798	0.299	0.230
0.220	1.731	0.256	0.263
0.240	1.654	0.207	0.295
0.260	1.571	0.156	0.327
0.280	1.483	0.102	0.359
0.300	1.393	0.047	0.390
0.350	1.172	—0.092	0.465
0.400	0.968	—0.228	0.532
0.450	0.788	—0.355	0.593
0.500	0.635	—0.470	0.646
0.550	0.507	—0.571	0.692
0.600	0.402	—0.658	0.731
0.650	0.317	—0.731	0.762
0.700	0.249	—0.791	0.787
0.750	0.195	—0.839	0.806
0.800	0.152	—0.875	0.820
0.850	0.118	—0.901	0.828
0.900	0.092	—0.917	0.833
0.950	0.071	—0.926	0.833
1.000	0.055	—0.928	0.830
1.100	0.033	—0.914	0.816
1.200	0.020	—0.883	0.792
1.300	0.012	—0.840	0.762
1.400	0.007	—0.789	0.728
1.500	0.005	—0.734	0.691
1.600	0.003	—0.678	0.652
1.700	0.002	—0.621	0.613
1.800	0.001	—0.566	0.573
1.900	0.001	—0.513	0.535
2.000	0.001	—0.463	0.497
2.100	0.	—0.416	0.461
2.200	0.	—0.373	0.426
2.300	0.	—0.333	0.393
2.400	0.	—0.297	0.362
2.500	0.	—0.264	0.333
2.600	0.	—0.234	0.305
2.700	0.	—0.207	0.279
2.800	0.	—0.183	0.255
2.900	0.	—0.161	0.233
3.000	0.	—0.142	0.213
3.200	0.	—0.109	0.176
3.400	0.	—0.084	0.145
3.600	0.	—0.064	0.119
3.800	0.	—0.049	0.098
4.000	0.	—0.037	0.080
4.200	0.	—0.028	0.065
4.400	0.	—0.021	0.052
4.600	0.	—0.016	0.042
4.800	0.	—0.012	0.034
5.000	0.	—0.009	0.028
5.200	0.	—0.007	0.022
5.400	0.	—0.005	0.018
5.600	0.	—0.004	0.014
5.800	0.	—0.003	0.011
6.000	0.	—0.002	0.009
6.200	0.	—0.001	0.007
6.400	0.	—0.001	0.006
6.600	0.	—0.001	0.005
6.800	0.	—0.001	0.004
7.000	0.	—0.	0.003

r	$1s$	$2s$	$2p$
7.200	0.	—0.	0.002
7.400	0.	—0.	0.002
7.600	0.	—0.	0.001
7.800	0.	—0.	0.001
8.000	0.	—0.	0.001
8.200	0.	—0.	0.001
8.400	0.	—0.	0.001
λ	32.7	2.98	1.85
$\langle r^{-2} \rangle$	89.5	5.32	1.50
$\langle r^{-1} \rangle$	6.66	1.15	1.02
$\langle r \rangle$	0.228	1.25	1.31
$\langle r^2 \rangle$	0.070	1.85	2.17

N^+ ^3P

r	$1s$	$2s$	$2p$
0.001	0.035	0.008	0.
0.002	0.069	0.016	0.
0.004	0.137	0.032	0.
0.006	0.202	0.047	0.
0.008	0.266	0.062	0.001
0.010	0.328	0.076	0.001
0.015	0.475	0.111	0.002
0.020	0.611	0.142	0.004
0.025	0.738	0.172	0.006
0.030	0.855	0.199	0.009
0.035	0.964	0.224	0.012
0.040	1.064	0.246	0.016
0.050	1.241	0.286	0.024
0.060	1.390	0.318	0.033
0.070	1.514	0.344	0.043
0.080	1.616	0.364	0.055
0.090	1.698	0.378	0.067
0.100	1.762	0.388	0.080
0.120	1.846	0.394	0.108
0.140	1.881	0.385	0.139
0.160	1.879	0.365	0.170
0.180	1.849	0.335	0.203
0.200	1.798	0.298	0.237
0.220	1.731	0.254	0.270
0.240	1.654	0.207	0.304
0.260	1.570	0.156	0.337
0.280	1.483	0.102	0.370
0.300	1.393	0.048	0.402
0.350	1.172	—0.091	0.479
0.400	0.968	—0.226	0.550
0.450	0.788	—0.352	0.613
0.500	0.635	—0.466	0.669
0.550	0.507	—0.566	0.716
0.600	0.402	—0.653	0.756
0.650	0.317	—0.726	0.789
0.700	0.249	—0.786	0.815
0.750	0.195	—0.834	0.835
0.800	0.152	—0.870	0.848
0.850	0.118	—0.896	0.857
0.900	0.092	—0.913	0.860
0.950	0.071	—0.923	0.860
1.000	0.055	—0.925	0.855
1.100	0.033	—0.912	0.837
1.200	0.020	—0.882	0.809
1.300	0.012	—0.840	0.774

r	$1s$	$2s$	$2p$
1.400	0.007	—0.791	0.734
1.500	0.005	—0.736	0.691
1.600	0.003	—0.680	0.647
1.700	0.002	—0.624	0.602
1.800	0.001	—0.570	0.558
1.900	0.001	—0.517	0.514
2.000	0.001	—0.467	0.473
2.100	0.	—0.420	0.433
2.200	0.	—0.377	0.396
2.300	0.	—0.337	0.361
2.400	0.	—0.301	0.328
2.500	0.	—0.267	0.297
2.600	0.	—0.237	0.269
2.700	0.	—0.210	0.243
2.800	0.	—0.186	0.219
2.900	0.	—0.164	0.198
3.000	0.	—0.144	0.178
3.200	0.	—0.111	0.143
3.400	0.	—0.086	0.115
3.600	0.	—0.066	0.091
3.800	0.	—0.050	0.073
4.000	0.	—0.038	0.058
4.200	0.	—0.029	0.045
4.400	0.	—0.022	0.036
4.600	0.	—0.016	0.028
4.800	0.	—0.012	0.022
5.000	0.	—0.009	0.017
5.200	0.	—0.007	0.013
5.400	0.	—0.005	0.010
5.600	0.	—0.004	0.008
5.800	0.	—0.003	0.006
6.000	0.	—0.002	0.005
6.200	0.	—0.002	0.004
6.400	0.	—0.001	0.003
6.600	0.	—0.001	0.002
6.800	0.	—0.001	0.002
7.000	0.	—0.	0.001
7.200	0.	—0.	0.001
7.400	0.	—0.	0.001
7.600	0.	—0.	0.001
λ	32.6	2.93	2.22
$\langle r^{-2}\rangle$	89.5	5.26	1.58
$\langle r^{-1}\rangle$	6.66	1.14	1.06
$\langle r\rangle$	0.228	1.25	1.24
$\langle r^{2}\rangle$	0.070	1.87	1.93

N^+ ^1D

r	$1s$	$2s$	$2p$
0.001	0.035	0.008	0.
0.002	0.069	0.016	0.
0.004	0.137	0.032	0.
0.006	0.202	0.047	0.
0.008	0.266	0.062	0.001
0.010	0.328	0.077	0.001
0.015	0.475	0.111	0.002
0.020	0.611	0.143	0.004
0.025	0.738	0.172	0.006
0.030	0.855	0.199	0.009
0.035	0.964	0.224	0.012
0.040	1.064	0.247	0.015
0.050	1.241	0.286	0.023
0.060	1.390	0.319	0.033
0.070	1.514	0.345	0.043
0.080	1.616	0.365	0.054
0.090	1.698	0.379	0.066
0.100	1.762	0.389	0.079
0.120	1.846	0.395	0.107
0.140	1.881	0.386	0.138
0.160	1.879	0.366	0.169
0.180	1.849	0.336	0.202
0.200	1.798	0.298	0.235
0.220	1.731	0.255	0.268
0.240	1.654	0.207	0.301
0.260	1.570	0.156	0.335
0.280	1.483	0.102	0.367
0.300	1.393	0.047	0.399
0.350	1.172	—0.091	0.475
0.400	0.968	—0.226	0.545
0.450	0.788	—0.353	0.608
0.500	0.635	—0.467	0.663
0.550	0.507	—0.568	0.710
0.600	0.402	—0.654	0.750
0.650	0.317	—0.728	0.782
0.700	0.249	—0.787	0.808
0.750	0.195	—0.835	0.827
0.800	0.152	—0.871	0.841
0.850	0.118	—0.897	0.849
0.900	0.092	—0.914	0.853
0.950	0.071	—0.924	0.853
1.000	0.055	—0.926	0.849
1.100	0.033	—0.913	0.832
1.200	0.020	—0.882	0.805
1.300	0.012	—0.840	0.771
1.400	0.007	—0.790	0.733
1.500	0.005	—0.736	0.692
1.600	0.003	—0.680	0.649
1.700	0.002	—0.624	0.605
1.800	0.001	—0.569	0.562
1.900	0.001	—0.516	0.520
2.000	0.001	—0.466	0.480
2.100	0.	—0.419	0.441
2.200	0.	—0.376	0.404
2.300	0.	—0.336	0.370
2.400	0.	—0.300	0.337
2.500	0.	—0.266	0.307
2.600	0.	—0.236	0.279
2.700	0.	—0.209	0.253
2.800	0.	—0.185	0.229
2.900	0.	—0.163	0.207
3.000	0.	—0.144	0.187
3.200	0.	—0.111	0.151
3.400	0.	—0.085	0.122
3.600	0.	—0.065	0.098
3.800	0.	—0.050	0.079
4.000	0.	—0.038	0.063
4.200	0.	—0.028	0.050
4.400	0.	—0.021	0.040
4.600	0.	—0.016	0.031
4.800	0.	—0.012	0.025
5.000	0.	—0.009	0.020
5.200	0.	—0.007	0.015
5.400	0.	—0.005	0.012
5.600	0.	—0.004	0.009
5.800	0.	—0.003	0.007
6.000	0.	—0.002	0.006
6.200	0.	—0.002	0.005
6.400	0.	—0.001	0.004
6.600	0.	—0.001	0.003
6.800	0.	—0.001	0.002
7.000	0.	—0.	0.002
7.200	0.	—0.	0.001
7.400	0.	—0.	0.001
7.600	0.	—0.	0.001
7.800	0.	—0.	0.001

r	$1s$	$2s$	$2p$
λ	32.6	2.94	2.12
$\langle r^{-2}\rangle$	89.5	5.28	1.56
$\langle r^{-1}\rangle$	6.66	1.14	1.05
$\langle r\rangle$	0.228	1.25	1.26
$\langle r^{2}\rangle$	0.070	1.87	1.99

N^{++} ^1P

r	$1s$	$2s$	$2p$
0.001	0.035	0.009	0.
0.002	0.069	0.017	0.
0.004	0.137	0.034	0.
0.006	0.202	0.050	0.
0.008	0.266	0.066	0.001
0.010	0.328	0.081	0.001
0.015	0.475	0.118	0.003
0.020	0.612	0.151	0.005
0.025	0.739	0.183	0.007
0.030	0.856	0.211	0.010
0.035	0.965	0.238	0.014
0.040	1.065	0.262	0.018
0.050	1.242	0.304	0.027
0.060	1.391	0.339	0.037
0.070	1.515	0.366	0.049
0.080	1.617	0.387	0.061
0.090	1.699	0.402	0.075
0.100	1.763	0.412	0.090
0.120	1.847	0.419	0.122
0.140	1.883	0.409	0.156
0.160	1.880	0.387	0.191
0.180	1.850	0.355	0.228
0.200	1.799	0.314	0.265
0.220	1.732	0.268	0.303
0.240	1.655	0.216	0.341
0.260	1.571	0.162	0.378
0.280	1.483	0.104	0.414
0.300	1.393	0.046	0.450
0.350	1.172	—0.103	0.535
0.400	0.967	—0.247	0.612
0.450	0.787	—0.381	0.680
0.500	0.633	—0.503	0.739
0.550	0.505	—0.609	0.789
0.600	0.400	—0.700	0.829
0.650	0.315	—0.775	0.861
0.700	0.247	—0.836	0.885
0.750	0.193	—0.884	0.901
0.800	0.150	—0.919	0.911
0.850	0.116	—0.943	0.914
0.900	0.090	—0.957	0.912
0.950	0.070	—0.962	0.905
1.000	0.054	—0.960	0.894
1.100	0.032	—0.937	0.862
1.200	0.019	—0.896	0.820
1.300	0.011	—0.842	0.771
1.400	0.007	—0.782	0.717
1.500	0.004	—0.718	0.663
1.600	0.002	—0.653	0.608
1.700	0.002	—0.590	0.554
1.800	0.001	—0.529	0.502
1.900	0.001	—0.472	0.453
2.000	0.	—0.418	0.407
2.100	0.	—0.370	0.364
2.200	0.	—0.325	0.324
2.300	0.	—0.285	0.288
2.400	0.	—0.249	0.255
2.500	0.	—0.217	0.226
2.600	0.	—0.188	0.199
2.700	0.	—0.163	0.175
2.800	0.	—0.141	0.153
2.900	0.	—0.121	0.134
3.000	0.	—0.105	0.117
3.200	0.	—0.077	0.089
3.400	0.	—0.056	0.068
3.600	0.	—0.041	0.051
3.800	0.	—0.030	0.038
4.000	0.	—0.021	0.028
4.200	0.	—0.015	0.021
4.400	0.	—0.011	0.016
4.600	0.	—0.008	0.011
4.800	0.	—0.006	0.008
5.000	0.	—0.004	0.006
5.200	0.	—0.003	0.005
5.400	0.	—0.002	0.003
5.600	0.	—0.001	0.002
5.800	0.	—0.001	0.002
6.000	0.	—0.001	0.001
6.200	0.	—0.	0.001
6.400	0.	—0.	0.001
λ	34.2	4.14	3.51
$\langle r^{-2}\rangle$	89.6	5.90	1.84
$\langle r^{-1}\rangle$	6.66	1.21	1.15
$\langle r\rangle$	0.228	1.18	1.12
$\langle r^{2}\rangle$	0.070	1.64	1.54

O ^1S

r	$1s$	$2s$	$2p$
0.001	0.043	0.010	0.
0.002	0.085	0.019	0.
0.004	0.167	0.038	0.
0.006	0.247	0.056	0.001
0.008	0.324	0.074	0.001
0.010	0.398	0.091	0.001
0.015	0.574	0.131	0.003
0.020	0.736	0.167	0.005
0.025	0.884	0.201	0.008
0.030	1.019	0.231	0.012
0.035	1.143	0.259	0.015
0.040	1.256	0.284	0.020
0.050	1.450	0.325	0.030
0.060	1.609	0.358	0.041
0.070	1.735	0.382	0.054
0.080	1.833	0.399	0.068
0.090	1.908	0.409	0.083
0.100	1.961	0.413	0.099
0.120	2.015	0.405	0.133
0.140	2.014	0.381	0.168
0.160	1.974	0.344	0.205
0.180	1.905	0.297	0.243
0.200	1.817	0.242	0.280
0.220	1.717	0.182	0.318
0.240	1.610	0.119	0.355
0.260	1.500	0.053	0.390
0.280	1.389	—0.013	0.425
0.300	1.281	—0.080	0.459

r	$1s$	$2s$	$2p$
0.350	1.028	—0.242	0.537
0.400	0.811	—0.391	0.606
0.450	0.630	—0.523	0.664
0.500	0.485	—0.636	0.713
0.550	0.371	—0.730	0.753
0.600	0.281	—0.806	0.785
0.650	0.213	—0.864	0.808
0.700	0.160	—0.908	0.825
0.750	0.120	—0.938	0.836
0.800	0.090	—0.956	0.841
0.850	0.068	—0.964	0.842
0.900	0.051	—0.964	0.839
0.950	0.038	—0.956	0.833
1.000	0.029	—0.943	0.823
1.100	0.016	—0.903	0.798
1.200	0.010	—0.851	0.767
1.300	0.006	—0.792	0.731
1.400	0.004	—0.730	0.693
1.500	0.002	—0.668	0.655
1.600	0.002	—0.607	0.615
1.700	0.001	—0.549	0.577
1.800	0.001	—0.494	0.539
1.900	0.001	—0.443	0.503
2.000	0.	—0.397	0.469
2.100	0.	—0.354	0.436
2.200	0.	—0.315	0.404
2.300	0.	—0.280	0.375
2.400	0.	—0.248	0.347
2.500	0.	—0.219	0.321
2.600	0.	—0.194	0.297
2.700	0.	—0.171	0.274
2.800	0.	—0.151	0.253
2.900	0.	—0.133	0.233
3.000	0.	—0.117	0.215
3.200	0.	—0.090	0.182
3.400	0.	—0.070	0.154
3.600	0.	—0.053	0.130
3.800	0.	—0.041	0.109
4.000	0.	—0.031	0.092
4.200	0.	—0.024	0.077
4.400	0.	—0.018	0.065
4.600	0.	—0.014	0.054
4.800	0.	—0.011	0.045
5.000	0.	—0.008	0.038
5.200	0.	—0.006	0.032
5.400	0.	—0.005	0.026
5.600	0.	—0.004	0.022
5.800	0.	—0.003	0.018
6.000	0.	—0.002	0.015
6.200	0.	—0.002	0.013
6.400	0.	—0.001	0.011
6.600	0.	—0.001	0.009
6.800	0.	—0.001	0.007
7.000	0.	—0.001	0.006
7.200	0.	—0.	0.005
7.400	0.	—0.	0.004
7.600	0.	—0.	0.003
7.800	0.	—0.	0.003
8.000	0.	—0.	0.002
8.200	0.	—0.	0.002
8.400	0.	—0.	0.002
8.600	0.	—0.	0.001
8.800	0.	—0.	0.001
9.000	0.	—0.	0.001
9.500	0.	—0.	0.001
λ	41.5	2.55	1.11
$\langle r^{-2} \rangle$	118.	6.63	1.77
$\langle r^{-1} \rangle$	7.64	1.27	1.09
$\langle r \rangle$	0.199	1.14	1.27
$\langle r^2 \rangle$	0.053	1.56	2.11

O ^{3}P

r	$1s$	$2s$	$2p$
0.001	0.043	0.010	0.
0.002	0.085	0.019	0.
0.004	0.167	0.038	0.
0.006	0.247	0.056	0.001
0.008	0.324	0.073	0.001
0.010	0.398	0.090	0.001
0.015	0.574	0.130	0.003
0.020	0.736	0.166	0.005
0.025	0.884	0.200	0.008
0.030	1.019	0.230	0.012
0.035	1.143	0.257	0.016
0.040	1.256	0.282	0.020
0.050	1.450	0.323	0.030
0.060	1.608	0.356	0.042
0.070	1.735	0.380	0.055
0.080	1.833	0.396	0.069
0.090	1.907	0.406	0.084
0.100	1.961	0.410	0.100
0.120	2.015	0.403	0.134
0.140	2.014	0.379	0.170
0.160	1.974	0.342	0.208
0.180	1.905	0.295	0.246
0.200	1.817	0.241	0.284
0.220	1.717	0.182	0.322
0.240	1.610	0.119	0.359
0.260	1.500	0.053	0.395
0.280	1.389	—0.013	0.431
0.300	1.281	—0.079	0.465
0.350	1.029	—0.240	0.544
0.400	0.811	—0.388	0.614
0.450	0.631	—0.519	0.674
0.500	0.486	—0.632	0.724
0.550	0.371	—0.725	0.765
0.600	0.282	—0.801	0.797
0.650	0.213	—0.860	0.821
0.700	0.160	—0.903	0.838
0.750	0.120	—0.933	0.849
0.800	0.090	—0.952	0.855
0.850	0.068	—0.961	0.855
0.900	0.051	—0.961	0.852
0.950	0.038	—0.954	0.845
1.000	0.029	—0.941	0.835
1.100	0.016	—0.902	0.808
1.200	0.010	—0.851	0.775
1.300	0.006	—0.793	0.737
1.400	0.004	—0.732	0.697
1.500	0.002	—0.670	0.655
1.600	0.002	—0.610	0.614
1.700	0.001	—0.553	0.573
1.800	0.001	—0.498	0.533
1.900	0.001	—0.448	0.495
2.000	0.	—0.401	0.458
2.100	0.	—0.358	0.424
2.200	0.	—0.319	0.391
2.300	0.	—0.284	0.361
2.400	0.	—0.252	0.332
2.500	0.	—0.223	0.305
2.600	0.	—0.197	0.280
2.700	0.	—0.174	0.257
2.800	0.	—0.154	0.236
2.900	0.	—0.136	0.216
3.000	0.	—0.120	0.198
3.200	0.	—0.092	0.165
3.400	0.	—0.071	0.138
3.600	0.	—0.055	0.114
3.800	0.	—0.042	0.095
4.000	0.	—0.032	0.079
4.200	0.	—0.025	0.065

r	$1s$	$2s$	$2p$
4.400	0.	—0.019	0.054
4.600	0.	—0.014	0.044
4.800	0.	—0.011	0.037
5.000	0.	—0.008	0.030
5.200	0.	—0.006	0.025
5.400	0.	—0.005	0.020
5.600	0.	—0.004	0.017
5.800	0.	—0.003	0.014
6.000	0.	—0.002	0.011
6.200	0.	—0.002	0.009
6.400	0.	—0.001	0.008
6.600	0.	—0.001	0.006
6.800	0.	—0.001	0.005
7.000	0.	—0.001	0.004
7.200	0.	—0.	0.003
7.400	0.	—0.	0.003
7.600	0.	—0.	0.002
7.800	0.	—0.	0.002
8.000	0.	—0.	0.001
8.200	0.	—0.	0.001
8.400	0.	—0.	0.001
8.600	0.	—0.	0.001
8.800	0.	—0.	0.001
9.000	0.	—0.	0.001
λ	41.3	2.49	1.26
$\langle r^{-2} \rangle$	118.	6.56	1.82
$\langle r^{-1} \rangle$	7.64	1.27	1.11
$\langle r \rangle$	0.199	1.14	1.23
$\langle r^2 \rangle$	0.053	1.58	1.97

O ^1D

r	$1s$	$2s$	$2p$
0.001	0.043	0.010	0.
0.002	0.085	0.019	0.
0.004	0.167	0.038	0.
0.006	0.247	0.056	0.001
0.008	0.324	0.074	0.001
0.010	0.398	0.091	0.001
0.015	0.574	0.130	0.003
0.020	0.736	0.167	0.005
0.025	0.884	0.200	0.008
0.030	1.019	0.230	0.012
0.035	1.143	0.258	0.016
0.040	1.256	0.283	0.020
0.050	1.450	0.324	0.030
0.060	1.609	0.357	0.042
0.070	1.735	0.381	0.054
0.080	1.833	0.397	0.069
0.090	1.908	0.407	0.084
0.100	1.961	0.411	0.100
0.120	2.015	0.404	0.134
0.140	2.014	0.380	0.169
0.160	1.974	0.343	0.207
0.180	1.905	0.296	0.244
0.200	1.817	0.242	0.282
0.220	1.717	0.182	0.320
0.240	1.610	0.119	0.357
0.260	1.500	0.053	0.393
0.280	1.389	—0.013	0.429
0.300	1.281	—0.079	0.462
0.350	1.029	—0.241	0.541
0.400	0.811	—0.389	0.611
0.450	0.631	—0.521	0.670
0.500	0.485	—0.633	0.720
0.550	0.371	—0.727	0.760
0.600	0.282	—0.803	0.792
0.650	0.213	—0.861	0.816
0.700	0.160	—0.905	0.833
0.750	0.120	—0.935	0.844
0.800	0.090	—0.954	0.849
0.850	0.068	—0.962	0.850
0.900	0.051	—0.962	0.847
0.950	0.038	—0.955	0.840
1.000	0.029	—0.942	0.830
1.100	0.016	—0.902	0.804
1.200	0.010	—0.851	0.772
1.300	0.006	—0.792	0.735
1.400	0.004	—0.731	0.696
1.500	0.002	—0.669	0.655
1.600	0.002	—0.609	0.615
1.700	0.001	—0.551	0.575
1.800	0.001	—0.497	0.536
1.900	0.001	—0.446	0.498
2.000	0.	—0.399	0.463
2.100	0.	—0.356	0.429
2.200	0.	—0.317	0.397
2.300	0.	—0.282	0.366
2.400	0.	—0.250	0.338
2.500	0.	—0.222	0.312
2.600	0.	—0.196	0.287
2.700	0.	—0.173	0.264
2.800	0.	—0.153	0.243
2.900	0.	—0.135	0.223
3.000	0.	—0.119	0.204
3.200	0.	—0.092	0.172
3.400	0.	—0.071	0.144
3.600	0.	—0.054	0.121
3.800	0.	—0.042	0.101
4.000	0.	—0.032	0.084
4.200	0.	—0.024	0.070
4.400	0.	—0.019	0.058
4.600	0.	—0.014	0.048
4.800	0.	—0.011	0.040
5.000	0.	—0.008	0.033
5.200	0.	—0.006	0.027
5.400	0.	—0.005	0.023
5.600	0.	—0.004	0.019
5.800	0.	—0.003	0.015
6.000	0.	—0.002	0.013
6.200	0.	—0.002	0.010
6.400	0.	—0.001	0.009
6.600	0.	—0.001	0.007
6.800	0.	—0.001	0.006
7.000	0.	—0.001	0.005
7.200	0.	—0.	0.004
7.400	0.	—0.	0.003
7.600	0.	—0.	0.003
7.800	0.	—0.	0.002
8.000	0.	—0.	0.002
8.200	0.	—0.	0.001
8.400	0.	—0.	0.001
8.600	0.	—0.	0.001
8.800	0.	—0.	0.001
9.000	0.	—0.	0.001
λ	41.4	2.51	1.20
$\langle r^{-2} \rangle$	118.	6.59	1.80
$\langle r^{-1} \rangle$	7.64	1.27	1.10
$\langle r \rangle$	0.199	1.14	1.25
$\langle r^2 \rangle$	0.053	1.57	2.03

O^+ ^4S

r	$1s$	$2s$	$2p$
0.001	0.043	0.010	0.
0.002	0.085	0.020	0.
0.004	0.167	0.040	0.
0.006	0.247	0.058	0.001
0.008	0.324	0.077	0.001
0.010	0.398	0.094	0.002
0.015	0.574	0.136	0.003
0.020	0.736	0.174	0.006
0.025	0.884	0.208	0.009
0.030	1.020	0.240	0.013
0.035	1.143	0.268	0.017
0.040	1.256	0.294	0.022
0.050	1.451	0.337	0.034
0.060	1.609	0.371	0.047
0.070	1.735	0.396	0.061
0.080	1.834	0.413	0.077
0.090	1.908	0.424	0.094
0.100	1.961	0.428	0.112
0.120	2.015	0.420	0.150
0.140	2.014	0.395	0.190
0.160	1.974	0.356	0.232
0.180	1.905	0.307	0.274
0.200	1.818	0.250	0.316
0.220	1.717	0.188	0.359
0.240	1.610	0.122	0.400
0.260	1.500	0.053	0.441
0.280	1.389	—0.016	0.480
0.300	1.281	—0.085	0.518
0.350	1.028	—0.253	0.605
0.400	0.810	—0.408	0.682
0.450	0.630	—0.544	0.747
0.500	0.485	—0.661	0.800
0.550	0.370	—0.758	0.843
0.600	0.281	—0.835	0.876
0.650	0.212	—0.895	0.899
0.700	0.160	—0.938	0.914
0.750	0.120	—0.967	0.921
0.800	0.090	—0.984	0.922
0.850	0.067	—0.990	0.918
0.900	0.050	—0.987	0.909
0.950	0.038	—0.977	0.895
1.000	0.028	—0.961	0.879
1.100	0.016	—0.914	0.838
1.200	0.009	—0.855	0.789
1.300	0.005	—0.789	0.737
1.400	0.003	—0.720	0.682
1.500	0.002	—0.652	0.628
1.600	0.001	—0.586	0.574
1.700	0.001	—0.524	0.523
1.800	0.001	—0.466	0.474
1.900	0.	—0.412	0.429
2.000	0.	—0.363	0.386
2.100	0.	—0.319	0.347
2.200	0.	—0.279	0.310
2.300	0.	—0.244	0.277
2.400	0.	—0.212	0.247
2.500	0.	—0.185	0.220
2.600	0.	—0.160	0.195
2.700	0.	—0.139	0.173
2.800	0.	—0.120	0.153
2.900	0.	—0.103	0.136
3.000	0.	—0.089	0.120
3.200	0.	—0.066	0.093
3.400	0.	—0.048	0.072
3.600	0.	—0.035	0.055
3.800	0.	—0.026	0.043
4.000	0.	—0.019	0.033
4.200	0.	—0.014	0.025
4.400	0.	—0.010	0.019
4.600	0.	—0.007	0.014
4.800	0.	—0.005	0.011
5.000	0.	—0.004	0.008
5.200	0.	—0.003	0.006
5.400	0.	—0.002	0.005
5.600	0.	—0.001	0.004
5.800	0.	—0.001	0.003
6.000	0.	—0.001	0.002
6.200	0.	—0.	0.001
6.400	0.	—0.	0.001
6.600	0.	—0.	0.001
6.800	0.	—0.	0.001
λ	42.7	3.60	2.65
$\langle r^{-2} \rangle$	118.	7.09	2.14
$\langle r^{-1} \rangle$	7.64	1.32	1.23
$\langle r \rangle$	0.198	1.09	1.08
$\langle r^2 \rangle$	0.053	1.42	1.46

O^+ ^2P

r	$1s$	$2s$	$2p$
0.001	0.043	0.010	0.
0.002	0.085	0.020	0.
0.004	0.167	0.040	0.
0.006	0.247	0.059	0.001
0.008	0.324	0.077	0.001
0.010	0.398	0.095	0.002
0.015	0.574	0.136	0.003
0.020	0.736	0.174	0.006
0.025	0.884	0.209	0.009
0.030	1.020	0.241	0.013
0.035	1.143	0.270	0.017
0.040	1.256	0.295	0.022
0.050	1.451	0.339	0.033
0.060	1.609	0.373	0.046
0.070	1.735	0.398	0.060
0.080	1.834	0.415	0.076
0.090	1.908	0.426	0.093
0.100	1.961	0.430	0.110
0.120	2.015	0.422	0.148
0.140	2.014	0.396	0.187
0.160	1.974	0.357	0.228
0.180	1.905	0.308	0.270
0.200	1.818	0.251	0.312
0.220	1.717	0.188	0.353
0.240	1.610	0.122	0.394
0.260	1.500	0.053	0.434
0.280	1.389	—0.016	0.472
0.300	1.281	—0.086	0.509
0.350	1.028	—0.255	0.595
0.400	0.810	—0.410	0.670
0.450	0.630	—0.548	0.733
0.500	0.485	—0.665	0.786
0.550	0.370	—0.762	0.827
0.600	0.281	—0.839	0.859
0.650	0.212	—0.899	0.882
0.700	0.159	—0.942	0.897
0.750	0.120	—0.971	0.904
0.800	0.090	—0.987	0.906
0.850	0.067	—0.993	0.903

r	$1s$	$2s$	$2p$
0.900	0.050	—0.990	0.894
0.950	0.037	—0.979	0.883
1.000	0.028	—0.962	0.867
1.100	0.016	—0.914	0.830
1.200	0.009	—0.854	0.785
1.300	0.005	—0.787	0.737
1.400	0.003	—0.718	0.686
1.500	0.002	—0.650	0.635
1.600	0.001	—0.583	0.585
1.700	0.001	—0.521	0.537
1.800	0.001	—0.462	0.490
1.900	0.	—0.409	0.447
2.000	0.	—0.360	0.406
2.100	0.	—0.316	0.367
2.200	0.	—0.276	0.332
2.300	0.	—0.241	0.299
2.400	0.	—0.210	0.269
2.500	0.	—0.182	0.242
2.600	0.	—0.158	0.216
2.700	0.	—0.136	0.194
2.800	0.	—0.118	0.173
2.900	0.	—0.102	0.155
3.000	0.	—0.087	0.138
3.200	0.	—0.065	0.109
3.400	0.	—0.047	0.086
3.600	0.	—0.035	0.068
3.800	0.	—0.025	0.053
4.000	0.	—0.018	0.041
4.200	0.	—0.013	0.032
4.400	0.	—0.010	0.025
4.600	0.	—0.007	0.019
4.800	0.	—0.005	0.015
5.000	0.	—0.004	0.011
5.200	0.	—0.003	0.009
5.400	0.	—0.002	0.007
5.600	0.	—0.001	0.005
5.800	0.	—0.001	0.004
6.000	0.	—0.001	0.003
6.200	0.	—0.	0.002
6.400	0.	—0.	0.002
6.600	0.	—0.	0.001
6.800	0.	—0.	0.001
7.000	0.	—0.	0.001
7.200	0.	—0.	0.001
λ	42.8	3.65	2.38
$\langle r^{-2} \rangle$	118.	7.15	2.08
$\langle r^{-1} \rangle$	7.64	1.33	1.20
$\langle r \rangle$	0.198	1.09	1.11
$\langle r^2 \rangle$	0.053	1.41	1.56

O^+ ^2D

r	$1s$	$2s$	$2p$
0.001	0.043	0.010	0.
0.002	0.085	0.020	0.
0.004	0.167	0.040	0.
0.006	0.247	0.059	0.001
0.008	0.324	0.077	0.001
0.010	0.398	0.094	0.002
0.015	0.574	0.136	0.003
0.020	0.736	0.174	0.006
0.025	0.884	0.209	0.009
0.030	1.020	0.240	0.013
0.035	1.143	0.269	0.017
0.040	1.256	0.295	0.022
0.050	1.451	0.338	0.033
0.060	1.609	0.372	0.046
0.070	1.735	0.397	0.061
0.080	1.834	0.414	0.076
0.090	1.908	0.425	0.093
0.100	1.961	0.429	0.111
0.120	2.015	0.421	0.148
0.140	2.014	0.396	0.188
0.160	1.974	0.357	0.230
0.180	1.905	0.308	0.272
0.200	1.818	0.251	0.314
0.220	1.717	0.188	0.355
0.240	1.610	0.122	0.396
0.260	1.500	0.053	0.436
0.280	1.389	—0.016	0.475
0.300	1.281	—0.086	0.513
0.350	1.028	—0.254	0.599
0.400	0.810	—0.409	0.675
0.450	0.630	—0.546	0.739
0.500	0.485	—0.663	0.791
0.550	0.370	—0.760	0.834
0.600	0.281	—0.838	0.866
0.650	0.212	—0.897	0.889
0.700	0.159	—0.940	0.903
0.750	0.120	—0.969	0.911
0.800	0.090	—0.986	0.913
0.850	0.067	—0.992	0.909
0.900	0.050	—0.989	0.900
0.950	0.038	—0.978	0.888
1.000	0.028	—0.961	0.872
1.100	0.016	—0.914	0.833
1.200	0.009	—0.854	0.787
1.300	0.005	—0.788	0.737
1.400	0.003	—0.719	0.685
1.500	0.002	—0.651	0.633
1.600	0.001	—0.585	0.581
1.700	0.001	—0.522	0.532
1.800	0.001	—0.464	0.484
1.900	0.	—0.410	0.440
2.000	0.	—0.361	0.398
2.100	0.	—0.317	0.359
2.200	0.	—0.277	0.323
2.300	0.	—0.242	0.290
2.400	0.	—0.211	0.260
2.500	0.	—0.183	0.233
2.600	0.	—0.159	0.208
2.700	0.	—0.137	0.185
2.800	0.	—0.119	0.165
2.900	0.	—0.102	0.147
3.000	0.	—0.088	0.130
3.200	0.	—0.065	0.102
3.400	0.	—0.048	0.080
3.600	0.	—0.035	0.062
3.800	0.	—0.026	0.049
4.000	0.	—0.019	0.038
4.200	0.	—0.013	0.029
4.400	0.	—0.010	0.022
4.600	0.	—0.007	0.017
4.800	0.	—0.005	0.013
5.000	0.	—0.004	0.010
5.200	0.	—0.003	0.008
5.400	0.	—0.002	0.006
5.600	0.	—0.001	0.004
5.800	0.	—0.001	0.003
6.000	0.	—0.001	0.003
6.200	0.	—0.	0.002
6.400	0.	—0.	0.001
6.600	0.	—0.	0.001
6.800	0.	—0.	0.001
7.000	0.	—0.	0.001

r	$1s$	$2s$	$2p$
λ	42.8	3.63	2.49
$\langle r^{-2}\rangle$	118.	7.13	2.10
$\langle r^{-1}\rangle$	7.64	1.32	1.21
$\langle r\rangle$	0.198	1.09	1.10
$\langle r^2\rangle$	0.053	1.41	1.52

O^{++} ^1S

r	$1s$	$2s$	$2p$
0.001	0.043	0.011	0.
0.002	0.085	0.021	0.
0.004	0.167	0.042	0.
0.006	0.247	0.062	0.001
0.008	0.324	0.081	0.001
0.010	0.399	0.100	0.002
0.015	0.575	0.143	0.004
0.020	0.736	0.184	0.007
0.025	0.885	0.220	0.010
0.030	1.020	0.253	0.014
0.035	1.144	0.284	0.019
0.040	1.257	0.311	0.024
0.050	1.452	0.357	0.036
0.060	1.610	0.392	0.050
0.070	1.737	0.419	0.066
0.080	1.835	0.437	0.083
0.090	1.909	0.447	0.101
0.100	1.962	0.452	0.121
0.120	2.016	0.443	0.162
0.140	2.016	0.416	0.205
0.160	1.975	0.374	0.250
0.180	1.906	0.322	0.295
0.200	1.818	0.261	0.340
0.220	1.718	0.195	0.385
0.240	1.610	0.124	0.430
0.260	1.500	0.052	0.472
0.280	1.389	−0.022	0.514
0.300	1.280	−0.096	0.554
0.350	1.027	−0.274	0.645
0.400	0.809	−0.438	0.724
0.450	0.628	−0.582	0.790
0.500	0.483	−0.704	0.843
0.550	0.368	−0.804	0.884
0.600	0.279	−0.883	0.914
0.650	0.210	−0.943	0.934
0.700	0.157	−0.985	0.946
0.750	0.118	−1.011	0.949
0.800	0.088	−1.024	0.946
0.850	0.066	−1.026	0.937
0.900	0.049	−1.018	0.923
0.950	0.036	−1.002	0.906
1.000	0.027	−0.979	0.885
1.100	0.015	−0.920	0.836
1.200	0.008	−0.849	0.780
1.300	0.005	−0.772	0.721
1.400	0.003	−0.694	0.662
1.500	0.002	−0.618	0.603
1.600	0.001	−0.546	0.546
1.700	0.001	−0.479	0.492
1.800	0.	−0.418	0.441
1.900	0.	−0.363	0.394
2.000	0.	−0.313	0.351
2.100	0.	−0.269	0.311
2.200	0.	−0.231	0.275
2.300	0.	−0.197	0.243
2.400	0.	−0.168	0.214
2.500	0.	−0.143	0.188
2.600	0.	−0.121	0.164
2.700	0.	−0.102	0.144
2.800	0.	−0.086	0.125
2.900	0.	−0.072	0.109
3.000	0.	−0.061	0.095
3.200	0.	−0.043	0.072
3.400	0.	−0.030	0.054
3.600	0.	−0.021	0.040
3.800	0.	−0.014	0.030
4.000	0.	−0.010	0.022
4.200	0.	−0.007	0.016
4.400	0.	−0.005	0.012
4.600	0.	−0.003	0.009
4.800	0.	−0.002	0.006
5.000	0.	−0.001	0.005
5.200	0.	−0.001	0.003
5.400	0.	−0.001	0.002
5.600	0.	−0.	0.002
5.800	0.	−0.	0.001
6.000	0.	−0.	0.001
6.200	0.	−0.	0.001
λ	44.6	5.01	3.61
$\langle r^{-2}\rangle$	118.	7.86	2.34
$\langle r^{-1}\rangle$	7.65	1.39	1.29
$\langle r\rangle$	0.198	1.03	1.02
$\langle r^2\rangle$	0.053	1.26	1.30

O^{++} ^3P

r	$1s$	$2s$	$2p$
0.001	0.043	0.011	0.
0.002	0.085	0.021	0.
0.004	0.167	0.042	0.
0.006	0.247	0.061	0.001
0.008	0.324	0.081	0.001
0.010	0.399	0.099	0.002
0.015	0.575	0.143	0.004
0.020	0.736	0.183	0.007
0.025	0.885	0.219	0.010
0.030	1.020	0.253	0.014
0.035	1.144	0.283	0.019
0.040	1.257	0.310	0.025
0.050	1.452	0.355	0.037
0.060	1.610	0.391	0.051
0.070	1.736	0.417	0.067
0.080	1.835	0.435	0.085
0.090	1.909	0.446	0.103
0.100	1.962	0.450	0.123
0.120	2.016	0.442	0.165
0.140	2.015	0.415	0.209
0.160	1.975	0.373	0.255
0.180	1.906	0.321	0.301
0.200	1.818	0.261	0.348
0.220	1.718	0.195	0.394
0.240	1.610	0.125	0.439
0.260	1.500	0.052	0.483
0.280	1.389	−0.021	0.526
0.300	1.280	−0.095	0.567
0.350	1.027	−0.272	0.662
0.400	0.809	−0.436	0.743
0.450	0.628	−0.579	0.811

r	$1s$	$2s$	$2p$
0.500	0.483	—0.701	0.866
0.550	0.368	—0.801	0.908
0.600	0.279	—0.880	0.939
0.650	0.210	—0.940	0.959
0.700	0.158	—0.982	0.970
0.750	0.118	—1.008	0.972
0.800	0.088	—1.022	0.967
0.850	0.066	—1.024	0.957
0.900	0.049	—1.016	0.940
0.950	0.036	—1.001	0.920
1.000	0.027	—0.979	0.896
1.100	0.015	—0.921	0.840
1.200	0.009	—0.850	0.778
1.300	0.005	—0.774	0.713
1.400	0.003	—0.697	0.648
1.500	0.002	—0.621	0.584
1.600	0.001	—0.549	0.523
1.700	0.001	—0.482	0.466
1.800	0.	—0.421	0.413
1.900	0.	—0.365	0.364
2.000	0.	—0.316	0.320
2.100	0.	—0.272	0.280
2.200	0.	—0.233	0.245
2.300	0.	—0.199	0.213
2.400	0.	—0.170	0.185
2.500	0.	—0.144	0.160
2.600	0.	—0.122	0.138
2.700	0.	—0.103	0.119
2.800	0.	—0.087	0.103
2.900	0.	—0.073	0.088
3.000	0.	—0.062	0.076
3.200	0.	—0.043	0.055
3.400	0.	—0.030	0.040
3.600	0.	—0.021	0.029
3.800	0.	—0.015	0.021
4.000	0.	—0.010	0.015
4.200	0.	—0.007	0.011
4.400	0.	—0.005	0.008
4.600	0.	—0.003	0.005
4.800	0.	—0.002	0.004
5.000	0.	—0.001	0.003
5.200	0.	—0.001	0.002
5.400	0.	—0.001	0.001
5.600	0.	—0.	0.001
5.800	0.	—0.	0.001
λ	44.5	4.96	4.09
$\langle r^{-2} \rangle$	118.	7.80	2.43
$\langle r^{-1} \rangle$	7.65	1.39	1.32
$\langle r \rangle$	0.198	1.03	0.984
$\langle r^2 \rangle$	0.053	1.27	1.20

O^{++} ^1D

r	$1s$	$2s$	$2p$
0.001	0.043	0.011	0.
0.002	0.085	0.021	0.
0.004	0.167	0.042	0.
0.006	0.247	0.062	0.001
0.008	0.324	0.081	0.001
0.010	0.399	0.099	0.002
0.015	0.575	0.143	0.004
0.020	0.736	0.183	0.007
0.025	0.885	0.220	0.010
0.030	1.020	0.253	0.014
0.035	1.144	0.283	0.019
0.040	1.257	0.310	0.025
0.050	1.452	0.356	0.037
0.060	1.610	0.391	0.051
0.070	1.736	0.417	0.067
0.080	1.835	0.436	0.084
0.090	1.909	0.446	0.103
0.100	1.962	0.450	0.122
0.120	2.016	0.442	0.164
0.140	2.015	0.415	0.208
0.160	1.975	0.374	0.254
0.180	1.906	0.321	0.300
0.200	1.818	0.261	0.346
0.220	1.718	0.195	0.392
0.240	1.610	0.124	0.437
0.260	1.500	0.052	0.481
0.280	1.389	—0.021	0.523
0.300	1.280	—0.095	0.564
0.350	1.027	—0.273	0.657
0.400	0.809	—0.436	0.738
0.450	0.628	—0.580	0.806
0.500	0.483	—0.702	0.860
0.550	0.368	—0.802	0.902
0.600	0.279	—0.881	0.932
0.650	0.210	—0.940	0.953
0.700	0.158	—0.983	0.963
0.750	0.118	—1.009	0.966
0.800	0.088	—1.022	0.962
0.850	0.066	—1.024	0.951
0.900	0.049	—1.017	0.936
0.950	0.036	—1.001	0.916
1.000	0.027	—0.979	0.893
1.100	0.015	—0.921	0.839
1.200	0.009	—0.850	0.779
1.300	0.005	—0.774	0.716
1.400	0.003	—0.696	0.652
1.500	0.002	—0.620	0.589
1.600	0.001	—0.548	0.530
1.700	0.001	—0.481	0.473
1.800	0.	—0.420	0.421
1.900	0.	—0.365	0.372
2.000	0.	—0.315	0.328
2.100	0.	—0.271	0.289
2.200	0.	—0.232	0.253
2.300	0.	—0.199	0.221
2.400	0.	—0.169	0.192
2.500	0.	—0.144	0.167
2.600	0.	—0.122	0.145
2.700	0.	—0.103	0.125
2.800	0.	—0.087	0.108
2.900	0.	—0.073	0.093
3.000	0.	—0.062	0.080
3.200	0.	—0.043	0.059
3.400	0.	—0.030	0.043
3.600	0.	—0.021	0.032
3.800	0.	—0.015	0.023
4.000	0.	—0.010	0.017
4.200	0.	—0.007	0.012
4.400	0.	—0.005	0.009
4.600	0.	—0.003	0.006
4.800	0.	—0.002	0.004
5.000	0.	—0.001	0.003
5.200	0.	—0.001	0.002
5.400	0.	—0.001	0.002
5.600	0.	—0.	0.001
5.800	0.	—0.	0.001
6.000	0.	—0.	0.001
λ	44.5	4.97	3.96

r	$1s$	$2s$	$2p$
$\langle r^{-2}\rangle$	118.	7.82	2.41
$\langle r^{-1}\rangle$	7.65	1.39	1.31
$\langle r\rangle$	0.198	1.03	0.994
$\langle r^{2}\rangle$	0.053	1.27	1.23

F ^{2}P

r	$1s$	$2s$	$2p$
0.001	0.051	0.012	0.
0.002	0.102	0.023	0.
0.004	0.199	0.046	0.
0.006	0.294	0.068	0.001
0.008	0.385	0.089	0.001
0.010	0.473	0.109	0.002
0.015	0.678	0.157	0.004
0.020	0.864	0.199	0.008
0.025	1.033	0.238	0.012
0.030	1.185	0.272	0.016
0.035	1.323	0.303	0.022
0.040	1.446	0.330	0.028
0.050	1.654	0.374	0.041
0.060	1.816	0.407	0.057
0.070	1.940	0.428	0.074
0.080	2.030	0.441	0.093
0.090	2.092	0.445	0.113
0.100	2.129	0.442	0.134
0.120	2.146	0.418	0.179
0.140	2.104	0.374	0.225
0.160	2.023	0.317	0.272
0.180	1.915	0.249	0.319
0.200	1.793	0.175	0.365
0.220	1.662	0.097	0.411
0.240	1.529	0.016	0.455
0.260	1.397	—0.065	0.497
0.280	1.270	—0.146	0.538
0.300	1.149	—0.224	0.576
0.350	0.881	—0.408	0.662
0.400	0.663	—0.568	0.733
0.450	0.493	—0.702	0.791
0.500	0.363	—0.809	0.836
0.550	0.265	—0.892	0.869
0.600	0.193	—0.952	0.892
0.650	0.140	—0.993	0.905
0.700	0.101	—1.017	0.911
0.750	0.073	—1.027	0.911
0.800	0.053	—1.025	0.905
0.850	0.038	—1.014	0.894
0.900	0.028	—0.995	0.880
0.950	0.020	—0.971	0.863
1.000	0.015	—0.942	0.843
1.100	0.008	—0.875	0.800
1.200	0.005	—0.801	0.752
1.300	0.003	—0.726	0.702
1.400	0.002	—0.653	0.652
1.500	0.001	—0.583	0.604
1.600	0.001	—0.518	0.557
1.700	0.001	—0.458	0.512
1.800	0.001	—0.403	0.470
1.900	0.	—0.354	0.430
2.000	0.	—0.310	0.393
2.100	0.	—0.271	0.359
2.200	0.	—0.236	0.327
2.300	0.	—0.206	0.298
2.400	0.	—0.179	0.271
2.500	0.	—0.155	0.246
2.600	0.	—0.134	0.223
2.700	0.	—0.116	0.203
2.800	0.	—0.101	0.184
2.900	0.	—0.087	0.166
3.000	0.	—0.075	0.150
3.200	0.	—0.056	0.123
3.400	0.	—0.041	0.100
3.600	0.	—0.031	0.082
3.800	0.	—0.023	0.067
4.000	0.	—0.017	0.054
4.200	0.	—0.012	0.044
4.400	0.	—0.009	0.035
4.600	0.	—0.007	0.029
4.800	0.	—0.005	0.023
5.000	0.	—0.004	0.019
5.200	0.	—0.003	0.015
5.400	0.	—0.002	0.012
5.600	0.	—0.001	0.010
5.800	0.	—0.001	0.008
6.000	0.	—0.001	0.006
6.200	0.	—0.001	0.005
6.400	0.	—0.	0.004
6.600	0.	—0.	0.003
6.800	0.	—0.	0.003
7.000	0.	—0.	0.002
7.200	0.	—0.	0.002
7.400	0.	—0.	0.001
7.600	0.	—0.	0.001
7.800	0.	—0.	0.001
8.000	0.	—0.	0.001
8.200	0.	—0.	0.001
λ	52.8	3.15	1.46
$\langle r^{-2}\rangle$	150.	8.65	2.39
$\langle r^{-1}\rangle$	8.63	1.45	1.27
$\langle r\rangle$	0.176	1.00	1.08
$\langle r^{2}\rangle$	0.042	1.22	1.54

F^{+} ^{1}S

r	$1s$	$2s$	$2p$
0.001	0.051	0.012	0.
0.002	0.102	0.024	0.
0.004	0.200	0.048	0.
0.006	0.294	0.071	0.001
0.008	0.385	0.093	0.001
0.010	0.473	0.114	0.002
0.015	0.678	0.163	0.005
0.020	0.864	0.207	0.008
0.025	1.033	0.247	0.012
0.030	1.186	0.283	0.018
0.035	1.323	0.315	0.023
0.040	1.446	0.343	0.030
0.050	1.654	0.389	0.045
0.060	1.817	0.423	0.062
0.070	1.940	0.445	0.081
0.080	2.030	0.458	0.101
0.090	2.092	0.462	0.123
0.100	2.130	0.459	0.146
0.120	2.146	0.434	0.193
0.140	2.104	0.388	0.243
0.160	2.023	0.328	0.294
0.180	1.916	0.258	0.345
0.200	1.793	0.180	0.395
0.220	1.662	0.098	0.444

r	$1s$	$2s$	$2p$
0.240	1.529	0.014	0.491
0.260	1.397	—0.071	0.537
0.280	1.270	—0.155	0.589
0.300	1.149	—0.237	0.621
0.350	0.880	—0.428	0.712
0.400	0.662	—0.594	0.787
0.450	0.492	—0.732	0.847
0.500	0.362	—0.843	0.892
0.550	0.264	—0.927	0.924
0.600	0.192	—0.987	0.945
0.650	0.139	—1.027	0.955
0.700	0.100	—1.049	0.958
0.750	0.072	—1.056	0.953
0.800	0.052	—1.051	0.942
0.850	0.038	—1.036	0.927
0.900	0.027	—1.013	0.908
0.950	0.020	—0.984	0.885
1.000	0.015	—0.950	0.860
1.100	0.008	—0.874	0.806
1.200	0.004	—0.792	0.747
1.300	0.003	—0.709	0.688
1.400	0.002	—0.629	0.630
1.500	0.001	—0.554	0.573
1.600	0.001	—0.485	0.520
1.700	0.001	—0.422	0.469
1.800	0.	—0.365	0.422
1.900	0.	—0.315	0.379
2.000	0.	—0.271	0.339
2.100	0.	—0.232	0.303
2.200	0.	—0.199	0.270
2.300	0.	—0.169	0.240
2.400	0.	—0.144	0.213
2.500	0.	—0.122	0.189
2.600	0.	—0.104	0.167
2.700	0.	—0.088	0.148
2.800	0.	—0.074	0.130
2.900	0.	—0.063	0.115
3.000	0.	—0.053	0.101
3.200	0.	—0.037	0.078
3.400	0.	—0.026	0.060
3.600	0.	—0.018	0.046
3.800	0.	—0.013	0.035
4.000	0.	—0.009	0.027
4.200	0.	—0.006	0.021
4.400	0.	—0.004	0.016
4.600	0.	—0.003	0.012
4.800	0.	—0.002	0.009
5.000	0.	—0.001	0.007
5.200	0.	—0.001	0.005
5.400	0.	—0.001	0.004
5.600	0.	—0.	0.003
5.800	0.	—0.	0.002
6.000	0.	—0.	0.002
6.200	0.	—0.	0.001
6.400	0.	—0.	0.001
6.600	0.	—0.	0.001
6.800	0.	—0.	0.001
λ	54.4	4.44	2.68
$\langle r^{-2} \rangle$	150.	9.30	2.68
$\langle r^{-1} \rangle$	8.63	1.51	1.36
$\langle r \rangle$	0.176	0.958	0.989
$\langle r^2 \rangle$	0.042	1.10	1.25

F^{4+} ^3P

r	$1s$	$2s$	$2p$
0.001	0.051	0.012	0.
0.002	0.102	0.024	0.
0.004	0.200	0.048	0.
0.006	0.294	0.070	0.001
0.008	0.385	0.092	0.001
0.010	0.473	0.113	0.002
0.015	0.678	0.162	0.005
0.020	0.864	0.207	0.008
0.025	1.033	0.246	0.013
0.030	1.186	0.282	0.018
0.035	1.323	0.314	0.024
0.040	1.446	0.342	0.030
0.050	1.654	0.388	0.045
0.060	1.816	0.421	0.062
0.070	1.940	0.444	0.081
0.080	2.030	0.456	0.102
0.090	2.092	0.461	0.124
0.100	2.129	0.457	0.147
0.120	2.146	0.432	0.195
0.140	2.104	0.387	0.246
0.160	2.023	0.327	0.297
0.180	1.916	0.257	0.348
0.200	1.793	0.180	0.399
0.220	1.662	0.098	0.448
0.240	1.529	0.014	0.496
0.260	1.397	—0.070	0.542
0.280	1.270	—0.154	0.586
0.300	1.149	—0.235	0.627
0.350	0.880	—0.426	0.720
0.400	0.663	—0.591	0.796
0.450	0.492	—0.729	0.857
0.500	0.362	—0.839	0.903
0.550	0.265	—0.923	0.935
0.600	0.192	—0.984	0.956
0.650	0.139	—1.024	0.967
0.700	0.101	—1.046	0.969
0.750	0.073	—1.054	0.964
0.800	0.052	—1.049	0.952
0.850	0.038	—1.034	0.936
0.900	0.028	—1.012	0.915
0.950	0.020	—0.984	0.892
1.000	0.015	—0.950	0.866
1.100	0.008	—0.875	0.808
1.200	0.005	—0.794	0.747
1.300	0.003	—0.711	0.685
1.400	0.002	—0.632	0.624
1.500	0.001	—0.557	0.565
1.600	0.001	—0.488	0.509
1.700	0.001	—0.425	0.457
1.800	0.	—0.368	0.409
1.900	0.	—0.318	0.365
2.000	0.	—0.274	0.324
2.100	0.	—0.235	0.288
2.200	0.	—0.201	0.255
2.300	0.	—0.171	0.225
2.400	0.	—0.146	0.198
2.500	0.	—0.124	0.175
2.600	0.	—0.105	0.154
2.700	0.	—0.089	0.135
2.800	0.	—0.075	0.118
2.900	0.	—0.063	0.103
3.000	0.	—0.053	0.090
3.200	0.	—0.038	0.069
3.400	0.	—0.027	0.052
3.600	0.	—0.019	0.040

r	$1s$	$2s$	$2p$
3.800	0.	—0.013	0.030
4.000	0.	—0.009	0.022
4.200	0.	—0.006	0.017
4.400	0.	—0.004	0.013
4.600	0.	—0.003	0.009
4.800	0.	—0.002	0.007
5.000	0.	—0.001	0.005
5.200	0.	—0.001	0.004
5.400	0.	—0.001	0.003
5.600	0.	—0.	0.002
5.800	0.	—0.	0.002
6.000	0.	—0.	0.001
6.200	0.	—0.	0.001
6.400	0.	—0.	0.001
λ	54.3	4.39	2.89
$\langle r^{-2} \rangle$	150.	9.24	2.73
$\langle r^{-1} \rangle$	8.63	1.50	1.38
$\langle r \rangle$	0.176	0.961	0.970
$\langle r^2 \rangle$	0.042	1.11	1.20

F^{+} ^1D

r	$1s$	$2s$	$2p$
0.001	0.051	0.012	0.
0.002	0.102	0.024	0.
0.004	0.200	0.048	0.
0.006	0.294	0.071	0.001
0.008	0.385	0.092	0.001
0.010	0.473	0.113	0.002
0.015	0.678	0.163	0.005
0.020	0.864	0.207	0.008
0.025	1.033	0.247	0.013
0.030	1.186	0.283	0.018
0.035	1.323	0.314	0.024
0.040	1.446	0.343	0.030
0.050	1.654	0.388	0.045
0.060	1.817	0.422	0.062
0.070	1.940	0.444	0.081
0.080	2.030.	0.457	0.102
0.090	2.092	0.461	0.123
0.100	2.129	0.458	0.146
0.120	2.146	0.433	0.194
0.140	2.104	0.388	0.245
0.160	2.023	0.328	0.296
0.180	1.916	0.257	0.347
0.200	1.793	0.180	0.397
0.220	1.662	0.098	0.447
0.240	1.529	0.014	0.494
0.260	1.397	—0.070	0.540
0.280	1.270	—0.154	0.583
0.300	1.149	—0.236	0.625
0.350	0.880	—0.427	0.717
0.400	0.662	—0.593	0.792
0.450	0.492	—0.731	0.853
0.500	0.362	—0.841	0.898
0.550	0.264	—0.925	0.931
0.600	0.192	—0.985	0.952
0.650	0.139	—1.025	0.962
0.700	0.101	—1.047	0.965
0.750	0.073	—1.055	0.960
0.800	0.052	—1.050	0.948
0.850	0.038	—1.035	0.932
0.900	0.027	—1.012	0.912
0.950	0.020	—0.984	0.889
1.000	0.015	—0.950	0.864
1.100	0.008	—0.875	0.807
1.200	0.005	—0.793	0.747
1.300	0.003	—0.711	0.686
1.400	0.002	—0.631	0.626
1.500	0.001	—0.556	0.568
1.600	0.001	—0.486	0.513
1.700	0.001	—0.424	0.462
1.800	0.	—0.367	0.414
1.900	0.	—0.317	0.370
2.000	0.	—0.273	0.330
2.100	0.	—0.234	0.294
2.200	0.	—0.200	0.261
2.300	0.	—0.170	0.231
2.400	0.	—0.145	0.204
2.500	0.	—0.123	0.180
2.600	0.	—0.104	0.159
2.700	0.	—0.088	0.140
2.800	0.	—0.075	0.123
2.900	0.	—0.063	0.108
3.000	0.	—0.053	0.095
3.200	0.	—0.038	0.072
3.400	0.	—0.027	0.055
3.600	0.	—0.019	0.042
3.800	0.	—0.013	0.032
4.000	0.	—0.009	0.024
4.200	0.	—0.006	0.018
4.400	0.	—0.004	0.014
4.600	0.	—0.003	0.010
4.800	0.	—0.002	0.008
5.000	0.	—0.001	0.006
5.200	0.	—0.001	0.004
5.400	0.	—0.001	0.003
5.600	0.	—0.	0.002
5.800	0.	—0.	0.002
6.000	0.	—0.	0.001
6.200	0.	—0.	0.001
6.400	0.	—0.	0.001
6.600	0.	—0.	0.001
λ	54.3	4.41	2.80
$\langle r^{-3} \rangle$	150.	9.27	2.71
$\langle r^{-1} \rangle$	8.63	1.51	1.37
$\langle r \rangle$	0.176	0.960	0.977
$\langle r^2 \rangle$	0.042	1.11	1.22

F^{++} ^1S

r	$1s$	$2s$	$2p$
0.001	0.051	0.013	0.
0.002	0.102	0.025	0.
0.004	0.200	0.050	0.
0.006	0.294	0.073	0.001
0.008	0.385	0.096	0.002
0.010	0.473	0.118	0.002
0.015	0.678	0.169	0.005
0.020	0.865	0.215	0.009
0.025	1.034	0.257	0.014
0.030	1.186	0.294	0.019
0.035	1.323	0.327	0.026
0.040	1.447	0.356	0.033
0.050	1.655	0.404	0.050
0.060	1.817	0.439	0.068

r	$1s$	$2s$	$2p$
0.070	1.941	0.462	0.089
0.080	2.031	0.475	0.112
0.090	2.093	0.480	0.136
0.100	2.130	0.476	0.161
0.120	2.147	0.449	0.214
0.140	2.105	0.402	0.269
0.160	2.023	0.339	0.325
0.180	1.916	0.266	0.381
0.200	1.793	0.185	0.436
0.220	1.662	0.099	0.490
0.240	1.529	0.011	0.542
0.260	1.397	−0.077	0.592
0.280	1.270	−0.164	0.639
0.300	1.149	−0.250	0.684
0.350	0.879	−0.448	0.783
0.400	0.661	−0.620	0.864
0.450	0.491	−0.763	0.927
0.500	0.361	−0.876	0.973
0.550	0.263	−0.961	1.004
0.600	0.191	−1.021	1.021
0.650	0.138	−1.059	1.027
0.700	0.100	−1.079	1.023
0.750	0.072	−1.083	1.011
0.800	0.052	−1.074	0.991
0.850	0.037	−1.054	0.967
0.900	0.027	−1.027	0.937
0.950	0.019	−0.993	0.905
1.000	0.014	−0.954	0.870
1.100	0.007	−0.868	0.796
1.200	0.004	−0.778	0.719
1.300	0.002	−0.688	0.644
1.400	0.001	−0.602	0.572
1.500	0.001	−0.522	0.504
1.600	0.001	−0.449	0.442
1.700	0.	−0.384	0.385
1.800	0.	−0.327	0.334
1.900	0.	−0.277	0.289
2.000	0.	−0.234	0.249
2.100	0.	−0.196	0.214
2.200	0.	−0.164	0.183
2.300	0.	−0.137	0.156
2.400	0.	−0.114	0.133
2.500	0.	−0.095	0.113
2.600	0.	−0.079	0.096
2.700	0.	−0.065	0.081
2.800	0.	−0.054	0.069
2.900	0.	−0.044	0.058
3.000	0.	−0.036	0.049
3.200	0.	−0.024	0.034
3.400	0.	−0.016	0.024
3.600	0.	−0.011	0.017
3.800	0.	−0.007	0.012
4.000	0.	−0.005	0.008
4.200	0.	−0.003	0.006
4.400	0.	−0.002	0.004
4.600	0.	−0.001	0.003
4.800	0.	−0.001	0.002
5.000	0.	−0.001	0.001
5.200	0.	−0.	0.001
5.400	0.	−0.	0.001
λ	56.2	5.83	4.69
$\langle r^{-2} \rangle$	150.	9.97	3.11
$\langle r^{-1} \rangle$	8.64	1.57	1.49
$\langle r \rangle$	0.176	0.921	0.878
$\langle r^2 \rangle$	0.041	1.01	0.959

F^{++} ^2P

r	$1s$	$2s$	$2p$
0.001	0.051	0.013	0.
0.002	0.102	0.025	0.
0.004	0.200	0.050	0.
0.006	0.294	0.074	0.001
0.008	0.385	0.096	0.002
0.010	0.473	0.118	0.002
0.015	0.678	0.170	0.005
0.020	0.865	0.216	0.009
0.025	1.034	0.258	0.014
0.030	1.186	0.295	0.019
0.035	1.324	0.328	0.026
0.040	1.447	0.357	0.033
0.050	1.655	0.405	0.049
0.060	1.817	0.440	0.068
0.070	1.941	0.463	0.088
0.080	2.031	0.477	0.110
0.090	2.093	0.481	0.134
0.100	2.130	0.477	0.159
0.120	2.147	0.451	0.211
0.140	2.105	0.403	0.266
0.160	2.024	0.340	0.321
0.180	1.916	0.266	0.376
0.200	1.793	0.185	0.431
0.220	1.662	0.099	0.484
0.240	1.529	0.011	0.535
0.260	1.397	−0.078	0.584
0.280	1.270	−0.165	0.631
0.300	1.148	−0.251	0.675
0.350	0.879	−0.450	0.772
0.400	0.661	−0.623	0.851
0.450	0.491	−0.766	0.913
0.500	0.360	−0.879	0.958
0.550	0.263	−0.964	0.989
0.600	0.191	−1.024	1.006
0.650	0.138	−1.062	1.013
0.700	0.099	−1.081	1.010
0.750	0.071	−1.084	0.999
0.800	0.051	−1.075	0.981
0.850	0.037	−1.055	0.958
0.900	0.027	−1.027	0.931
0.950	0.019	−0.993	0.901
1.000	0.014	−0.954	0.868
1.100	0.007	−0.867	0.798
1.200	0.004	−0.776	0.726
1.300	0.002	−0.686	0.654
1.400	0.001	−0.599	0.585
1.500	0.001	−0.519	0.520
1.600	0.001	−0.447	0.459
1.700	0.	−0.382	0.404
1.800	0.	−0.325	0.354
1.900	0.	−0.275	0.308
2.000	0.	−0.232	0.268
2.100	0.	−0.195	0.232
2.200	0.	−0.163	0.200
2.300	0.	−0.136	0.173
2.400	0.	−0.113	0.148
2.500	0.	−0.094	0.127
2.600	0.	−0.078	0.109
2.700	0.	−0.064	0.093
2.800	0.	−0.053	0.079
2.900	0.	−0.044	0.068
3.000	0.	−0.036	0.057
3.200	0.	−0.024	0.041
3.400	0.	−0.016	0.030
3.600	0.	−0.011	0.021

r	$1s$	$2s$	$2p$
3.800	0.	—0.007	0.015
4.000	0.	—0.005	0.011
4.200	0.	—0.003	0.007
4.400	0.	—0.002	0.005
4.600	0.	—0.001	0.004
4.800	0.	—0.001	0.003
5.000	0.	—0.001	0.002
5.200	0.	—0.	0.001
5.400	0.	—0.	0.001
5.600	0.	—0.	0.001
λ	56.3	5.88	4.34
$\langle r^{-2}\rangle$	150.	10.0	3.04
$\langle r^{-1}\rangle$	8.64	1.57	1.47
$\langle r\rangle$	0.175	0.918	0.897
$\langle r^{+2}\rangle$	0.041	1.00	1.01

F^{++} ^2D

r	$1s$	$2s$	$2p$
0.001	0.051	0.013	0.
0.002	0.102	0.025	0.
0.004	0.200	0.050	0.
0.006	0.294	0.074	0.001
0.008	0.385	0.096	0.002
0.010	0.473	0.118	0.002
0.015	0.678	0.169	0.005
0.020	0.865	0.216	0.009
0.025	1.034	0.257	0.014
0.030	1.186	0.295	0.019
0.035	1.324	0.328	0.026
0.040	1.447	0.357	0.033
0.050	1.655	0.405	0.049
0.060	1.817	0.440	0.068
0.070	1.941	0.463	0.089
0.080	2.031	0.476	0.111
0.090	2.093	0.480	0.135
0.100	2.130	0.477	0.160
0.120	2.147	0.450	0.212
0.140	2.105	0.403	0.267
0.160	2.024	0.340	0.323
0.180	1.916	0.266	0.378
0.200	1.793	0.185	0.433
0.220	1.662	0.099	0.486
0.240	1.529	0.011	0.538
0.260	1.397	—0.077	0.587
0.280	1.270	—0.165	0.634
0.300	1.148	—0.250	0.678
0.350	0.879	—0.449	0.777
0.400	0.661	—0.622	0.856
0.450	0.491	—0.765	0.919
0.500	0.361	—0.878	0.964
0.550	0.263	—0.963	0.995
0.600	0.191	—1.023	1.012
0.650	0.138	—1.061	1.019
0.700	0.099	—1.080	1.015
0.750	0.072	—1.084	1.003
0.800	0.051	—1.074	0.985
0.850	0.037	—1.055	0.962
0.900	0.027	—1.027	0.934
0.950	0.019	—0.993	0.903
1.000	0.014	—0.954	0.869

r	$1s$	$2s$	$2p$
1.100	0.007	—0.868	0.797
1.200	0.004	—0.777	0.724
1.300	0.002	—0.686	0.650
1.400	0.001	—0.600	0.580
1.500	0.001	—0.520	0.514
1.600	0.001	—0.448	0.452
1.700	0.	—0.383	0.396
1.800	0.	—0.326	0.346
1.900	0.	—0.276	0.301
2.000	0.	—0.233	0.260
2.100	0.	—0.195	0.225
2.200	0.	—0.164	0.193
2.300	0.	—0.136	0.166
2.400	0.	—0.114	0.142
2.500	0.	—0.094	0.121
2.600	0.	—0.078	0.104
2.700	0.	—0.065	0.088
2.800	0.	—0.053	0.075
2.900	0.	—0.044	0.064
3.000	0.	—0.036	0.054
3.200	0.	—0.024	0.038
3.400	0.	—0.016	0.027
3.600	0.	—0.011	0.019
3.800	0.	—0.007	0.014
4.000	0.	—0.005	0.010
4.200	0.	—0.003	0.007
4.400	0.	—0.002	0.005
4.600	0.	—0.001	0.003
4.800	0.	—0.001	0.002
5.000	0.	—0.001	0.002
5.200	0.	—0.	0.001
5.400	0.	—0.	0.001
5.600	0.	—0.	0.001
λ	56.2	5.86	4.48
$\langle r^{-2}\rangle$	150.	10.0	3.07
$\langle r^{-1}\rangle$	8.64	1.57	1.47
$\langle r\rangle$	0.176	0.919	0.890
$\langle r^2\rangle$	0.041	1.01	0.988

Ne ^1S

r	$1s$	$2s$	$2p$
0.001	0.060	0.014	0.
0.002	0.119	0.028	0.
0.004	0.233	0.055	0.
0.006	0.343	0.081	0.001
0.008	0.449	0.105	0.002
0.010	0.550	0.129	0.003
0.015	0.785	0.184	0.006
0.020	0.995	0.233	0.010
0.025	1.184	0.276	0.015
0.030	1.352	0.314	0.022
0.035	1.501	0.348	0.029
0.040	1.633	0.377	0.037
0.050	1.849	0.422	0.055
0.060	2.011	0.452	0.075
0.070	2.127	0.470	0.097

r	$1s$	$2s$	$2p$
0.080	2.204	0.476	0.121
0.090	2.249	0.473	0.147
0.100	2.267	0.461	0.173
0.120	2.241	0.417	0.228
0.140	2.156	0.352	0.285
0.160	2.033	0.272	0.342
0.180	1.889	0.183	0.398
0.200	1.734	0.089	0.452
0.220	1.577	—0.008	0.504
0.240	1.424	—0.105	0.554
0.260	1.277	—0.200	0.601
0.280	1.139	—0.292	0.645
0.300	1.012	—0.380	0.686
0.350	0.740	—0.577	0.774
0.400	0.533	—0.740	0.844
0.450	0.379	—0.867	0.895
0.500	0.267	—0.961	0.931
0.550	0.187	—1.026	0.954
0.600	0.131	—1.066	0.965
0.650	0.091	—1.085	0.966
0.700	0.064	—1.087	0.960
0.750	0.045	—1.077	0.948
0.800	0.031	—1.055	0.931
0.850	0.022	—1.026	0.910
0.900	0.016	—0.991	0.886
0.950	0.011	—0.951	0.859
1.000	0.008	—0.909	0.832
1.100	0.005	—0.821	0.774
1.200	0.003	—0.732	0.714
1.300	0.002	—0.647	0.656
1.400	0.001	—0.567	0.600
1.500	0.001	—0.495	0.547
1.600	0.001	—0.430	0.497
1.700	0.	—0.372	0.451
1.800	0.	—0.320	0.408
1.900	0.	—0.275	0.368
2.000	0.	—0.236	0.332
2.100	0.	—0.202	0.300
2.200	0.	—0.173	0.270
2.300	0.	—0.147	0.242
2.400	0.	—0.125	0.218
2.500	0.	—0.107	0.195
2.600	0.	—0.091	0.175
2.700	0.	—0.077	0.157
2.800	0.	—0.065	0.141
2.900	0.	—0.055	0.126
3.000	0.	—0.047	0.113
3.200	0.	—0.034	0.090
3.400	0.	—0.024	0.072
3.600	0.	—0.017	0.057
3.800	0.	—0.012	0.046
4.000	0.	—0.009	0.036
4.200	0.	—0.006	0.029
4.400	0.	—0.004	0.023
4.600	0.	—0.003	0.018
4.800	0.	—0.002	0.014
5.000	0.	—0.002	0.011
5.200	0.	—0.001	0.009
5.400	0.	—0.001	0.007
5.600	0.	—0.001	0.006
5.800	0.	—0.	0.004
6.000	0.	—0.	0.003
6.200	0.	—0.	0.003
6.400	0.	—0.	0.002
6.600	0.	—0.	0.002
6.800	0.	—0.	0.001
7.000	0.	—0.	0.001
7.200	0.	—0.	0.001
7.400	0.	—0.	0.001
λ	65.5	3.86	1.70

r	$1s$	$2s$	$2p$
$\langle r^{-2} \rangle$	187.	11.1	3.06
$\langle r^{-1} \rangle$	9.62	1.63	1.44
$\langle r \rangle$	0.158	0.892	0.965
$\langle r^2 \rangle$	0.033	0.967	1.23

Ne^+ ^3P

r	$1s$	$2s$	$2p$
0.001	0.060	0.015	0.
0.002	0.119	0.029	0.
0.004	0.233	0.057	0.
0.006	0.343	0.083	0.001
0.008	0.449	0.109	0.002
0.010	0.550	0.133	0.003
0.015	0.785	0.190	0.006
0.020	0.996	0.240	0.011
0.025	1.184	0.285	0.017
0.030	1.352	0.324	0.023
0.035	1.501	0.359	0.031
0.040	1.633	0.389	0.039
0.050	1.849	0.435	0.059
0.060	2.011	0.467	0.081
0.070	2.127	0.485	0.105
0.080	2.205	0.491	0.131
0.090	2.250	0.487	0.158
0.100	2.268	0.475	0.187
0.120	2.242	0.429	0.246
0.140	2.156	0.362	0.307
0.160	2.033	0.280	0.368
0.180	1.889	0.188	0.428
0.200	1.734	0.090	0.487
0.220	1.577	—0.010	0.543
0.240	1.424	—0.110	0.596
0.260	1.277	—0.209	0.646
0.280	1.139	—0.304	0.693
0.300	1.012	—0.394	0.736
0.350	0.740	—0.598	0.830
0.400	0.532	—0.765	0.902
0.450	0.378	—0.895	0.955
0.500	0.266	—0.990	0.990
0.550	0.187	—1.055	1.010
0.600	0.130	—1.094	1.018
0.650	0.091	—1.111	1.016
0.700	0.063	—1.111	1.004
0.750	0.044	—1.096	0.986
0.800	0.031	—1.071	0.963
0.850	0.022	—1.038	0.936
0.900	0.015	—0.998	0.905
0.950	0.011	—0.954	0.872
1.000	0.008	—0.908	0.838
1.100	0.004	—0.812	0.767
1.200	0.002	—0.716	0.696
1.300	0.002	—0.625	0.627
1.400	0.001	—0.541	0.562
1.500	0.001	—0.465	0.501
1.600	0.001	—0.397	0.445
1.700	0.	—0.338	0.394
1.800	0.	—0.286	0.347
1.900	0.	—0.242	0.305
2.000	0.	—0.203	0.268
2.100	0.	—0.170	0.235
2.200	0.	—0.143	0.205
2.300	0.	—0.119	0.179

r	$1s$	$2s$	$2p$
2.400	0.	—0.099	0.156
2.500	0.	—0.082	0.135
2.600	0.	—0.068	0.118
2.700	0.	—0.057	0.102
2.800	0.	—0.047	0.088
2.900	0.	—0.039	0.076
3.000	0.	—0.032	0.066
3.200	0.	—0.022	0.049
3.400	0.	—0.015	0.036
3.600	0.	—0.010	0.027
3.800	0.	—0.007	0.020
4.000	0.	—0.004	0.015
4.200	0.	—0.003	0.011
4.400	0.	—0.002	0.008
4.600	0.	—0.001	0.006
4.800	0.	—0.001	0.004
5.000	0.	—0.001	0.003
5.200	0.	—0.	0.002
5.400	0.	—0.	0.002
5.600	0.	—0.	0.001
5.800	0.	—0.	0.001
6.000	0.	—0.	0.001
λ	67.2	5.24	3.21
$\langle r^{-2} \rangle$	186.	11.7	3.42
$\langle r^{-1} \rangle$	9.62	1.69	1.54
$\langle r \rangle$	0.158	0.860	0.876
$\langle r^2 \rangle$	0.033	0.890	0.982

Ne^{++} ^1S

r	$1s$	$2s$	$2p$
0.001	0.060	0.015	0.
0.002	0.119	0.030	0.
0.004	0.234	0.059	0.001
0.006	0.343	0.086	0.001
0.008	0.449	0.113	0.002
0.010	0.550	0.138	0.003
0.015	0.785	0.197	0.007
0.020	0.996	0.249	0.012
0.025	1.185	0.296	0.018
0.030	1.353	0.337	0.025
0.035	1.502	0.373	0.033
0.040	1.634	0.404	0.042
0.050	1.850	0.452	0.063
0.060	2.012	0.485	0.087
0.070	2.128	0.503	0.112
0.080	2.205	0.510	0.140
0.090	2.250	0.506	0.170
0.100	2.269	0.493	0.200
0.120	2.242	0.445	0.263
0.140	2.157	0.374	0.329
0.160	2.034	0.288	0.394
0.180	1.889	0.192	0.458
0.200	1.734	0.090	0.520
0.220	1.577	—0.014	0.579
0.240	1.423	—0.118	0.636
0.260	1.276	—0.221	0.689
0.280	1.138	—0.320	0.738
0.300	1.011	—0.414	0.783
0.350	0.739	—0.626	0.880
0.400	0.531	—0.798	0.953
0.450	0.377	—0.931	1.005
0.500	0.265	—1.027	1.039
0.550	0.185	—1.091	1.055
0.600	0.129	—1.128	1.059
0.650	0.090	—1.141	1.051
0.700	0.062	—1.136	1.034
0.750	0.043	—1.117	1.009
0.800	0.030	—1.086	0.980
0.850	0.021	—1.047	0.946
0.900	0.015	—1.001	0.909
0.950	0.010	—0.952	0.870
1.000	0.007	—0.900	0.830
1.100	0.004	—0.794	0.748
1.200	0.002	—0.690	0.668
1.300	0.001	—0.593	0.591
1.400	0.001	—0.505	0.520
1.500	0.001	—0.426	0.454
1.600	0.	—0.358	0.395
1.700	0.	—0.298	0.342
1.800	0.	—0.248	0.295
1.900	0.	—0.205	0.254
2.000	0.	—0.168	0.217
2.100	0.	—0.138	0.186
2.200	0.	—0.113	0.158
2.300	0.	—0.092	0.134
2.400	0.	—0.075	0.114
2.500	0.	—0.061	0.096
2.600	0.	—0.049	0.081
2.700	0.	—0.040	0.069
2.800	0.	—0.032	0.058
2.900	0.	—0.026	0.049
3.000	0.	—0.021	0.041
3.200	0.	—0.013	0.029
3.400	0.	—0.009	0.020
3.600	0.	—0.005	0.014
3.800	0.	—0.003	0.010
4.000	0.	—0.002	0.007
4.200	0.	—0.001	0.005
4.400	0.	—0.001	0.003
4.600	0.	—0.001	0.002
4.800	0.	—0.	0.001
5.000	0.	—0.	0.001
5.200	0.	—0.	0.001
λ	69.4	6.87	4.76
$\langle r^{-2} \rangle$	186.	12.5	3.75
$\langle r^{-1} \rangle$	9.62	1.75	1.62
$\langle r \rangle$	0.157	0.827	0.817
$\langle r^2 \rangle$	0.033	0.815	0.841

Ne^{++} ^3P

r	$1s$	$2s$	$2p$
0.001	0.060	0.015	0.
0.002	0.119	0.030	0.
0.004	0.234	0.059	0.001
0.006	0.343	0.086	0.001
0.008	0.449	0.113	0.002
0.010	0.550	0.138	0.003
0.015	0.785	0.197	0.007
0.020	0.996	0.249	0.012
0.025	1.185	0.295	0.018
0.030	1.353	0.336	0.025
0.035	1.502	0.372	0.033
0.040	1.634	0.403	0.043

r	$1s$	$2s$	$2p$
0.050	1.850	0.451	0.063
0.060	2.012	0.483	0.087
0.070	2.128	0.502	0.113
0.080	2.205	0.508	0.141
0.090	2.250	0.504	0.171
0.100	2.268	0.492	0.202
0.120	2.242	0.444	0.265
0.140	2.157	0.374	0.331
0.160	2.034	0.288	0.397
0.180	1.889	0.192	0.461
0.200	1.734	0.091	0.524
0.220	1.577	—0.014	0.584
0.240	1.423	—0.118	0.641
0.260	1.277	—0.220	0.695
0.280	1.139	—0.319	0.744
0.300	1.011	—0.413	0.790
0.350	0.739	—0.624	0.888
0.400	0.531	—0.796	0.963
0.450	0.377	—0.929	1.016
0.500	0.265	—1.025	1.045
0.550	0.185	—1.089	1.066
0.600	0.129	—1.126	1.069
0.650	0.090	—1.140	1.060
0.700	0.062	—1.135	1.042
0.750	0.043	—1.116	1.016
0.800	0.030	—1.085	0.985
0.850	0.021	—1.047	0.950
0.900	0.015	—1.002	0.911
0.950	0.010	—0.953	0.870
1.000	0.008	—0.901	0.828
1.100	0.004	—0.795	0.744
1.200	0.002	—0.692	0.661
1.300	0.001	—0.595	0.582
1.400	0.001	—0.507	0.509
1.500	0.001	—0.428	0.442
1.600	0.	—0.359	0.382
1.700	0.	—0.300	0.329
1.800	0.	—0.249	0.282
1.900	0.	—0.206	0.241
2.000	0.	—0.170	0.205
2.100	0.	—0.139	0.174
2.200	0.	—0.114	0.147
2.300	0.	—0.093	0.124
2.400	0.	—0.076	0.104
2.500	0.	—0.061	0.088
2.600	0.	—0.050	0.074
2.700	0.	—0.040	0.062
2.800	0.	—0.032	0.052
2.900	0.	—0.026	0.043
3.000	0.	—0.021	0.036
3.200	0.	—0.014	0.025
3.400	0.	—0.009	0.017
3.600	0.	—0.006	0.012
3.800	0.	—0.004	0.008
4.000	0.	—0.002	0.005
4.200	0.	—0.001	0.004
4.400	0.	—0.001	0.003
4.600	0.	—0.001	0.002
4.800	0.	—0.	0.001
5.000	0.	—0.	0.001
5.200	0.	—0.	0.001
λ	69.3	6.82	5.03
$\langle r^{-2}\rangle$	186.	12.5	3.81
$\langle r^{-1}\rangle$	9.62	1.75	1.64
$\langle r\rangle$	0.157	0.828	0.805
$\langle r^2\rangle$	0.033	0.818	0.812

Ne^{++} ^1D

r	$1s$	$2s$	$2p$
0.001	0.060	0.015	0.
0.002	0.119	0.030	0.
0.004	0.234	0.059	0.001
0.006	0.343	0.086	0.001
0.008	0.449	0.113	0.002
0.010	0.550	0.138	0.003
0.015	0.785	0.197	0.007
0.020	0.996	0.249	0.012
0.025	1.185	0.296	0.018
0.030	1.353	0.337	0.025
0.035	1.502	0.372	0.033
0.040	1.634	0.403	0.042
0.050	1.850	0.451	0.063
0.060	2.012	0.484	0.087
0.070	2.128	0.502	0.113
0.080	2.205	0.509	0.141
0.090	2.250	0.505	0.170
0.100	2.268	0.492	0.201
0.120	2.242	0.444	0.265
0.140	2.157	0.374	0.330
0.160	2.034	0.288	0.395
0.180	1.889	0.192	0.460
0.200	1.734	0.091	0.522
0.220	1.577	—0.014	0.582
0.240	1.423	—0.118	0.639
0.260	1.276	—0.220	0.692
0.280	1.139	—0.319	0.742
0.300	1.011	—0.413	0.787
0.350	0.739	—0.624	0.885
0.400	0.531	—0.797	0.959
0.450	0.377	—0.930	1.012
0.500	0.265	—1.026	1.045
0.550	0.185	—1.090	1.062
0.600	0.129	—1.127	1.065
0.650	0.090	—0.140	1.056
0.700	0.062	—1.136	1.039
0.750	0.043	—1.116	1.014
0.800	0.030	—1.086	0.983
0.850	0.021	—1.047	0.948
0.900	0.015	—1.001	0.910
0.950	0.010	—0.952	0.870
1.000	0.007	—0.901	0.829
1.100	0.004	—0.795	0.745
1.200	0.002	—0.691	0.664
1.300	0.001	—0.594	0.586
1.400	0.001	—0.506	0.513
1.500	0.001	—0.427	0.447
1.600	0.	—0.359	0.387
1.700	0.	—0.299	0.334
1.800	0.	—0.248	0.287
1.900	0.	—0.205	0.246
2.000	0.	—0.169	0.210
2.100	0.	—0.139	0.178
2.200	0.	—0.114	0.151
2.300	0.	—0.093	0.128
2.400	0.	—0.075	0.108
2.500	0.	—0.061	0.091
2.600	0.	—0.050	0.077
2.700	0.	—0.040	0.064
2.800	0.	—0.032	0.054
2.900	0.	—0.026	0.045
3.000	0.	—0.021	0.038
3.200	0.	—0.014	0.026
3.400	0.	—0.009	0.018
3.600	0.	—0.006	0.013

r	$1s$	$2s$	$2p$
3.800	0.	—0.004	0.009
4.000	0.	—0.002	0.006
4.200	0.	—0.001	0.004
4.400	0.	—0.001	0.003
4.600	0.	—0.001	0.002
4.800	0.	—0.	0.001
5.000	0.	—0.	0.001
5.200	0.	—0.	0.001
λ	69.3	6.84	4.92
$\langle r^{-2} \rangle$	186.	12.5	3.79
$\langle r^{-1} \rangle$	9.62	1.75	1.63
$\langle r \rangle$	0.157	0.828	0.809
$\langle r^2 \rangle$	0.033	0.817	0.824

Na ^2S

r	$1s$	$2s$	$2p$	$3s$
0.001	0.069	0.017	0.	0.003
0.002	0.137	0.034	0.	0.005
0.004	0.269	0.066	0.001	0.010
0.006	0.395	0.096	0.001	0.014
0.008	0.515	0.126	0.002	0.019
0.010	0.630	0.154	0.004	0.023
0.015	0.894	0.218	0.008	0.033
0.020	1.129	0.274	0.014	0.041
0.025	1.336	0.324	0.021	0.048
0.030	1.518	0.366	0.030	0.055
0.035	1.677	0.403	0.039	0.060
0.040	1.815	0.434	0.050	0.065
0.050	2.036	0.480	0.074	0.072
0.060	2.192	0.507	0.102	0.076
0.070	2.296	0.519	0.131	0.077
0.080	2.357	0.517	0.163	0.077
0.090	2.381	0.504	0.196	0.075
0.100	2.377	0.481	0.231	0.071
0.120	2.305	0.412	0.301	0.060
0.140	2.175	0.321	0.373	0.046
0.160	2.012	0.215	0.443	0.030
0.180	1.834	0.102	0.512	0.013
0.200	1.652	—0.015	0.577	—0.005
0.220	1.474	—0.132	0.639	—0.023
0.240	1.306	—0.246	0.696	—0.040
0.260	1.149	—0.355	0.749	—0.057
0.280	1.007	—0.459	0.797	—0.072
0.300	0.877	—0.555	0.841	—0.086
0.350	0.613	—0.763	0.931	—0.116
0.400	0.422	—0.923	0.996	—0.138
0.450	0.287	—1.037	1.037	—0.151
0.500	0.194	—1.112	1.060	—0.157
0.550	0.130	—1.154	1.066	—0.157
0.600	0.088	—1.169	1.060	—0.152
0.650	0.059	—1.162	1.044	—0.143
0.700	0.040	—1.139	1.020	—0.130
0.750	0.027	—1.105	0.990	—0.115
0.800	0.018	—1.061	0.956	—0.097
0.850	0.013	—1.011	0.919	—0.078
0.900	0.009	—0.958	0.880	—0.058
0.950	0.006	—0.902	0.840	—0.037
1.000	0.005	—0.846	0.799	—0.015
1.100	0.003	—0.736	0.719	0.029
1.200	0.002	—0.633	0.641	0.073
1.300	0.001	—0.539	0.569	0.116
1.400	0.001	—0.455	0.502	0.157
1.500	0.001	—0.382	0.441	0.196
1.600	0.	—0.319	0.386	0.232
1.700	0.	—0.266	0.337	0.267
1.800	0.	—0.220	0.293	0.298
1.900	0.	—0.182	0.255	0.328
2.000	0.	—0.150	0.221	0.355
2.100	0.	—0.123	0.191	0.379
2.200	0.	—0.101	0.165	0.401
2.300	0.	—0.082	0.143	0.421
2.400	0.	—0.067	0.123	0.438
2.500	0.	—0.055	0.106	0.453
2.600	0.	—0.045	0.091	0.467
2.700	0.	—0.036	0.078	0.478
2.800	0.	—0.030	0.067	0.487
2.900	0.	—0.024	0.058	0.495
3.000	0.	—0.019	0.050	0.501
3.200	0.	—0.013	0.037	0.509
3.400	0.	—0.008	0.027	0.511
3.600	0.	—0.005	0.020	0.508
3.800	0.	—0.004	0.015	0.502
4.000	0.	—0.002	0.011	0.492
4.200	0.	—0.002	0.008	0.480
4.400	0.	—0.001	0.006	0.466
4.600	0.	—0.001	0.004	0.449
4.800	0.	—0.	0.003	0.432
5.000	0.	—0.	0.002	0.414
5.200	0.	—0.	0.002	0.395
5.400	0.	—0.	0.001	0.375
5.600	0.	—0.	0.001	0.356
5.800	0.	—0.	0.001	0.337
6.000	0.	—0.	0.001	0.318
6.200	0.	—0.	0.001	0.299
6.400	0.	—0.	0.	0.281
6.600	0.	—0.	0.	0.263
6.800	0.	—0.	0.	0.246
7.000	0.	—0.	0.	0.230
7.200	0.	—0.	0.	0.215
7.400	0.	—0.	0.	0.200
7.600	0.	—0.	0.	0.186
7.800	0.	—0.	0.	0.173
8.000	0.	—0.	0.	0.160
8.200	0.	—0.	0.	0.148
8.400	0.	—0.	0.	0.137
8.600	0.	—0.	0.	0.127
8.800	0.	—0.	0.	0.117
9.000	0.	—0.	0.	0.108
9.500	0.	—0.	0.	0.088
10.000	0.	—0.	0.	0.071
10.500	0.	—0.	0.	0.057
11.000	0.	—0.	0.	0.046
11.500	0.	—0.	0.	0.037
12.000	0.	—0.	0.	0.029
12.500	0.	—0.	0.	0.023
13.000	0.	—0.	0.	0.018
13.500	0.	—0.	0.	0.015
14.000	0.	—0.	0.	0.011
14.500	0.	—0.	0.	0.009
15.000	0.	—0.	0.	0.007
15.500	0.	—0.	0.	0.006
16.000	0.	—0.	0.	0.004
16.500	0.	—0.	0.	0.003
17.000	0.	—0.	0.	0.003
17.500	0.	—0.	0.	0.002
18.000	0.	—0.	0.	0.002
18.500	0.	0.	0.	0.001
19.000	0.	—0.	0.	0.001
19.500	0.	—0.	0.	0.001
20.000	0.	—0.	0.	0.001
λ	81.0	5.59	3.04	0.364

r	$1s$	$2s$	$2p$	$3s$
$\langle r^{-2} \rangle$	226.	14.4	4.19	0.394
$\langle r^{-1} \rangle$	10.6	1.87	1.70	0.301
$\langle r \rangle$	0.143	0.779	0.798	4.21
$\langle r^{2} \rangle$	0.027	0.731	0.822	20.7

Na^{+} ^{1}S

r	$1s$	$2s$	$2p$
0.001	0.070	0.017	0.
0.002	0.138	0.034	0.
0.004	0.269	0.066	0.001
0.006	0.395	0.096	0.001
0.008	0.515	0.126	0.002
0.010	0.630	0.154	0.004
0.015	0.894	0.218	0.008
0.020	1.129	0.274	0.014
0.025	1.336	0.324	0.021
0.030	1.518	0.366	0.030
0.035	1.677	0.403	0.039
0.040	1.815	0.434	0.050
0.050	2.036	0.479	0.074
0.060	2.192	0.507	0.102
0.070	2.296	0.519	0.132
0.080	2.357	0.517	0.163
0.090	2.381	0.504	0.197
0.100	2.377	0.481	0.231
0.120	2.305	0.412	0.302
0.140	2.175	0.321	0.373
0.160	2.012	0.215	0.444
0.180	1.834	0.102	0.512
0.200	1.652	—0.015	0.578
0.220	1.474	—0.132	0.639
0.240	1.306	—0.246	0.697
0.260	1.149	—0.355	0.750
0.280	1.007	—0.459	0.798
0.300	0.877	—0.555	0.842
0.350	0.613	—0.763	0.932
0.400	0.422	—0.923	0.997
0.450	0.287	—1.037	1.038
0.500	0.194	—1.112	1.061
0.550	0.130	—1.154	1.067
0.600	0.088	—1.169	1.061
0.650	0.059	—1.162	1.045
0.700	0.040	—1.139	1.021
0.750	0.027	—1.105	0.991
0.800	0.018	—1.061	0.957
0.850	0.013	—1.011	0.920
0.900	0.009	—0.958	0.881
0.950	0.006	—0.903	0.840
1.000	0.005	—0.847	0.799
1.100	0.003	—0.736	0.719
1.200	0.002	—0.633	0.641
1.300	0.001	—0.539	0.568
1.400	0.001	—0.455	0.501
1.500	0.001	—0.382	0.440
1.600	0.	—0.319	0.385
1.700	0.	—0.266	0.335
1.800	0.	—0.220	0.292
1.900	0.	—0.182	0.253
2.000	0.	—0.150	0.219
2.100	0.	—0.123	0.189
2.200	0.	—0.101	0.163
2.300	0.	—0.082	0.140
2.400	0.	—0.067	0.121
2.500	0.	—0.055	0.103
2.600	0.	—0.044	0.089
2.700	0.	—0.036	0.076
2.800	0.	—0.029	0.065
2.900	0.	—0.024	0.055
3.000	0.	—0.019	0.047
3.200	0.	—0.013	0.034
3.400	0.	—0.008	0.025
3.600	0.	—0.005	0.018
3.800	0.	—0.003	0.013
4.000	0.	—0.002	0.009
4.200	0.	—0.001	0.007
4.400	0.	—0.001	0.005
4.600	0.	—0.001	0.003
4.800	0.	—0.	0.002
5.000	0.	—0.	0.002
5.200	0.	—0.	0.001
5.400	0.	—0.	0.001
5.600	0.	—0.	0.001
λ	81.5	6.15	3.60
$\langle r^{-2} \rangle$	227.	14.4	4.20
$\langle r^{-1} \rangle$	10.6	1.87	1.70
$\langle r \rangle$	0.143	0.779	0.796
$\langle r^{2} \rangle$	0.027	0.731	0.816

Na^{++} ^{2}P

r	$1s$	$2s$	$2p$
0.001	0.070	0.018	0.
0.002	0.138	0.035	0.
0.004	0.269	0.068	0.001
0.006	0.395	0.099	0.001
0.008	0.515	0.130	0.003
0.010	0.630	0.158	0.004
0.015	0.894	0.225	0.009
0.020	1.129	0.283	0.015
0.025	1.336	0.334	0.023
0.030	1.519	0.378	0.032
0.035	1.678	0.416	0.042
0.040	1.816	0.447	0.054
0.050	2.036	0.495	0.079
0.060	2.193	0.523	0.109
0.070	2.297	0.535	0.140
0.080	2.357	0.533	0.174
0.090	2.382	0.519	0.210
0.100	2.378	0.495	0.247
0.120	2.305	0.424	0.322
0.140	2.175	0.329	0.398
0.160	2.012	0.220	0.473
0.180	1.834	0.103	0.546
0.200	1.652	—0.018	0.615
0.220	1.474	—0.139	0.681
0.240	1.305	—0.257	0.741
0.260	1.149	—0.370	0.797
0.280	1.006	—0.477	0.848
0.300	0.877	—0.576	0.894
0.350	0.612	—0.790	0.987
0.400	0.421	—0.954	1.052
0.450	0.286	—1.069	1.092
0.500	0.193	—1.144	1.111
0.550	0.129	—1.183	1.112

r	$1s$	$2s$	$2p$
0.600	0.087	—1.194	1.100
0.650	0.058	—1.184	1.077
0.700	0.039	—1.156	1.046
0.750	0.026	—1.115	1.008
0.800	0.018	—1.066	0.966
0.850	0.012	—1.011	0.921
0.900	0.009	—0.953	0.875
0.950	0.006	—0.892	0.827
1.000	0.004	—0.832	0.780
1.100	0.002	—0.714	0.687
1.200	0.001	—0.604	0.600
1.300	0.001	—0.506	0.520
1.400	0.001	—0.421	0.447
1.500	0.	—0.347	0.382
1.600	0.	—0.284	0.326
1.700	0.	—0.232	0.276
1.800	0.	—0.188	0.233
1.900	0.	—0.152	0.196
2.000	0.	—0.122	0.165
2.100	0.	—0.098	0.138
2.200	0.	—0.079	0.115
2.300	0.	—0.063	0.096
2.400	0.	—0.050	0.080
2.500	0.	—0.040	0.066
2.600	0.	—0.031	0.055
2.700	0.	—0.025	0.045
2.800	0.	—0.020	0.037
2.900	0.	—0.016	0.031
3.000	0.	—0.012	0.025
3.200	0.	—0.008	0.017
3.400	0.	—0.005	0.012
3.600	0.	—0.003	0.008
3.800	0.	—0.002	0.005
4.000	0.	—0.001	0.003
4.200	0.	—0.001	0.002
4.400	0.	—0.	0.002
4.600	0.	—0.	0.001
4.800	0.	—0.	0.001
λ	83.7	7.86	5.49
$\langle r^{-3}\rangle$	226.	15.2	4.61
$\langle r^{-1}\rangle$	10.6	1.93	1.80
$\langle r\rangle$	0.143	0.753	0.739
$\langle r^{2}\rangle$	0.027	0.678	0.689

Mg ^1S

r	$1s$	$2s$	$2p$	$3s$
0.001	0.079	0.020	0.	0.004
0.002	0.157	0.040	0.	0.008
0.004	0.306	0.077	0.001	0.015
0.006	0.448	0.113	0.002	0.022
0.008	0.584	0.147	0.003	0.028
0.010	0.712	0.180	0.005	0.035
0.015	1.006	0.253	0.011	0.049
0.020	1.264	0.317	0.018	0.061
0.025	1.488	0.372	0.028	0.072
0.030	1.683	0.419	0.039	0.081
0.035	1.850	0.458	0.052	0.088
0.040	1.993	0.490	0.066	0.094
0.050	2.213	0.535	0.097	0.103
0.060	2.360	0.557	0.132	0.107
0.070	2.447	0.561	0.170	0.107
0.080	2.487	0.549	0.210	0.105
0.090	2.489	0.524	0.252	0.100
0.100	2.461	0.488	0.295	0.092
0.120	2.340	0.391	0.381	0.073
0.140	2.166	0.271	0.468	0.049
0.160	1.966	0.139	0.552	0.023
0.180	1.758	0.	0.631	—0.005
0.200	1.553	—0.138	0.706	—0.032
0.220	1.360	—0.274	0.775	—0.058
0.240	1.182	—0.402	0.837	—0.083
0.260	1.022	—0.523	0.894	—0.106
0.280	0.878	—0.635	0.944	—0.127
0.300	0.751	—0.736	0.988	—0.146
0.350	0.502	—0.944	1.073	—0.182
0.400	0.330	—1.092	1.126	—0.205
0.450	0.215	—1.185	1.151	—0.214
0.500	0.139	—1.233	1.155	—0.212
0.550	0.090	—1.246	1.141	—0.202
0.600	0.058	—1.232	1.114	—0.184
0.650	0.038	—1.197	1.078	—0.161
0.700	0.025	—1.149	1.034	—0.133
0.750	0.016	—1.090	0.987	—0.102
0.800	0.011	—1.025	0.936	—0.069
0.850	0.007	—0.958	0.884	—0.035
0.900	0.005	—0.889	0.831	0.
0.950	0.004	—0.821	0.779	0.036
1.000	0.003	—0.755	0.728	0.071
1.100	0.001	—0.631	0.631	0.140
1.200	0.001	—0.521	0.543	0.205
1.300	0.001	—0.426	0.463	0.266
1.400	0.	—0.345	0.394	0.321
1.500	0.	—0.278	0.333	0.370
1.600	0.	—0.223	0.280	0.414
1.700	0.	—0.178	0.235	0.452
1.800	0.	—0.142	0.197	0.484
1.900	0.	—0.112	0.164	0.512
2.000	0.	—0.089	0.137	0.534
2.100	0.	—0.070	0.114	0.552
2.200	0.	—0.055	0.095	0.566
2.300	0.	—0.043	0.079	0.576
2.400	0.	—0.034	0.065	0.583
2.500	0.	—0.026	0.054	0.586
2.600	0.	—0.021	0.045	0.587
2.700	0.	—0.016	0.037	0.586
2.800	0.	—0.012	0.031	0.582
2.900	0.	—0.010	0.026	0.577
3.000	0.	—0.008	0.021	0.569
3.200	0.	—0.005	0.015	0.551
3.400	0.	—0.003	0.010	0.528
3.600	0.	—0.002	0.007	0.503
3.800	0.	—0.001	0.005	0.475
4.000	0.	—0.001	0.004	0.447
4.200	0.	—0.	0.003	0.419
4.400	0.	—0.	0.002	0.390
4.600	0.	—0.	0.001	0.362
4.800	0.	—0.	0.001	0.335
5.000	0.	—0.	0.001	0.309
5.200	0.	—0.	0.001	0.285
5.400	0.	—0.	0.	0.261
5.600	0.	—0.	0.	0.239
5.800	0.	—0.	0.	0.219
6.000	0.	—0.	0.	0.200
6.200	0.	—0.	0.	0.182
6.400	0.	—0.	0.	0.165
6.600	0.	—0.	0.	0.150
6.800	0.	—0.	0.	0.136
7.000	0.	—0.	0.	0.123
7.200	0.	—0.	0.	0.111
7.400	0.	—0.	0.	0.100
7.600	0.	—0.	0.	0.091

r	$1s$	$2s$	$2p$	$3s$
7.800	0.	—0.	0.	0.082
8.000	0.	—0.	0.	0.073
8.200	0.	—0.	0.	0.066
8.400	0.	—0.	0.	0.059
8.600	0.	—0.	0.	0.053
8.800	0.	—0.	0.	0.048
9.000	0.	—0.	0.	0.043
9.500	0.	—0.	0.	0.032
10.000	0.	—0.	0.	0.024
10.500	8.	—0.	0.	0.018
11.000	0.	—0.	0.	0.014
11.500	0.	—0.	0.	0.010
12.000	0.	—0.	0.	0.008
12.500	0.	—0.	0.	0.006
13.000	0.	.	0.	0.004
13.500	0.	.	0.	0.003
14.000	0.	.	0.	0.002
14.500	0.	.	0.	0.002
15.000	0.	.	0.	0.001
15.500	0.	.	0.	0.001
16.000	0.	.	0.	0.001
λ	98.1	7.53	4.57	0.506
$\langle r^{-3} \rangle$	270.	18.2	5.47	0.783
$\langle r^{-1} \rangle$	11.6	2.11	1.95	0.399
$\langle r \rangle$	0.131	0.690	0.685	3.25
$\langle r^2 \rangle$	0.023	0.571	0.597	12.4

Mg^+ ^2S

r	$1s$	$2s$	$2p$	$3s$
0.001	0.079	0.020	0.	0.005
0.002	0.157	0.040	0.	0.009
0.004	0.306	0.077	0.001	0.018
0.006	0.448	0.113	0.002	0.026
0.008	0.583	0.147	0.003	0.033
0.010	0.712	0.180	0.005	0.041
0.015	1.006	0.253	0.011	0.057
0.020	1.264	0.317	0.018	0.072
0.025	1.488	0.372	0.028	0.084
0.030	1.683	0.419	0.039	0.095
0.035	1.850	0.458	0.052	0.104
0.040	1.993	0.490	0.066	0.111
0.050	2.213	0.535	0.097	0.121
0.060	2.360	0.557	0.132	0.126
0.070	2.447	0.561	0.170	0.126
0.080	2.487	0.549	0.210	0.123
0.090	2.489	0.524	0.252	0.117
0.100	2.461	0.488	0.295	0.108
0.120	2.340	0.391	0.382	0.086
0.140	2.166	0.271	0.468	0.058
0.160	1.966	0.139	0.552	0.027
0.180	1.758	0.	0.632	—0.006
0.200	1.553	—0.138	0.706	—0.038
0.220	1.360	—0.273	0.775	—0.069
0.240	1.183	—0.402	0.838	—0.098
0.260	1.022	—0.523	0.895	—0.125
0.280	0.878	—0.634	0.945	—0.150
0.300	0.751	—0.736	0.989	—0.172
0.350	0.502	—0.944	1.074	—0.214
0.400	0.330	—1.091	1.127	—0.240
0.450	0.215	—1.185	1.152	—0.251
0.500	0.139	—1.233	1.155	—0.249
0.550	0.090	—1.246	1.142	—0.236
0.600	0.058	—1.232	1.115	—0.215
0.650	0.038	—1.197	1.078	—0.187
0.700	0.025	—1.149	1.035	—0.154
0.750	0.016	—1.090	0.987	—0.117
0.800	0.011	—1.026	0.936	—0.078
0.850	0.007	—0.958	0.884	—0.037
0.900	0.005	—0.889	0.831	0.005
0.950	0.004	—0.821	0.779	0.047
1.000	0.003	—0.755	0.728	0.088
1.100	0.001	—0.631	0.631	0.170
1.200	0.001	—0.521	0.542	0.246
1.300	0.001	—0.426	0.462	0.317
1.400	0.	—0.346	0.392	0.380
1.500	0.	—0.278	0.331	0.436
1.600	0.	—0.223	0.279	0.485
1.700	0.	—0.178	0.233	0.527
1.800	0.	—0.141	0.195	0.562
1.900	0.	—0.112	0.163	0.590
2.000	0.	—0.088	0.135	0.612
2.100	0.	—0.070	0.112	0.628
2.200	0.	—0.055	0.093	0.639
2.300	0.	—0.043	0.077	0.645
2.400	0.	—0.033	0.064	0.646
2.500	0.	—0.026	0.053	0.644
2.600	0.	—0.020	0.043	0.639
2.700	0.	—0.016	0.036	0.630
2.800	0.	—0.012	0.029	0.620
2.900	0.	—0.010	0.024	0.606
3.000	0.	—0.007	0.020	0.592
3.200	0.	—0.004	0.014	0.558
3.400	0.	—0.003	0.009	0.520
3.600	0.	—0.002	0.006	0.480
3.800	0.	—0.001	0.004	0.440
4.000	0.	—0.001	0.003	0.400
4.200	0.	—0.	0.002	0.361
4.400	0.	—0.	0.001	0.325
4.600	0.	—0.	0.001	0.290
4.800	0.	—0.	0.001	0.258
5.000	0.	—0.	0.	0.229
5.200	0.	—0.	0.	0.202
5.400	0.	—0.	0.	0.178
5.600	0.	—0.	0.	0.156
5.800	0.	—0.	0.	0.136
6.000	0.	—0.	0.	0.119
6.200	0.	—0.	0.	0.103
6.400	0.	—0.	0.	0.089
6.600	0.	—0.	0.	0.077
6.800	0.	—0.	0.	0.067
7.000	0.	—0.	0.	0.058
7.200	0.	—0.	0.	0.050
7.400	0.	—0.	0.	0.043
7.600	0.	—0.	0.	0.037
7.800	0.	—0.	0.	0.031
8.000	0.	—0.	0.	0.027
8.200	0.	—0.	0.	0.023
8.400	0.	—0.	0.	0.020
8.600	0.	—0.	0.	0.017
8.800	0.	—0.	0.	0.014
9.000	0.	—0.	0.	0.012
9.500	0.	—0.	0.	0.008
10.000	0.	—0.	0.	0.005
10.500	0.	—0.	0.	0.003
11.000	0.	—0.	0.	0.002
11.500	0.	—0.	0.	0.001
12.000	0.	—0.	0.	0.001
12.500	0.	—0.	0.	0.001
λ	98.7	8.17	5.21	1.08

r	$1s$	$2s$	$2p$	$3s$
$\langle r^{-3}\rangle$	270.	18.2	5.48	1.05
$\langle r^{-1}\rangle$	11.6	2.11	1.95	0.455
$\langle r\rangle$	0.131	0.690	0.684	2.84
$\langle r^{2}\rangle$	0.023	0.571	0.595	9.25

Mg^{++} ^1S

r	$1s$	$2s$	$2p$
0.001	0.079	0.020	0.
0.002	0.157	0.040	0.
0.004	0.306	0.077	0.001
0.006	0.448	0.113	0.002
0.008	0.584	0.147	0.003
0.010	0.712	0.180	0.005
0.015	1.006	0.253	0.011
0.020	1.264	0.317	0.019
0.025	1.488	0.372	0.028
0.030	1.683	0.419	0.039
0.035	1.850	0.458	0.052
0.040	1.993	0.490	0.066
0.050	2.213	0.535	0.097
0.060	2.360	0.557	0.133
0.070	2.447	0.561	0.171
0.080	2.487	0.549	0.211
0.090	2.489	0.524	0.253
0.100	2.461	0.488	0.296
0.120	2.340	0.391	0.383
0.140	2.166	0.271	0.469
0.160	1.966	0.139	0.553
0.180	1.758	0.	0.633
0.200	1.553	—0.138	0.708
0.220	1.360	—0.273	0.777
0.240	1.183	—0.402	0.840
0.260	1.022	—0.523	0.897
0.280	0.878	—0.634	0.947
0.300	0.751	—0.735	0.991
0.350	0.502	—0.944	1.076
0.400	0.330	—1.091	1.129
0.450	0.215	—1.184	1.154
0.500	0.139	—1.233	1.157
0.550	0.090	—1.246	1.143
0.600	0.058	—1.232	1.116
0.650	0.038	—1.198	1.080
0.700	0.025	—1.149	1.036
0.750	0.016	—1.090	0.988
0.800	0.011	—1.026	0.937
0.850	0.007	—0.958	0.884
0.900	0.005	—0.890	0.831
0.950	0.004	—0.822	0.778
1.000	0.003	—0.755	0.727
1.100	0.001	—0.631	0.629
1.200	0.001	—0.521	0.540
1.300	0.001	—0.426	0.460
1.400	0.	—0.346	0.389
1.500	0.	—0.278	0.328
1.600	0.	—0.223	0.275
1.700	0.	—0.178	0.230
1.800	0.	—0.141	0.191
1.900	0.	—0.111	0.159
2.000	0.	—0.088	0.131
2.100	0.	—0.069	0.108
2.200	0.	—0.054	0.089
2.300	0.	—0.042	0.073
2.400	0.	—0.033	0.060
2.500	0.	—0.026	0.049
2.600	0.	—0.020	0.040
2.700	0.	—0.015	0.033
2.800	0.	—0.012	0.027
2.900	0.	—0.009	0.022
3.000	0.	—0.007	0.018
3.200	0.	—0.004	0.012
3.400	0.	—0.003	0.008
3.600	0.	—0.001	0.005
3.800	0.	—0.001	0.003
4.000	0.	—0.001	0.002
4.200	0.	—0.	0.001
4.400	0.	—0.	0.001
4.600	0.	—0.	0.001
λ	99.5	8.97	6.01
$\langle r^{-3}\rangle$	272.	18.4	5.50
$\langle r^{-1}\rangle$	11.6	2.11	1.96
$\langle r\rangle$	0.131	0.690	0.681
$\langle r^{2}\rangle$	0.023	0.571	0.589

Al ^2P

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.090	0.023	0.	0.005	0.
0.002	0.177	0.046	0.	0.011	0.
0.004	0.344	0.090	0.001	0.021	0.
0.006	0.503	0.131	0.002	0.030	0.
0.008	0.654	0.170	0.004	0.039	0.001
0.010	0.797	0.207	0.006	0.048	0.001
0.015	1.120	0.290	0.014	0.067	0.002
0.020	1.400	0.361	0.024	0.083	0.004
0.025	1.641	0.421	0.036	0.097	0.006
0.030	1.846	0.471	0.050	0.109	0.009
0.035	2.019	0.512	0.066	0.118	0.012
0.040	2.164	0.544	0.084	0.125	0.015
0.050	2.379	0.586	0.123	0.135	0.022
0.060	2.513	0.601	0.166	0.138	0.030
0.070	2.581	0.595	0.213	0.136	0.038
0.080	2.597	0.570	0.262	0.130	0.047
0.090	2.574	0.532	0.313	0.120	0.056
0.100	2.520	0.481	0.364	0.108	0.065
0.120	2.351	0.353	0.468	0.078	0.083
0.140	2.134	0.204	0.569	0.042	0.100
0.160	1.900	0.044	0.665	0.004	0.117
0.180	1.667	—0.118	0.754	—0.034	0.132
0.200	1.445	—0.276	0.836	—0.072	0.145
0.220	1.242	—0.427	0.910	—0.107	0.157
0.240	1.059	—0.567	0.976	—0.139	0.167
0.260	0.898	—0.696	1.033	—0.167	0.176
0.280	0.758	—0.811	1.083	—0.193	0.183
0.300	0.637	—0.913	1.124	—0.214	0.188
0.350	0.406	—1.112	1.197	—0.252	0.194
0.400	0.256	—1.237	1.232	—0.269	0.191
0.450	0.160	—1.302	1.236	—0.267	0.181
0.500	0.099	—1.319	1.217	—0.251	0.166
0.550	0.062	—1.300	1.180	—0.224	0.147
0.600	0.039	—1.255	1.131	—0.187	0.124
0.650	0.024	—1.193	1.075	—0.145	0.098
0.700	0.015	—1.120	1.012	—0.098	0.071
0.750	0.010	—1.041	0.948	—0.048	0.042
0.800	0.007	—0.959	0.882	0.003	0.012
0.850	0.004	—0.877	0.818	0.054	—0.018
0.900	0.003	—0.797	0.755	0.105	—0.048

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.950	0.002	—0.721	0.694	0.155	—0.078
1.000	0.002	—0.649	0.636	0.203	—0.107
1.100	0.001	—0.521	0.530	0.293	—0.164
1.200	0.001	—0.413	0.438	0.374	—0.219
1.300	0.	—0.324	0.360	0.444	—0.269
1.400	0.	—0.252	0.293	0.503	—0.315
1.500	0.	—0.195	0.238	0.552	—0.357
1.600	0.	—0.150	0.193	0.591	—0.394
1.700	0.	—0.114	0.155	0.621	—0.427
1.800	0.	—0.087	0.125	0.643	—0.456
1.900	0.	—0.066	0.100	0.657	—0.481
2.000	0.	—0.050	0.080	0.665	—0.502
2.100	0.	—0.038	0.064	0.668	—0.519
2.200	0.	—0.029	0.051	0.665	—0.533
2.300	0.	—0.022	0.041	0.659	—0.543
2.400	0.	—0.016	0.033	0.649	—0.551
2.500	0.	—0.012	0.026	0.636	—0.556
2.600	0.	—0.009	0.021	0.621	—0.559
2.700	0.	—0.007	0.017	0.604	—0.560
2.800	—0.	—0.005	0.014	0.586	—0.559
2.900	—0.	—0.004	0.011	0.566	—0.556
3.000	—0.	—0.003	0.009	0.546	—0.551
3.200	—0.	—0.002	0.006	0.504	—0.539
3.400	—0.	—0.001	0.004	0.462	—0.522
3.600	—0.	—0.001	0.003	0.420	—0.502
3.800	—0.	—0.	0.002	0.380	—0.480
4.000	—0.	—0.	0.001	0.343	—0.457
4.200	—0.	—0.	0.001	0.307	—0.432
4.400	—0.	—0.	0.001	0.275	—0.408
4.600	—0.	—0.	0.	0.245	—0.383
4.800	—0.	—0.	0.	0.217	—0.359
5.000	—0.	—0.	0.	0.193	—0.335
5.200	—0.	—0.	0.	0.170	—0.312
5.400	—0.	—0.	0.	0.150	—0.290
5.600	—0.	—0.	0.	0.132	—0.269
5.800	—0.	—0.	0.	0.116	—0.248
6.000	—0.	—0.	0.	0.102	—0.229
6.200	—0.	—0.	0.	0.090	—0.212
6.400	—0.	—0.	0.	0.078	—0.195
6.600	—0.	—0.	0.	0.069	—0.179
6.800	—0.	—0.	0.	0.060	—0.164
7.000	—0.	—0.	0.	0.052	—0.151
7.200	—0.	—0.	0.	0.045	—0.138
7.400	—0.	—0.	0.	0.040	—0.126
7.600	—0.	—0.	0.	0.034	—0.115
7.800	—0.	—0.	0.	0.030	—0.105
8.000	—0.	—0.	0.	0.026	—0.096
8.200	—0.	—0.	0.	0.023	—0.087
8.400	—0.	—0.	0.	0.020	—0.079
8.600	—0.	—0.	0.	0.017	—0.072
8.800	—0.	—0.	0.	0.015	—0.066
9.000	—0.	—0.	0.	0.013	—0.060
9.500	—0.	—0.	0.	0.009	—0.047
10.000	—0.	—0.	0.	0.006	—0.036
10.500	—0.	—0.	0.	0.004	—0.028
11.000	—0.	—0.	0.	0.003	—0.022
11.500	—0.	—0.	0.	0.002	—0.017
12.000	—0.	—0.	0.	0.001	—0.013
12.500	—0.	—0.	0.	0.001	—0.010
13.000	—0.	—0.	0.	0.001	—0.008
13.500	—0.	—0.	0.	0.	—0.006
14.000	—0.	—0.	0.	0.	—0.004
14.500	—0.	—0.	0.	0.	—0.003
15.000	—0.	—0.	0.	0.	—0.003
15.500	—0.	—0.	0.	0.	—0.002
16.000	—0,	—0.	0,	0,	—0.001
16.500	—0.	—0.	0.	0.	—0.001
17.000	—0.	—0.	0.	0.	—0.001
17.500	—0.	—0.	0.	0.	—0.001
λ	117.	9.82	6.44	0.787	0.420
$\langle r^{-2} \rangle$	317.	22.6	6.92	1.35	0.308
$\langle r^{-1} \rangle$	12.6	2.35	2.21	0.507	0.379
$\langle r \rangle$	0.120	0.620	0.600	2.60	3.43
$\langle r^2 \rangle$	0.019	0.459	0.455	7.89	14.0

Al^+ ^1S

r	$1s$	$2s$	$2p$	$3s$
0.001	0.090	0.023	0.	0.006
0.002	0.177	0.046	0.	0.011
0.004	0.344	0.090	0.001	0.022
0.006	0.503	0.131	0.002	0.033
0.008	0.654	0.170	0.004	0.042
0.010	0.797	0.207	0.006	0.051
0.015	1.120	0.290	0.014	0.072
0.020	1.400	0.361	0.024	0.090
0.025	1.641	0.422	0.036	0.105
0.030	1.846	0.472	0.050	0.117
0.035	2.019	0.512	0.066	0.127
0.040	2.164	0.545	0.084	0.135
0.050	2.379	0.586	0.123	0.145
0.060	2.513	0.602	0.166	0.149
0.070	2.581	0.595	0.213	0.147
0.080	2.597	0.571	0.262	0.140
0.090	2.574	0.532	0.313	0.130
0.100	2.520	0.481	0.365	0.117
0.120	2.351	0.354	0.468	0.084
0.140	2.134	0.204	0.569	0.045
0.160	1.900	0.044	0.665	0.004
0.180	1.667	—0.118	0.755	—0.037
0.200	1.445	—0.277	0.837	—0.077
0.220	1.242	—0.428	0.911	—0.115
0.240	1.059	—0.568	0.976	—0.150
0.260	0.898	—0.696	1.034	—0.181
0.280	0.758	—0.812	1.083	—0.208
0.300	0.637	—0.914	1.125	—0.231
0.350	0.406	—1.113	1.198	—0.271
0.400	0.256	—1.238	1.232	—0.289
0.450	0.160	—1.303	1.236	—0.287
0.500	0.099	—1.320	1.217	—0.270
0.550	0.062	—1.301	1.180	—0.240
0.600	0.039	—1.256	1.132	—0.200
0.650	0.024	—1.193	1.075	—0.154
0.700	0.015	—1.120	1.012	—0.103
0.750	0.010	—1.040	0.948	—0.049
0.800	0.007	—0.958	0.882	0.006
0.850	0.004	—0.876	0.817	0.062
0.900	0.003	—0.797	0.754	0.117
0.950	0.002	—0.721	0.694	0.170
1.000	0.002	—0.649	0.636	0.222
1.100	0.001	—0.520	0.530	0.319
1.200	0.001	—0.412	0.438	0.405
1.300	0.	—0.323	0.359	0.480
1.400	0.	—0.251	0.293	0.542
1.500	0.	—0.194	0.238	0.593
1.600	0.	—0.149	0.192	0.632
1.700	0.	—0.114	0.155	0.662

r	1s	2s	2p	3s
1.800	0.	—0.087	0.125	0.682
1.900	0.	—0.066	0.100	0.694
2.000	0.	—0.050	0.080	0.699
2.100	0.	—0.037	0.064	0.698
2.200	0.	—0.028	0.051	0.692
2.300	0.	—0.021	0.041	0.681
2.400	0.	—0.016	0.033	0.666
2.500	0.	—0.012	0.026	0.649
2.600	0.	—0.009	0.021	0.629
2.700	0.	—0.007	0.017	0.607
2.800	0.	—0.005	0.013	0.584
2.900	0.	—0.004	0.011	0.560
3.000	0.	—0.003	0.009	0.535
3.200	0.	—0.002	0.006	0.485
3.400	0.	—0.001	0.004	0.435
3.600	0.	—0.	0.002	0.387
3.800	0.	—0.	0.002	0.342
4.000	0.	—0.	0.001	0.301
4.200	0.	—0.	0.001	0.263
4.400	0.	—0.	0.001	0.229
4.600	0.	—0.	0.	0.198
4.800	0.	—0.	0.	0.171
5.000	0.	—0.	0.	0.147
5.200	0.	—0.	0.	0.126
5.400	0.	—0.	0.	0.107
5.600	0.	—0.	0.	0.092
5.800	0.	—0.	0.	0.078
6.000	0.	—0.	0.	0.066
6.200	0.	—0.	0.	0.056
6.400	0.	—0.	0.	0.047
6.600	0.	—0.	0.	0.040
6.800	0.	—0.	0.	0.033
7.000	0.	—0.	0.	0.028
7.200	0.	—0.	0.	0.023
7.400	0.	—0.	0.	0.020
7.600	0.	—0.	0.	0.016
7.800	0.	—0.	0.	0.014
8.000	0.	—0.	0.	0.011
8.200	0.	—0.	0.	0.010
8.400	0.	—0.	0.	0.008
8.600	0.	—0.	0.	0.007
8.800	0.	—0.	0.	0.005
9.000	0.	—0.	0.	0.005
9.500	0.	—0.	0.	0.003
10.000	0.	—0.	0.	0.002
10.500	0.	—0.	0.	0.001
11.000	0.	—0.	0.	0.001
λ	118.	10.4	7.06	1.30
$\langle r^{-2} \rangle$	317.	22.6	6.92	1.55
$\langle r^{-1} \rangle$	12.6	2.35	2.21	0.540
$\langle r \rangle$	0.120	0.620	0.600	2.43
$\langle r^2 \rangle$	0.019	0.458	0.455	6.80

Al^{++} ^2S

r	1s	2s	2p	3s
0.001	0.090	0.023	0.	0.006
0.002	0.177	0.046	0.	0.013
0.004	0.344	0.090	0.001	0.025
0.006	0.503	0.131	0.002	0.036
0.008	0.654	0.170	0.004	0.047
0.010	0.797	0.207	0.006	0.057
0.015	1.120	0.290	0.014	0.080
0.020	1.400	0.361	0.024	0.100
0.025	1.641	0.422	0.036	0.116
0.030	1.846	0.472	0.050	0.130
0.035	2.019	0.512	0.066	0.141
0.040	2.164	0.545	0.084	0.150
0.050	2.379	0.586	0.123	0.161
0.060	2.513	0.602	0.167	0.165
0.070	2.581	0.595	0.214	0.163
0.080	2.597	0.571	0.263	0.155
0.090	2.574	0.532	0.314	0.144
0.100	2.520	0.481	0.365	0.129
0.120	2.351	0.354	0.469	0.093
0.140	2.134	0.204	0.570	0.050
0.160	1.900	0.044	0.666	0.004
0.180	1.667	—0.118	0.756	—0.042
0.200	1.445	—0.277	0.838	—0.086
0.220	1.242	—0.428	0.913	—0.128
0.240	1.059	—0.568	0.978	—0.166
0.260	0.898	—0.696	1.036	—0.201
0.280	0.758	—0.812	1.085	—0.231
0.300	0.637	—0.914	1.127	—0.256
0.350	0.406	—1.113	1.200	—0.301
0.400	0.256	—1.238	1.234	—0.320
0.450	0.160	—1.303	1.238	—0.318
0.500	0.099	—1.319	1.218	—0.297
0.550	0.062	—1.301	1.181	—0.263
0.600	0.039	—1.256	1.132	—0.219
0.650	0.024	—1.193	1.075	—0.167
0.700	0.015	—1.120	1.012	—0.110
0.750	0.010	—1.040	0.947	—0.049
0.800	0.007	—0.958	0.882	0.012
0.850	0.004	—0.877	0.817	0.075
0.900	0.003	—0.797	0.753	0.136
0.950	0.002	—0.721	0.692	0.196
1.000	0.002	—0.649	0.634	0.253
1.100	0.001	—0.520	0.528	0.360
1.200	0.001	—0.412	0.436	0.454
1.300	0.	—0.323	0.357	0.534
1.400	0.	—0.251	0.291	0.600
1.500	0.	—0.194	0.235	0.652
1.600	0.	—0.149	0.190	0.691
1.700	0.	—0.113	0.152	0.719
1.800	0.	—0.086	0.122	0.735
1.900	0.	—0.065	0.097	0.742
2.000	0.	—0.049	0.077	0.741
2.100	0.	—0.037	0.062	0.732
2.200	0.	—0.028	0.049	0.718
2.300	0.	—0.021	0.039	0.699
2.400	0.	—0.016	0.031	0.676
2.500	0.	—0.012	0.024	0.650
2.600	0.	—0.009	0.019	0.622
2.700	0.	—0.006	0.015	0.592
2.800	0.	—0.005	0.012	0.562
2.900	0.	—0.004	0.009	0.531
3.000	0.	—0.003	0.007	0.500
3.200	0.	—0.001	0.005	0.439
3.400	0.	—0.001	0.003	0.381
3.600	0.	—0.	0.002	0.327
3.800	0.	—0.	0.001	0.279
4.000	0.	—0.	0.001	0.236
4.200	0.	—0.	0.	0.198
4.400	0.	—0.	0.	0.166
4.600	0.	—0.	0.	0.138
4.800	0.	—0.	0.	0.114
5.000	0.	—0.	0.	0.094
5.200	0.	—0.	0.	0.077
5.400	0.	—0.	0.	0.063
5.600	0.	—0.	0.	0.051
5.800	0.	—0.	0.	0.042
6.000	0.	—0.	0.	0.034

r	$1s$	$2s$	$2p$	$3s$
6.200	0.	—0.	0.	0.027
6.400	0.	—0.	0.	0.022
6.600	0.	—0.	0.	0.018
6.800	0.	—0.	0.	0.014
7.000	0.	—0.	0.	0.011
7.200	0.	—0.	0.	0.009
7.400	0.	—0.	0.	0.007
7.600	0.	—0.	0.	0.006
7.800	0.	—0.	0.	0.005
8.000	0.	—0.	0.	0.004
8.200	0.	—0.	0.	0.003
8.400	0.	—0.	0.	0.002
8.600	0.	—0.	0.	0.002
8.800	0.	—0.	0.	0.001
9.000	0.	—0.	0.	0.001
9.500	0.	—0.	0.	0.001
λ	119.	11.3	7.94	2.06
$\langle r^{-2} \rangle$	317.	22.6	6.94	1.88
$\langle r^{-1} \rangle$	12.6	2.35	2.21	0.588
$\langle r \rangle$	0.120	0.620	0.598	2.24
$\langle r^2 \rangle$	0.019	0.458	0.451	5.70

Si ^1S

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.100	0.027	0.	0.007	0.
0.002	0.198	0.053	0.	0.014	0.
0.004	0.384	0.102	0.001	0.026	0.
0.006	0.560	0.149	0.003	0.039	0.001
0.008	0.727	0.193	0.005	0.050	0.001
0.010	0.883	0.235	0.008	0.061	0.002
0.015	1.235	0.327	0.017	0.085	0.004
0.020	1.536	0.405	0.030	0.105	0.006
0.025	1.792	0.470	0.045	0.121	0.009
0.030	2.006	0.523	0.062	0.135	0.013
0.035	2.183	0.565	0.082	0.146	0.017
0.040	2.328	0.596	0.104	0.154	0.021
0.050	2.535	0.632	0.152	0.163	0.031
0.060	2.651	0.638	0.204	0.164	0.041
0.070	2.696	0.620	0.261	0.158	0.053
0.080	2.687	0.581	0.319	0.148	0.065
0.090	2.638	0.527	0.379	0.133	0.077
0.100	2.558	0.460	0.440	0.115	0.089
0.120	2.340	0.301	0.559	0.072	0.112
0.140	2.084	0.121	0.674	0.024	0.135
0.160	1.820	—0.065	0.781	—0.026	0.155
0.180	1.566	—0.249	0.879	—0.074	0.173
0.200	1.333	—0.425	0.966	—0.120	0.189
0.220	1.124	—0.588	1.043	—0.162	0.202
0.240	0.941	—0.736	1.109	—0.199	0.213
0.260	0.783	—0.868	1.165	—0.231	0.221
0.280	0.649	—0.983	1.211	—0.258	0.226
0.300	0.535	—1.082	1.247	—0.279	0.229
0.350	0.326	—1.261	1.302	—0.311	0.228
0.400	0.197	—1.357	1.313	—0.315	0.215
0.450	0.118	—1.388	1.293	—0.296	0.194
0.500	0.070	—1.370	1.248	—0.260	0.165
0.550	0.042	—1.318	1.188	—0.211	0.131
0.600	0.025	—1.244	1.117	—0.154	0.094
0.650	0.016	—1.157	1.041	—0.090	0.055
0.700	0.010	—1.062	0.962	—0.023	0.014
0.750	0.006	—0.966	0.883	0.045	—0.028
0.800	0.004	—0.871	0.806	0.112	—0.070
0.850	0.003	—0.780	0.733	0.178	—0.111
0.900	0.002	—0.694	0.663	0.241	—0.151
0.950	0.001	—0.615	0.598	0.301	—0.190
1.000	0.001	—0.542	0.537	0.358	—0.227
1.100	0.001	—0.417	0.430	0.458	—0.297
1.200	0.	—0.317	0.341	0.541	—0.359
1.300	0.	—0.238	0.269	0.608	—0.413
1.400	0.	—0.178	0.211	0.659	—0.459
1.500	0.	—0.132	0.164	0.695	—0.497
1.600	0.	—0.097	0.128	0.719	—0.528
1.700	0.	—0.072	0.099	0.731	—0.553
1.800	0.	—0.052	0.076	0.735	—0.572
1.900	0.	—0.038	0.059	0.730	—0.586
2.000	0.	—0.028	0.046	0.719	—0.595
2.100	0.	—0.020	0.035	0.703	—0.600
2.200	—0.	—0.015	0.027	0.683	—0.601
2.300	—0.	—0.011	0.021	0.660	—0.599
2.400	—0.	—0.008	0.016	0.635	—0.595
2.500	—0.	—0.006	0.013	0.608	—0.589
2.600	—0.	—0.004	0.010	0.580	—0.581
2.700	—0.	—0.003	0.008	0.552	—0.571
2.800	—0.	—0.002	0.006	0.524	—0.560
2.900	—0.	—0.002	0.005	0.495	—0.548
3.000	—0.	—0.001	0.004	0.468	—0.535
3.200	—0.	—0.001	0.002	0.414	—0.508
3.400	—0.	—0.	0.001	0.365	—0.480
3.600	—0.	—0.	0.001	0.319	—0.451
3.800	—0.	—0.	0.001	0.278	—0.422
4.000	—0.	—0.	0.	0.241	—0.393
4.200	—0.	—0.	0.	0.208	—0.366
4.400	—0.	—0.	0.	0.180	—0.339
4.600	—0.	—0.	0.	0.155	—0.314
4.800	—0.	—0.	0.	0.133	—0.291
5.000	—0.	—0.	0.	0.114	—0.268
5.200	—0.	—0.	0.	0.097	—0.247
5.400	—0.	—0.	0.	0.083	—0.227
5.600	—0.	—0.	0.	0.071	—0.209
5.800	—0.	—0.	0.	0.060	—0.191
6.000	—0.	—0.	0.	0.051	—0.175
6.200	—0.	—0.	0.	0.043	—0.161
6.400	—0.	—0.	0.	0.037	—0.147
6.600	—0.	—0.	0.	0.031	—0.134
6.800	—0.	—0.	0.	0.027	—0.122
7.000	—0.	—0.	0.	0.022	—0.112
7.200	—0.	—0.	0.	0.019	—0.102
7.400	—0.	—0.	0.	0.016	—0.093
7.600	—0.	—0.	0.	0.014	—0.084
7.800	—0.	—0.	0.	0.012	—0.077
8.000	—0.	—0.	0.	0.010	—0.070
8.200	—0.	—0.	0.	0.008	—0.063
8.400	—0.	—0.	0.	0.007	—0.057
8.600	—0.	—0.	0.	0.006	—0.052
8.800	—0.	—0.	0.	0.005	—0.047
9.000	—0.	—0.	0.	0.004	—0.043
9.500	—0.	—0.	0.	0.003	—0.033
10.000	—0.	—0.	0.	0.002	—0.026
10.500	—0.	—0.	0.	0.001	—0.020
11.000	—0.	—0.	0.	0.001	—0.015
11.500	—0.	—0.	0.	0.001	—0.012
12.000	—0.	—0.	0.	0.	—0.009
12.500	—0.	—0.	0.	0.	—0.007
13.000	—0.	—0.	0.	0.	—0.005
13.500	—0.	—0.	0.	0.	—0.004
14.000	—0.	—0.	0.	0.	—0.003
14.500	—0.	—0.	0.	0.	—0.002
15.000	—0.	—0.	0.	0.	—0.002
15.500	—0.	—0.	0.	0.	—0.001
16.000	—0.	—0.	0.	0.	—0.001
16.500	—0.	—0.	0.	0.	—0.001
17.000	—0.	—0.	0.	0.	—0.001

r	1s	2s	2p	3s	3p
λ	138.	12.4	8.58	1.12	0.422
$\langle r^{-2}\rangle$	369.	27.4	8.52	2.02	0.458
$\langle r^{-1}\rangle$	13.6	2.59	2.46	0.608	0.454
$\langle r\rangle$	0.111	0.563	0.535	2.19	2.95
$\langle r^{2}\rangle$	0.017	0.377	0.359	5.59	10.6

Si ^{3}P

r	1s	2s	2p	3s	3p
0.001	0.100	0.027	0.	0.007	0.
0.002	0.198	0.053	0.	0.013	0.
0.004	0.384	0.102	0.001	0.026	0.
0.006	0.560	0.149	0.003	0.038	0.001
0.008	0.727	0.193	0.005	0.049	0.001
0.010	0.883	0.235	0.008	0.060	0.002
0.015	1.235	0.327	0.017	0.084	0.004
0.020	1.536	0.405	0.030	0.104	0.006
0.025	1.792	0.470	0.045	0.120	0.010
0.030	2.006	0.523	0.062	0.134	0.013
0.035	2.183	0.564	0.082	0.144	0.017
0.040	2.328	0.596	0.104	0.152	0.022
0.050	2.535	0.632	0.152	0.161	0.032
0.060	2.651	0.638	0.204	0.162	0.043
0.070	2.696	0.620	0.261	0.157	0.055
0.080	2.687	0.581	0.319	0.146	0.068
0.090	2.638	0.527	0.379	0.132	0.080
0.100	2.558	0.460	0.440	0.114	0.093
0.120	2.340	0.301	0.559	0.071	0.118
0.140	2.084	0.121	0.674	0.023	0.141
0.160	1.820	−0.065	0.781	−0.026	0.163
0.180	1.566	−0.249	0.879	−0.074	0.182
0.200	1.333	−0.425	0.966	−0.119	0.198
0.220	1.124	−0.588	1.043	−0.160	0.212
0.240	0.941	−0.736	1.109	−0.197	0.223
0.260	0.783	−0.868	1.165	−0.229	0.232
0.280	0.649	−0.983	1.210	−0.255	0.237
0.300	0.535	−1.081	1.247	−0.276	0.241
0.350	0.326	−1.261	1.302	−0.308	0.240
0.400	0.197	−1.357	1.313	−0.312	0.227
0.450	0.118	−1.388	1.293	−0.294	0.204
0.500	0.070	−1.370	1.248	−0.258	0.175
0.550	0.042	−1.318	1.188	−0.210	0.140
0.600	0.025	−1.244	1.117	−0.153	0.101
0.650	0.016	−1.157	1.041	−0.090	0.060
0.700	0.010	−1.062	0.962	−0.024	0.017
0.750	0.006	−0.966	0.883	0.043	−0.026
0.800	0.004	−0.871	0.807	0.110	−0.070
0.850	0.003	−0.780	0.733	0.175	−0.113
0.900	0.002	−0.695	0.663	0.238	−0.155
0.950	0.001	−0.615	0.598	0.298	−0.195
1.000	0.001	−0.542	0.537	0.353	−0.235
1.100	0.001	−0.417	0.430	0.453	−0.308
1.200	0.	−0.317	0.341	0.536	−0.374
1.300	0.	−0.238	0.269	0.602	−0.431
1.400	0.	−0.178	0.211	0.653	−0.480
1.500	0.	−0.132	0.164	0.690	−0.522
1.600	0.	−0.097	0.128	0.714	−0.555
1.700	0.	−0.072	0.099	0.727	−0.582
1.800	0.	−0.053	0.077	0.731	−0.602
1.900	0.	−0.038	0.059	0.727	−0.617
2.000	0.	−0.028	0.046	0.717	−0.626
2.100	−0.	−0.020	0.035	0.702	−0.631
2.200	−0.	−0.015	0.027	0.683	−0.632
2.300	−0.	−0.011	0.021	0.660	−0.629
2.400	−0.	−0.008	0.016	0.636	−0.623
2.500	−0.	−0.006	0.013	0.610	−0.615
2.600	−0.	−0.004	0.010	0.583	−0.604
2.700	−0.	−0.003	0.008	0.555	−0.592
2.800	−0.	−0.002	0.006	0.527	−0.578
2.900	−0.	−0.002	0.005	0.499	−0.563
3.000	−0.	−0.001	0.004	0.472	−0.548
3.200	−0.	−0.001	0.002	0.419	−0.514
3.400	−0.	−0.	0.001	0.370	−0.479
3.600	−0.	−0.	0.001	0.324	−0.443
3.800	−0.	−0.	0.001	0.283	−0.408
4.000	−0.	−0.	0.	0.246	−0.374
4.200	−0.	−0.	0.	0.213	−0.342
4.400	−0.	−0.	0.	0.184	−0.311
4.600	−0.	−0.	0.	0.159	−0.282
4.800	−0.	−0.	0.	0.136	−0.255
5.000	−0.	−0.	0.	0.117	−0.230
5.200	−0.	−0.	0.	0.100	−0.207
5.400	−0.	−0.	0.	0.085	−0.186
5.600	−0.	−0.	0.	0.073	−0.167
5.800	−0.	−0.	0.	0.062	−0.149
6.000	−0.	−0.	0.	0.053	−0.134
6.200	−0.	−0.	0.	0.045	−0.119
6.400	−0.	−0.	0.	0.038	−0.106
6.600	−0.	−0.	0.	0.032	−0.095
6.800	−0.	−0.	0.	0.027	−0.084
7.000	−0.	−0.	0.	0.023	−0.075
7.200	−0.	−0.	0.	0.019	−0.066
7.400	−0.	−0.	0.	0.016	−0.059
7.600	−0.	−0.	0.	0.014	−0.052
7.800	−0.	−0.	0.	0.012	−0.046
8.000	−0.	−0.	0.	0.010	−0.041
8.200	−0.	−0.	0.	0.008	−0.036
8.400	−0.	−0.	0.	0.007	−0.032
8.600	−0.	−0.	0.	0.006	−0.028
8.800	−0.	−0.	0.	0.005	−0.025
9.000	−0.	−0.	0.	0.004	−0.022
9.500	−0.	−0.	0.	0.003	−0.016
10.000	−0.	−0.	0.	0.002	−0.011
10.500	−0.	−0.	0.	0.001	−0.008
11.000	−0.	−0.	0.	0.001	−0.006
11.500	−0.	−0.	0.	0.	−0.004
12.000	−0.	−0.	0.	0.	−0.003
12.500	−0.	−0.	0.	0.	−0.002
13.000	−0.	−0.	0.	0.	−0.002
13.500	−0.	−0.	0.	0.	−0.001
14.000	−0.	−0.	0.	0.	−0.001
14.500	−0.	−0.	0.	0.	−0.001

r	1s	2s	2p	3s	3p
λ	138.	12.3	8.51	1.08	0.594
$\langle r^{-2}\rangle$	369.	27.4	8.52	1.98	0.498
$\langle r^{-1}\rangle$	13.6	2.59	2.46	0.603	0.477
$\langle r\rangle$	0.111	0.563	0.535	2.21	2.75
$\langle r^{2}\rangle$	0.017	0.377	0.360	5.68	8.98

Si ^{1}D

r	1s	2s	2p	3s	3p
0.001	0.100	0.027	0.	0.007	0.
0.002	0.198	0.053	0.	0.014	0.
0.004	0.384	0.102	0.001	0.026	0.
0.006	0.560	0.149	0.003	0.038	0.001
0.008	0.727	0.193	0.005	0.050	0.001
0.010	0.883	0.235	0.008	0.060	0.002
0.015	1.235	0.327	0.017	0.084	0.004

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.020	1.536	0.405	0.030	0.104	0.006
0.025	1.792	0.470	0.045	0.121	0.009
0.030	2.006	0.523	0.062	0.134	0.013
0.035	2.183	0.564	0.082	0.145	0.017
0.040	2.328	0.596	0.104	0.153	0.022
0.050	2.535	0.632	0.152	0.162	0.032
0.060	2.651	0.638	0.204	0.163	0.043
0.070	2.696	0.620	0.261	0.157	0.054
0.080	2.687	0.581	0.319	0.147	0.066
0.090	2.638	0.527	0.379	0.132	0.079
0.100	2.558	0.460	0.440	0.114	0.091
0.120	2.340	0.301	0.559	0.071	0.115
0.140	2.084	0.121	0.674	0.024	0.138
0.160	1.820	—0.065	0.781	—0.026	0.160
0.180	1.566	—0.249	0.879	—0.074	0.178
0.200	1.333	—0.425	0.966	—0.119	0.195
0.220	1.124	—0.588	1.043	—0.161	0.208
0.240	0.941	—0.736	1.109	—0.198	0.219
0.260	0.783	—0.868	1.165	—0.230	0.227
0.280	0.649	—0.983	1.211	—0.256	0.233
0.300	0.535	—1.082	1.247	—0.277	0.236
0.350	0.326	—1.261	1.302	—0.309	0.235
0.400	0.197	—1.357	1.313	—0.313	0.222
0.450	0.118	—1.388	1.293	—0.295	0.200
0.500	0.070	—1.370	1.248	—0.259	0.171
0.550	0.042	—1.318	1.188	—0.210	0.136
0.600	0.025	—1.244	1.117	—0.153	0.098
0.650	0.016	—1.157	1.041	—0.090	0.058
0.700	0.010	—1.062	0.962	—0.024	0.016
0.750	0.006	—0.966	0.883	0.044	—0.027
0.800	0.004	—0.871	0.806	0.111	—0.070
0.850	0.003	—0.780	0.733	0.176	—0.112
0.900	0.002	—0.694	0.663	0.239	—0.153
0.950	0.001	—0.615	0.598	0.299	—0.193
1.000	0.001	—0.542	0.537	0.355	—0.232
1.100	0.001	—0.417	0.430	0.455	—0.304
1.200	0.	—0.317	0.341	0.538	—0.368
1.300	0.	—0.238	0.269	0.605	—0.424
1.400	0.	—0.178	0.211	0.655	—0.472
1.500	0.	—0.132	0.164	0.692	—0.512
1.600	0.	—0.097	0.128	0.716	—0.545
1.700	0.	—0.072	0.099	0.729	—0.571
1.800	0.	—0.052	0.077	0.732	—0.590
1.900	0.	—0.038	0.059	0.728	—0.605
2.000	0.	—0.028	0.046	0.718	—0.614
2.100	0.	—0.020	0.035	0.702	—0.619
2.200	—0.	—0.015	0.027	0.683	—0.620
2.300	—0.	—0.011	0.021	0.660	—0.618
2.400	—0.	—0.008	0.016	0.636	—0.612
2.500	—0.	—0.006	0.013	0.609	—0.605
2.600	—0.	—0.004	0.010	0.582	—0.596
2.700	—0.	—0.003	0.008	0.554	—0.584
2.800	—0.	—0.002	0.006	0.526	—0.572
2.900	—0.	—0.002	0.005	0.498	—0.558
3.000	—0.	—0.001	0.004	0.470	—0.544
3.200	—0.	—0.001	0.002	0.417	—0.513
3.400	—0.	—0.	0.001	0.368	—0.480
3.600	—0.	—0.	0.001	0.322	—0.447
3.800	—0.	—0.	0.001	0.281	—0.415
4.000	—0.	—0.	0.	0.244	—0.383
4.200	—0.	—0.	0.	0.211	—0.352
4.400	—0.	—0.	0.	0.182	—0.323
4.600	—0.	—0.	0.	0.157	—0.296
4.800	—0.	—0.	0.	0.135	—0.270
5.000	—0.	—0.	0.	0.116	—0.246
5.200	—0.	—0.	0.	0.099	—0.223
5.400	—0.	—0.	0.	0.084	—0.203
5.600	—0.	—0.	0.	0.072	—0.183
5.800	—0.	—0.	0.	0.061	—0.166
6.000	—0.	—0.	0.	0.052	—0.150
6.200	—0.	—0.	0.	0.044	—0.135
6.400	—0.	—0.	0.	0.037	—0.122
6.600	—0.	—0.	0.	0.032	—0.109
6.800	—0.	—0.	0.	0.027	—0.098
7.000	—0.	—0.	0.	0.023	—0.088
7.200	—0.	—0.	0.	0.019	—0.079
7.400	—0.	—0.	0.	0.016	—0.071
7.600	—0.	—0.	0.	0.014	—0.063
7.800	—0.	—0.	0.	0.012	—0.057
8.000	—0.	—0.	0.	0.010	—0.051
8.200	—0.	—0.	0.	0.008	—0.045
8.400	—0.	—0.	0.	0.007	—0.040
8.600	—0.	—0.	0.	0.006	—0.036
8.800	—0.	—0.	0.	0.005	—0.032
9.000	—0.	—0.	0.	0.004	—0.029
9.500	—0.	—0.	0.	0.003	—0.021
10.000	—0.	—0.	0.	0.002	—0.016
10.500	—0.	—0.	0.	0.001	—0.012
11.000	—0.	—0.	0.	0.001	—0.009
11.500	—0.	—0.	0.	0.	—0.006
12.000	—0.	—0.	0.	0.	—0.005
12.500	—0.	—0.	0.	0.	—0.003
13.000	—0.	—0.	0.	0.	—0.003
13.500	—0.	—0.	0.	0.	—0.002
14.000	—0.	—0.	0.	0.	—0.001
14.500	—0.	—0.	0.	0.	—0.001
λ	138.	12.3	8.54	1.10	0.522
$\langle r^{-2}\rangle$	369.	27.4	8.52	2.00	0.482
$\langle r^{-1}\rangle$	13.6	2.59	2.46	0.605	0.468
$\langle r\rangle$	0.111	0.563	0.535	2.20	2.83
$\langle r^2\rangle$	0.017	0.377	0.360	5.65	9.55

Si^+ ^2P

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.100	0.027	0.	0.007	0.
0.002	0.198	0.053	0.	0.014	0.
0.004	0.384	0.102	0.001	0.028	0.
0.006	0.560	0.149	0.003	0.040	0.001
0.008	0.727	0.193	0.005	0.052	0.001
0.010	0.883	0.235	0.008	0.064	0.002
0.015	1.235	0.327	0.017	0.089	0.004
0.020	1.537	0.406	0.030	0.110	0.007
0.025	1.792	0.470	0.045	0.128	0.011
0.030	2.006	0.523	0.062	0.142	0.015
0.035	2.183	0.565	0.082	0.153	0.020
0.040	2.329	0.596	0.104	0.161	0.025
0.050	2.535	0.633	0.152	0.171	0.036
0.060	2.651	0.639	0.204	0.172	0.049
0.070	2.696	0.620	0.261	0.166	0.063
0.080	2.687	0.582	0.319	0.155	0.077
0.090	2.638	0.527	0.379	0.139	0.091
0.100	2.558	0.460	0.440	0.120	0.105
0.120	2.340	0.301	0.559	0.075	0.133
0.140	2.084	0.121	0.674	0.025	0.160
0.160	1.820	—0.065	0.781	—0.027	0.184
0.180	1.566	—0.250	0.879	—0.078	0.206
0.200	1.332	—0.425	0.967	—0.126	0.224
0.220	1.124	—0.588	1.043	—0.170	0.240
0.240	1.941	—0.737	1.109	—0.209	0.252
0.260	0.783	—0.868	1.165	—0.243	0.262
0.280	0.648	—0.984	1.211	—0.271	0.268
0.300	0.535	—1.082	1.247	—0.293	0.272
0.350	0.326	—1.262	1.302	—0.326	0.270
0.400	0.197	—1.358	1.314	—0.330	0.255
0.450	0.118	—1.388	1.293	—0.310	0.229

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.500	0.070	—1.371	1.248	—0.272	0.195
0.550	0.042	—1.319	1.188	—0.220	0.155
0.600	0.025	—1.244	1.117	—0.159	0.111
0.650	0.016	—1.157	1.041	—0.092	0.063
0.700	0.010	—1.062	0.962	—0.022	0.015
0.750	0.006	—0.965	0.883	0.049	—0.035
0.800	0.004	—0.871	0.806	0.120	—0.084
0.850	0.003	—0.779	0.733	0.190	—0.133
0.900	0.002	—0.694	0.663	0.256	—0.181
0.950	0.001	—0.614	0.597	0.319	—0.227
1.000	0.001	—0.542	0.537	0.378	—0.271
1.100	0.001	—0.416	0.430	0.483	—0.353
1.200	0.	—0.316	0.341	0.569	—0.426
1.300	0.	—0.238	0.269	0.637	—0.489
1.400	0.	—0.177	0.210	0.689	—0.542
1.500	0.	—0.131	0.164	0.724	—0.585
1.600	0.	—0.097	0.127	0.747	—0.619
1.700	0.	—0.071	0.099	0.757	—0.645
1.800	0.	—0.052	0.076	0.758	—0.663
1.900	0.	—0.038	0.059	0.750	—0.674
2.000	0.	—0.028	0.045	0.735	—0.679
2.100	0.	—0.020	0.035	0715	—0.678
2.200	0.	—0.015	0.027	0.691	—0.673
2.300	—0.	—0.011	0.021	0.664	—0.664
2.400	—0.	—0.008	0.016	0.634	—0.652
2.500	—0.	—0.006	0.012	0.603	—0.637
2.600	—0.	—0.004	0.010	0.572	—0.620
2.700	—0.	—0.003	0.007	0.540	—0.600
2.800	—0.	—0.002	0.006	0.508	—0.580
2.900	—0.	—0.002	0.005	0.477	—0.558
3.000	—0.	—0.001	0.004	0.446	—0.536
3.200	—0.	—0.001	0.002	0.388	—0.490
3.400	—0.	—0.	0.001	0.334	—0.444
3.600	—0.	—0.	0.001	0.286	—0.400
3.800	—0.	—0.	0.001	0.243	—0.357
4.000	—0.	—0.	0.	0.206	—0.317
4.200	—0.	—0.	0.	0.173	—0.280
4.400	—0.	—0.	0.	0.145	—0.247
4.600	—0.	—0.	0.	0.121	—0.216
4.800	—0.	—0.	0.	0.101	—0.188
5.000	—0.	—0.	0.	0.083	—0.164
5.200	—0.	—0.	0.	0.069	—0.142
5.400	—0.	—0.	0.	0.057	—0.123
5.600	—0.	—0.	0.	0.047	—0.106
5.800	—0.	—0.	0.	0.038	—0.091
6.000	—0.	—0.	0.	0.031	—0.078
6.200	—0.	—0.	0.	0.026	—0.067
6.400	—0.	—0.	0.	0.021	—0.057
6.600	—0.	—0.	0.	0.017	—0.049
6.800	—0.	—0.	0.	0.014	—0.041
7.000	—0.	—0.	0.	0.011	—0.035
7.200	—0.	—0.	0.	0.009	—0.030
7.400	—0.	—0.	0.	0.007	—0.025
7.600	—0.	—0.	0.	0.006	—0.021
7.800	—0.	—0.	0.	0.005	—0.018
8.000	—0.	—0.	0.	0.004	—0.015
8.200	—0.	—0.	0.	0.003	—0.013
8.400	—0.	—0.	0.	0.003	—0.011
8.600	—0.	—0.	0.	0.002	—0.009
8.800	—0.	—0.	0.	0.002	—0.008
9.000	—0.	—0.	0.	0.001	—0.006
9.500	—0.	—0.	0.	0.001	—0.004
10.000	—0.	—0.	0.	0.	—0.003
10.500	—0.	—0.	0.	0.	—0.002
11.000	—0.	—0.	0.	0.	—0.001
11.500	—0.	—0.	0.	0.	—0.001
λ	138.	13.0	9.22	1.68	1.17
$\langle r^{-2}\rangle$	369.	27.5	8.52	2.21	0.610
$\langle r^{-1}\rangle$	13.6	2.59	2.46	0.635	0.528

r	$1s$	$2s$	$2p$	$3s$	$3p$
$\langle r\rangle$	0.111	0.563	0.535	2.09	2.47
$\langle r^2\rangle$	0.017	0.377	0.359	5.04	7.10

Si^{++} ^1S

r	$1s$	$2s$	$2p$	$3s$
0.001	0.100	0.027	0.	0.008
0.002	0.198	0.053	0.	0.015
0.004	0.384	0.102	0.001	0.030
0.006	0.560	0.149	0.003	0.043
0.008	0.727	0.193	0.005	0.056
0.010	0.883	0.235	0.008	0.068
0.015	1.236	0.328	0.017	0.095
0.020	1.537	0.406	0.030	0.117
0.025	1.792	0.471	0.045	0.136
0.030	2.006	0.524	0.062	0.151
0.035	2.183	0.565	0.082	0.163
0.040	2.329	0.597	0.104	0.172
0.050	2.535	0.633	0.152	0.182
0.060	2.651	0.639	0.205	0.183
0.070	2.696	0.621	0.261	0.177
0.080	2.687	0.582	0.320	0.165
0.090	2.638	0.528	0.380	0.148
0.100	2.558	0.461	0.440	0.128
0.120	2.340	0.301	0.560	0.080
0.140	2.084	0.121	0.675	0.026
0.160	1.820	—0.066	0.782	—0.029
0.180	1.566	—0.250	0.880	—0.084
0.200	1.332	—0.426	0.968	—0.135
0.220	1.124	—0.589	1.044	—0.181
0.240	0.941	—0.738	1.110	—0.223
0.260	0.783	—0.870	1.166	—0.258
0.280	0.648	—0.985	1.212	—0.288
0.300	0.535	—1.084	1.248	—0.312
0.350	0.326	—1.263	1.303	—0.347
0.400	0.197	—1.359	1.314	—0.350
0.450	0.118	—1.389	1.293	—0.329
0.500	0.070	—1.371	1.249	—0.287
0.550	0.042	—1.319	1.188	—0.232
0.600	0.025	—1.245	1.117	—0.166
0.650	0.016	—1.156	1.041	—0.094
0.700	0.010	—1.062	0.962	—0.019
0.750	0.006	—0.965	0.883	0.058
0.800	0.004	—0.870	0.806	0.134
0.850	0.003	—0.778	0.732	0.207
0.900	0.002	—0.693	0.662	0.278
0.950	0.001	—0.613	0.596	0.345
1.000	0.001	—0.540	0.536	0.407
1.100	0.001	—0.415	0.429	0.517
1.200	0.	—0.315	0.340	0.607
1.300	0.	—0.236	0.267	0.676
1.400	0.	—0.176	0.209	0.727
1.500	0.	—0.130	0.163	0.761
1.600	0.	—0.096	0.126	0.780
1.700	0.	—0.070	0.098	0.787
1.800	0.	—0.051	0.075	0.782
1.900	0.	—0.037	0.058	0.769
2.000	0.	—0.027	0.045	0.748
2.100	0.	—0.019	0.034	0.722
2.200	0.	—0.014	0.026	0.692
2.300	0.	—0.010	0.020	0.659
2.400	0.	—0.007	0.016	0.624
2.500	0.	—0.005	0.012	0.587
2.600	0.	—0.004	0.009	0.551
2.700	0.	—0.003	0.007	0.514

r	$1s$	$2s$	$2p$	$3s$
2.800	0.	—0.002	0.005	0.479
2.900	0.	—0.001	0.004	0.444
3.000	0.	—0.001	0.003	0.410
3.200	0.	—0.	0.002	0.348
3.400	0.	—0.	0.001	0.292
3.600	0.	—0.	0.001	0.243
3.800	0.	—0.	0.	0.200
4.000	0.	—0.	0.	0.164
4.200	0.	—0.	0.	0.134
4.400	0.	—0.	0.	0.109
4.600	0.	—0.	0.	0.088
4.800	0.	—0.	0.	0.071
5.000	0.	—0.	0.	0.057
5.200	0.	—0.	0.	0.045
5.400	0.	—0.	0.	0.036
5.600	0.	—0.	0.	0.028
5.800	0.	—0.	0.	0.023
6.000	0.	—0.	0.	0.018
6.200	0.	—0.	0.	0.014
6.400	0.	0.	0.	0.011
6.600	0.	0.	0.	0.009
6.800	0.	0.	0.	0.007
7.000	0.	0.	0.	0.005
7.200	0.	0.	0.	0.004
7.400	0.	0.	0.	0.003
7.600	0.	0.	0.	0.002
7.800	0.	0.	0.	0.002
8.000	0.	0.	0.	0.001
8.200	0.	0.	0.	0.001
8.400	0.	0.	0.	0.001
8.600	0.	0.	0.	0.001
8.800	0.	0.	0.	0.001
λ	139.	13.9	10.1	2.36
$\langle r^{-2} \rangle$	369.	27.5	8.54	2.48
$\langle r^{-1} \rangle$	13.6	2.60	2.46	0.669
$\langle r \rangle$	0.111	0.562	0.535	1.99
$\langle r^2 \rangle$	0.017	0.376	0.358	4.51

$P\ ^1S$

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.111	0.030	0.	0.008	0.
0.002	0.219	0.059	0.	0.016	0.
0.004	0.425	0.115	0.002	0.032	0.
0.006	0.619	0.168	0.004	0.046	0.001
0.008	0.801	0.217	0.006	0.060	0.002
0.010	0.971	0.263	0.010	0.072	0.002
0.015	1.352	0.365	0.021	0.100	0.005
0.020	1.673	0.450	0.036	0.123	0.009
0.025	1.941	0.518	0.055	0.142	0.013
0.030	2.163	0.573	0.076	0.157	0.018
0.035	2.342	0.615	0.100	0.168	0.024
0.040	2.486	0.644	0.126	0.176	0.030
0.050	2.680	0.674	0.183	0.184	0.043
0.060	2.775	0.668	0.246	0.182	0.058
0.070	2.795	0.636	0.312	0.172	0.074
0.080	2.759	0.581	0.381	0.156	0.090
0.090	2.681	0.510	0.450	0.135	0.106
0.100	2.575	0.426	0.519	0.111	0.122
0.120	2.311	0.234	0.655	0.056	0.153
0.140	2.018	0.024	0.782	—0.003	0.182
0.160	1.729	—0.187	0.899	—0.063	0.208
0.180	1.460	—0.390	1.003	—0.119	0.229
0.200	1.219	—0.580	1.093	—0.171	0.248
0.220	1.009	—0.751	1.170	—0.217	0.262
0.240	0.829	—0.903	1.234	—0.256	0.272
0.260	0.677	—1.034	1.286	—0.288	0.279
0.280	0.551	—1.145	1.325	—0.313	0.282
0.300	0.446	—1.236	1.354	—0.331	0.282
0.350	0.260	—1.388	1.385	—0.350	0.269
0.400	0.150	—1.449	1.370	—0.336	0.242
0.450	0.086	—1.443	1.322	—0.296	0.203
0.500	0.050	—1.389	1.252	—0.238	0.157
0.550	0.029	—1.306	1.169	—0.167	0.104
0.600	0.017	—1.205	1.078	—0.088	0.049
0.650	0.010	—1.095	0.984	—0.006	—0.008
0.700	0.006	—0.984	0.892	0.078	—0.065
0.750	0.004	—0.876	0.803	0.160	—0.122
0.800	0.002	—0.773	0.718	0.239	—0.178
0.850	0.002	—0.678	0.640	0.314	—0.231
0.900	0.001	—0.591	0.567	0.383	—0.282
0.950	0.001	—0.512	0.501	0.447	—0.330
1.000	0.001	—0.442	0.441	0.505	—0.375
1.100	0.	—0.326	0.339	0.603	—0.455
1.200	0.	—0.238	0.258	0.677	—0.522
1.300	0.	—0.172	0.196	0.730	—0.577
1.400	0.	—0.123	0.147	0.763	—0.619
1.500	0.	—0.088	0.110	0.781	—0.651
1.600	0.	—0.062	0.083	0.785	—0.672
1.700	0.	—0.044	0.062	0.778	—0.686
1.800	—0.	—0.031	0.046	0.763	—0.692
1.900	—0.	—0.022	0.034	0.741	—0.691
2.000	—0.	—0.016	0.026	0.715	—0.686
2.100	—0.	—0.011	0.019	0.684	—0.676
2.200	—0.	—0.008	0.014	0.652	—0.662
2.300	—0.	—0.006	0.011	0.618	—0.645
2.400	—0.	—0.004	0.008	0.583	—0.627
2.500	—0.	—0.003	0.006	0.549	—0.606
2.600	—0.	—0.002	0.005	0.514	—0.585
2.700	—0.	—0.002	0.004	0.481	—0.562
2.800	—0.	—0.001	0.003	0.449	—0.539
2.900	—0.	—0.001	0.002	0.418	—0.515
3.000	—0.	—0.001	0.002	0.388	—0.492
3.200	—0.	—0.	0.001	0.333	—0.446
3.400	—0.	—0.	0.001	0.284	—0.402
3.600	—0.	—0.	0.	0.241	—0.360
3.800	—0.	—0.	0.	0.204	—0.321
4.000	—0.	—0.	0.	0.172	—0.285
4.200	—0.	—0.	0.	0.144	—0.252
4.400	—0.	—0.	0.	0.121	—0.222
4.600	—0.	—0.	0.	0.101	—0.196
4.800	—0.	—0.	0.	0.084	—0.172
5.000	—0.	—0.	0.	0.070	—0.150
5.200	—0.	—0.	0.	0.058	—0.131
5.400	—0.	—0.	0.	0.048	—0.115
5.600	—0.	—0.	0.	0.040	—0.100
5.800	—0.	—0.	0.	0.033	—0.087
6.000	—0.	—0.	0.	0.027	—0.075
6.200	—0.	—0.	0.	0.022	—0.065
6.400	—0.	—0.	0.	0.018	—0.057
6.600	—0.	—0.	0.	0.015	—0.049
6.800	—0.	—0.	0.	0.012	—0.042
7.000	—0.	—0.	0.	0.010	—0.037
7.200	—0.	—0.	0.	0.008	—0.032
7.400	—0.	—0.	0.	0.007	—0.027
7.600	—0.	—0.	0.	0.006	—0.024
7.800	—0.	—0.	0.	0.005	—0.020
8.000	—0.	—0.	0.	0.004	—0.017
8.200	—0.	—0.	0.	0.003	—0.015
8.400	—0.	—0.	0.	0.003	—0.013
8.600	—0.	—0.	0.	0.002	—0.011
8.800	—0.	—0.	0.	0.002	—0.010
9.000	—0.	—0.	0.	0.001	—0.008

r	1s	2s	2p	3s	3p
9.500	—0.	—0.	0.	0.001	—0.006
10.000	—0.	—0.	0.	0.	—0.004
10.500	—0.	—0.	0.	0.	—0.003
11.000	—0.	—0.	0.	0.	—0.002
11.500	—0.	—0.	0.	0.	—0.001
12.000	—0.	—0.	0.	0.	—0.001
12.500	—0.	—0.	0.	0.	—0.001
λ	160.	15.0	10.8	1.39	0.784
$\langle r^{-2}\rangle$	424.	32.7	10.3	2.69	0.715
$\langle r^{-1}\rangle$	14.6	2.83	2.71	0.695	0.570
$\langle r\rangle$	0.104	0.516	0.483	1.93	2.32
$\langle r^2\rangle$	0.014	0.316	0.292	4.35	6.39

P ^{2}P

r	1s	2s	2p	3s	3p
0.001	0.111	0.030	0.	0.008	0.
0.002	0.219	0.059	0.	0.016	0.
0.004	0.425	0.115	0.002	0.032	0.
0.006	0.619	0.168	0.004	0.046	0.001
0.008	0.801	0.217	0.006	0.060	0.001
0.010	0.971	0.263	0.010	0.073	0.002
0.015	1.352	0.365	0.021	0.101	0.005
0.020	1.673	0.450	0.036	0.124	0.008
0.025	1.941	0.519	0.055	0.143	0.013
0.030	2.163	0.573	0.076	0.158	0.018
0.035	2.342	0.615	0.100	0.169	0.023
0.040	2.486	0.645	0.126	0.177	0.029
0.050	2.680	0.674	0.183	0.185	0.042
0.060	2.775	0.668	0.246	0.183	0.057
0.070	2.795	0.636	0.312	0.173	0.072
0.080	2.759	0.582	0.381	0.157	0.088
0.090	2.681	0.510	0.450	0.136	0.104
0.100	2.575	0.427	0.519	0.112	0.119
0.120	2.311	0.234	0.655	0.056	0.150
0.140	2.018	0.024	0.783	—0.003	0.178
0.160	1.729	—0.187	0.899	—0.063	0.203
0.180	1.460	—0.391	1.003	—0.120	0.224
0.200	1.219	—0.580	1.094	—0.172	0.242
0.220	1.009	—0.751	1.171	—0.218	0.256
0.240	0.829	—0.903	1.234	—0.257	0.266
0.260	0.677	—1.034	1.286	—0.290	0.272
0.280	0.551	—1.145	1.325	—0.315	0.275
0.300	0.446	—1.237	1.354	—0.333	0.275
0.350	0.260	—1.388	1.385	—0.352	0.263
0.400	0.150	—1.449	1.370	—0.338	0.235
0.450	0.086	—1.443	1.322	—0.297	0.197
0.500	0.050	—1.389	1.252	—0.239	0.152
0.550	0.029	—1.306	1.169	—0.167	0.100
0.600	0.017	—1.205	1.078	—0.088	0.046
0.650	0.010	—1.095	0.984	—0.005	—0.010
0.700	0.006	—0.984	0.892	0.079	—0.066
0.750	0.004	—0.876	0.803	0.161	—0.122
0.800	0.002	—0.773	0.718	0.241	—0.176
0.850	0.002	—0.678	0.640	0.316	—0.228
0.900	0.001	—0.591	0.567	0.386	—0.278
0.950	0.001	—0.512	0.501	0.450	—0.325
1.000	0.001	—0.442	0.441	0.508	—0.368
1.100	0.	—0.326	0.339	0.606	—0.446
1.200	0.	—0.238	0.258	0.681	—0.511
1.300	0.	—0.172	0.196	0.733	—0.564
1.400	0.	—0.123	0.147	0.767	—0.604
1.500	0.	—0.088	0.110	0.784	—0.635
1.600	0.	—0.062	0.082	0.788	—0.656
1.700	0.	—0.044	0.062	0.780	—0.669
1.800	—0.	—0.031	0.046	0.764	—0.675
1.900	—0.	—0.022	0.034	0.742	—0.675
2.000	—0.	—0.016	0.025	0.715	—0.670
2.100	—0.	—0.011	0.019	0.684	—0.661
2.200	—0.	—0.008	0.014	0.651	—0.649
2.300	—0.	—0.006	0.011	0.616	—0.634
2.400	—0.	—0.004	0.008	0.581	—0.617
2.500	—0.	—0.003	0.006	0.546	—0.599
2.600	—0.	—0.002	0.005	0.512	—0.580
2.700	—0.	—0.002	0.004	0.478	—0.559
2.800	—0.	—0.001	0.003	0.445	—0.539
2.900	—0.	—0.001	0.002	0.414	—0.517
3.000	—0.	—0.001	0.002	0.384	—0.496
3.200	—0.	—0.	0.001	0.329	—0.454
3.400	—0.	—0.	0.001	0.281	—0.414
3.600	—0.	—0.	0.	0.238	—0.375
3.800	—0.	—0.	0.	0.201	—0.339
4.000	—0.	—0.	0.	0.169	—0.305
4.200	—0.	—0.	0.	0.142	—0.274
4.400	—0.	—0.	0.	0.119	—0.245
4.600	—0.	—0.	0.	0.099	—0.219
4.800	—0.	—0.	0.	0.083	—0.195
5.000	—0.	—0.	0.	0.069	—0.173
5.200	—0.	—0.	0.	0.057	—0.154
5.400	—0.	—0.	0.	0.047	—0.137
5.600	—0.	—0.	0.	0.039	—0.121
5.800	—0.	—0.	0.	0.032	—0.107
6.000	—0.	—0.	0.	0.027	—0.095
6.200	—0.	—0.	0.	0.022	—0.083
6.400	—0.	—0.	0.	0.018	—0.074
6.600	—0.	—0.	0.	0.015	—0.065
6.800	—0.	—0.	0.	0.012	—0.057
7.000	—0.	—0.	0.	0.010	—0.050
7.200	—0.	—0.	0.	0.008	—0.044
7.400	—0.	—0.	0.	0.007	—0.039
7.600	—0.	—0.	0.	0.006	—0.034
7.800	—0.	—0.	0.	0.005	—0.030
8.000	—0.	—0.	0.	0.004	—0.026
8.200	—0.	—0.	0.	0.003	—0.023
8.400	—0.	—0.	0.	0.003	—0.020
8.600	—0.	—0.	0.	0.002	—0.017
8.800	—0.	—0.	0.	0.002	—0.015
9.000	—0.	—0.	0.	0.001	—0.013
9.500	—0.	—0.	0.	0.001	—0.009
10.000	—0.	—0.	0.	0.001	—0.007
10.500	—0.	—0.	0.	0.	—0.005
11.000	—0.	—0.	0.	0.	—0.003
11.500	—0.	—0.	0.	0.	—0.002
12.000	—0.	—0.	0.	0.	—0.002
12.500	—0.	—0.	0.	0.	—0.001
13.000	—0.	—0.	0.	0.	—0.001
13.500	—0.	—0.	0.	0.	—0.001
λ	160.	15.1	10.9	1.43	0.649
$\langle r^{-2}\rangle$	424.	32.7	10.3	2.72	0.687
$\langle r^{-1}\rangle$	14.6	2.83	2.71	0.698	0.556
$\langle r\rangle$	0.104	0.516	0.483	1.92	2.40
$\langle r^2\rangle$	0.014	0.316	0.292	4.31	6.92

P^2 D

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.111	0.030	0.	0.008	0.
0.002	0.219	0.059	0.	0.016	0.
0.004	0.425	0.115	0.002	0.032	0.
0.006	0.619	0.168	0.004	0.046	0.001
0.008	0.801	0.217	0.006	0.060	0.001
0.010	0.971	0.263	0.010	0.073	0.002
0.015	1.352	0.365	0.021	0.101	0.005
0.020	1.673	0.450	0.036	0.124	0.009
0.025	1.941	0.519	0.055	0.143	0.013
0.030	2.163	0.573	0.076	0.158	0.018
0.035	2.342	0.615	0.100	0.169	0.023
0.040	2.486	0.645	0.126	0.177	0.029
0.050	2.680	0.674	0.183	0.184	0.043
0.060	2.775	0.668	0.246	0.182	0.057
0.070	2.795	0.636	0.312	0.172	0.073
0.080	2.759	0.581	0.381	0.157	0.089
0.090	2.681	0.510	0.450	0.136	0.105
0.100	2.575	0.427	0.519	0.112	0.121
0.120	2.311	0.234	0.655	0.056	0.151
0.140	2.018	0.024	0.783	−0.003	0.180
0.160	1.729	−0.187	0.899	−0.063	0.205
0.180	1.460	−0.391	1.003	−0.120	0.226
0.200	1.219	−0.580	1.094	−0.172	0.244
0.220	1.009	−0.751	1.171	−0.218	0.258
0.240	0.829	−0.903	1.234	−0.257	0.268
0.260	0.677	−1.034	1.286	−0.289	0.275
0.280	0.551	−1.145	1.325	−0.314	0.278
0.300	0.446	−1.237	1.354	−0.332	0.278
0.350	0.260	−1.388	1.385	−0.351	0.265
0.400	0.150	−1.449	1.370	−0.337	0.238
0.450	0.086	−1.443	1.322	−0.297	0.200
0.500	0.050	−1.389	1.252	−0.238	0.153
0.550	0.029	−1.306	1.169	−0.167	0.102
0.600	0.017	−1.205	1.078	−0.088	0.047
0.650	0.010	−1.095	0.984	−0.005	−0.009
0.700	0.006	−0.984	0.892	0.079	−0.066
0.750	0.004	−0.876	0.803	0.161	−0.122
0.800	0.002	−0.773	0.718	0.240	−0.177
0.850	0.002	−0.678	0.640	0.315	−0.229
0.900	0.001	−0.591	0.567	0.385	−0.280
0.950	0.001	−0.512	0.501	0.449	−0.327
1.000	0.001	−0.442	0.441	0.507	−0.371
1.100	0.	−0.326	0.339	0.605	−0.450
1.200	0.	−0.238	0.258	0.679	−0.516
1.300	0.	−0.172	0.196	0.732	−0.569
1.400	0.	−0.123	0.147	0.765	−0.610
1.500	0.	−0.088	0.110	0.783	−0.641
1.600	0.	−0.062	0.082	0.787	−0.662
1.700	0.	−0.044	0.062	0.780	−0.676
1.800	−0.	−0.031	0.046	0.764	−0.681
1.900	−0.	−0.022	0.034	0.742	−0.681
2.000	−0.	−0.016	0.026	0.715	−0.676
2.100	−0.	−0.011	0.019	0.684	−0.667
2.200	−0.	−0.008	0.014	0.651	−0.654
2.300	−0.	−0.006	0.011	0.617	−0.639
2.400	−0.	−0.004	0.008	0.582	−0.621
2.500	−0.	−0.003	0.006	0.547	−0.602
2.600	−0.	−0.002	0.005	0.513	−0.582
2.700	−0.	−0.002	0.004	0.479	−0.561
2.800	−0.	−0.001	0.003	0.447	−0.539
2.900	−0.	−0.001	0.002	0.416	−0.517
3.000	−0.	−0.001	0.002	0.386	−0.495
3.200	−0.	−0.	0.001	0.331	−0.451
3.400	−0.	−0.	0.001	0.282	−0.409
3.600	−0.	−0.	0.	0.239	−0.369
3.800	−0.	−0.	0.	0.202	−0.332
4.000	−0.	−0.	0.	0.170	−0.297
4.200	−0.	−0.	0.	0.143	−0.265
4.400	−0.	−0.	0.	0.120	−0.236
4.600	−0.	−0.	0.	0.100	−0.209
4.800	−0.	−0.	0.	0.083	−0.186
5.000	−0.	−0.	0.	0.069	−0.164
5.200	−0.	−0.	0.	0.057	−0.145
5.400	−0.	−0.	0.	0.048	−0.128
5.600	−0.	−0.	0.	0.039	−0.112
5.800	−0.	−0.	0.	0.033	−0.099
6.000	−0.	−0.	0.	0.027	−0.087
6.200	−0.	−0.	0.	0.022	−0.076
6.400	−0.	−0.	0.	0.018	−0.066
6.600	−0.	−0.	0.	0.015	−0.058
6.800	−0.	−0.	0.	0.012	−0.051
7.000	−0.	−0.	0.	0.010	−0.044
7.200	−0.	−0.	0.	0.008	−0.039
7.400	−0.	−0.	0.	0.007	−0.034
7.600	−0.	−0.	0.	0.006	−0.029
7.800	−0.	−0.	0.	0.005	−0.025
8.000	−0.	−0.	0.	0.004	−0.022
8.200	−0.	−0.	0.	0.003	−0.019
8.400	−0.	−0.	0.	0.003	−0.017
8.600	−0.	−0.	0.	0.002	−0.015
8.800	−0.	−0.	0.	0.002	−0.013
9.000	−0.	−0.	0.	0.001	−0.011
9.500	−0.	−0.	0.	0.001	−0.008
10.000	−0.	−0.	0.	0.001	−0.005
10.500	−0.	−0.	0.	0.	−0.004
11.000	−0.	−0.	0.	0.	−0.003
11.500	−0.	−0.	0.	0.	−0.002
12.000	−0.	−0.	0.	0.	−0.001
12.500	−0.	−0.	0.	0.	−0.001
13.000	−0.	−0.	0.	0.	−0.001
λ	160.	15.1	10.8	1.41	0.701
$\langle r^{-2} \rangle$	424.	32.7	10.3	2.71	0.698
$\langle r^{-1} \rangle$	14.6	2.83	2.71	0.697	0.562
$\langle r \rangle$	0.104	0.516	0.483	1.93	2.37
$\langle r^2 \rangle$	0.014	0.316	0.292	4.33	6.70

P^+ ^1S

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.111	0.030	0.	0.009	0.
0.002	0.219	0.060	0.	0.017	0.
0.004	0.425	0.115	0.002	0.033	0.
0.006	0.619	0.168	0.004	0.049	0.001
0.008	0.801	0.217	0.006	0.063	0.002
0.010	0.971	0.263	0.010	0.076	0.002
0.015	1.352	0.365	0.021	0.106	0.005
0.020	1.673	0.450	0.036	0.130	0.009
0.025	1.941	0.519	0.055	0.150	0.014
0.030	2.163	0.573	0.076	0.166	0.019
0.035	2.343	0.615	0.100	0.177	0.025
0.040	2.486	0.645	0.126	0.186	0.032
0.050	2.680	0.674	0.183	0.194	0.046
0.060	2.775	0.669	0.246	0.191	0.062
0.070	2.795	0.636	0.312	0.181	0.079
0.080	2.759	0.582	0.381	0.164	0.096
0.090	2.681	0.511	0.450	0.143	0.113
0.100	2.575	0.427	0.520	0.117	0.131
0.120	2.311	0.234	0.655	0.059	0.164

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.140	2.018	0.024	0.783	—0.004	0.194
0.160	1.729	—0.187	0.899	—0.066	0.222
0.180	1.460	—0.391	1.003	—0.126	0.245
0.200	1.219	—0.580	1.094	—0.181	0.264
0.220	1.009	—0.752	1.171	—0.229	0.279
0.240	0.829	—0.904	1.235	—0.270	0.290
0.260	0.677	—1.035	1.286	—0.304	0.297
0.280	0.551	—1.146	1.326	—0.330	0.300
0.300	0.446	—1.237	1.354	—0.349	0.299
0.350	0.260	—1.389	1.386	—0.369	0.285
0.400	0.150	—1.450	1.371	—0.353	0.255
0.450	0.086	—1.443	1.323	—0.310	0.212
0.500	0.050	—1.390	1.252	—0.248	0.162
0.550	0.029	—1.306	1.169	—0.173	0.105
0.600	0.017	—1.205	1.078	—0.090	0.045
0.650	0.010	—1.095	0.984	—0.002	—0.017
0.700	0.006	—0.984	0.892	0.086	—0.079
0.750	0.004	—0.875	0.803	0.173	—0.140
0.800	0.002	—0.772	0.718	0.256	—0.199
0.850	0.002	—0.677	0.639	0.335	—0.256
0.900	0.001	—0.590	0.567	0.408	—0.310
0.950	0.001	—0.511	0.501	0.475	—0.360
1.000	0.001	—0.441	0.441	0.535	—0.407
1.100	0.	—0.325	0.339	0.636	—0.490
1.200	0.	—0.237	0.258	0.712	—0.558
1.300	0.	—0.171	0.195	0.764	—0.612
1.400	0.	—0.122	0.147	0.796	—0.652
1.500	0.	—0.087	0.110	0.810	—0.681
1.600	0.	—0.062	0.082	0.810	—0.699
1.700	0.	—0.044	0.061	0.799	—0.709
1.800	—0.	—0.031	0.046	0.778	—0.711
1.900	—0.	—0.022	0.034	0.751	—0.706
2.000	—0.	—0.015	0.025	0.719	—0.696
2.100	—0.	—0.011	0.019	0.683	—0.682
2.200	—0.	—0.008	0.014	0.645	—0.665
2.300	—0.	—0.005	0.011	0.606	—0.644
2.400	—0.	—0.004	0.008	0.567	—0.622
2.500	—0.	—0.003	0.006	0.528	—0.599
2.600	—0.	—0.002	0.004	0.490	—0.574
2.700	—0.	—0.001	0.003	0.453	—0.549
2.800	—0.	—0.001	0.003	0.418	—0.524
2.900	—0.	—0.001	0.002	0.385	—0.499
3.000	—0.	—0.001	0.002	0.353	—0.473
3.200	—0.	—0.	0.001	0.295	—0.424
3.400	—0.	—0.	0.001	0.245	—0.378
3.600	—0.	—0.	0.	0.203	—0.335
3.800	—0.	—0.	0.	0.166	—0.295
4.000	—0.	—0.	0.	0.136	—0.258
4.200	—0.	—0.	0.	0.110	—0.226
4.400	—0.	—0.	0.	0.090	—0.196
4.600	—0.	—0.	0.	0.072	—0.170
4.800	—0.	—0.	0.	0.058	—0.147
5.000	—0.	—0.	0.	0.047	—0.127
5.200	—0.	—0.	0.	0.037	—0.109
5.400	—0.	—0.	0.	0.030	—0.093
5.600	—0.	—0.	0.	0.024	—0.080
5.800	—0.	—0.	0.	0.019	—0.068
6.000	—0.	—0.	0.	0.015	—0.058
6.200	—0.	—0.	0.	0.012	—0.050
6.400	—0.	—0.	0.	0.009	—0.042
6.600	—0.	—0.	0.	0.008	—0.036
6.800	—0.	—0.	0.	0.006	—0.030
7.000	—0.	—0.	0.	0.005	—0.026
7.200	—0.	—0.	0.	0.004	—0.022
7.400	—0.	—0.	0.	0.003	—0.018
7.600	—0.	—0.	0.	0.002	—0.015
7.800	—0.	—0.	0.	0.002	—0.013
8.000	—0.	—0.	0.	0.001	—0.011
8.200	—0.	—0.	0.	0.001	—0.009
8.400	—0.	—0.	0.	0.001	—0.008
8.600	—0.	—0.	0.	0.001	—0.006

r	$1s$	$2s$	$2p$	$3s$	$3p$
8.800	—0.	—0.	0.	0.001	—0.005
9.000	—0.	—0.	0.	0.	—0.004
9.500	—0.	—0.	0.	0.	—0.003
10.000	—0.	—0.	0.	0.	—0.002
10.500	—0.	—0.	0.	0.	—0.001
11.000	—0.	—0.	0.	0.	—0.001
λ	161.	15.9	11.7	2.10	1.20
$\langle r^{-2} \rangle$	424.	32.8	10.3	2.97	0.794
$\langle r^{-1} \rangle$	14.6	2.83	2.71	0.728	0.599
$\langle r \rangle$	0.104	0.515	0.483	1.84	2.22
$\langle r^2 \rangle$	0.014	0.315	0.292	3.91	5.79

P^+ ^3P

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.111	0.030	0.	0.009	0.
0.002	0.219	0.059	0.	0.017	0.
0.004	0.425	0.115	0.002	0.033	0.
0.006	0.619	0.168	0.004	0.048	0.001
0.008	0.801	0.217	0.006	0.063	0.002
0.010	0.971	0.263	0.010	0.076	0.003
0.015	1.352	0.365	0.021	0.105	0.006
0.020	1.673	0.450	0.036	0.129	0.010
0.025	1.941	0.519	0.055	0.149	0.015
0.030	2.163	0.573	0.076	0.165	0.020
0.035	2.343	0.615	0.100	0.177	0.026
0.040	2.486	0.645	0.126	0.185	0.033
0.050	2.680	0.674	0.183	0.193	0.048
0.060	2.775	0.669	0.246	0.190	0.065
0.070	2.795	0.636	0.312	0.180	0.082
0.080	2.759	0.582	0.381	0.164	0.100
0.090	2.681	0.511	0.450	0.142	0.118
0.100	2.575	0.427	0.520	0.117	0.136
0.120	2.311	0.234	0.655	0.059	0.171
0.140	2.018	0.024	0.783	—0.004	0.203
0.160	1.729	—0.187	0.899	—0.066	0.231
0.180	1.460	—0.391	1.003	—0.125	0.256
0.200	1.219	—0.580	1.094	—0.180	0.276
0.220	1.009	—0.752	1.171	—0.228	0.291
0.240	0.829	—0.904	1.235	—0.268	0.303
0.260	0.677	—1.035	1.286	—0.302	0.310
0.280	0.551	—1.146	1.325	—0.328	0.313
0.300	0.446	—1.237	1.354	—0.347	0.313
0.350	0.260	—1.389	1.385	—0.367	0.298
0.400	0.150	—1.450	1.370	—0.351	0.266
0.450	0.086	—1.443	1.322	—0.309	0.222
0.500	0.050	—1.390	1.252	—0.247	0.169
0.550	0.029	—1.306	1.169	—0.173	0.110
0.600	0.017	—1.205	1.078	—0.090	0.048
0.650	0.010	—1.095	0.984	—0.003	—0.016
0.700	0.006	—0.984	0.892	0.085	—0.081
0.750	0.004	—0.875	0.803	0.171	—0.145
0.800	0.002	—0.773	0.718	0.254	—0.206
0.850	0.002	—0.677	0.640	0.332	—0.266
0.900	0.001	—0.590	0.567	0.405	—0.322
0.950	0.001	—0.512	0.501	0.471	—0.375
1.000	0.001	—0.442	0.441	0.532	—0.424
1.100	0.	—0.325	0.339	0.632	—0.510
1.200	0.	—0.237	0.258	0.708	—0.581
1.300	0.	—0.171	0.195	0.761	—0.637
1.400	0.	—0.123	0.147	0.793	—0.679
1.500	0.	—0.087	0.110	0.808	—0.708

r	$1s$	$2s$	$2p$	$3s$	$3p$
1.600	0.	—0.062	0.082	0.808	—0.726
1.700	0.	—0.044	0.061	0.798	—0.735
1.800	—0.	—0.031	0.046	0.778	—0.734
1.900	—0.	—0.022	0.034	0.751	—0.727
2.000	—0.	—0.015	0.025	0.719	—0.714
2.100	—0.	—0.011	0.019	0.684	—0.697
2.200	—0.	—0.008	0.014	0.647	—0.676
2.300	—0.	—0.005	0.011	0.608	—0.651
2.400	—0.	—0.004	0.008	0.569	—0.625
2.500	—0.	—0.003	0.006	0.531	—0.598
2.600	—0.	—0.002	0.005	0.493	—0.569
2.700	—0.	—0.002	0.003	0.456	—0.540
2.800	—0.	—0.001	0.003	0.421	—0.511
2.900	—0.	—0.001	0.002	0.388	—0.483
3.000	—0.	—0.001	0.002	0.356	—0.454
3.200	—0.	—0.	0.001	0.298	—0.400
3.400	—0.	—0.	0.001	0.248	—0.349
3.600	—0.	—0.	0.	0.205	—0.302
3.800	—0.	—0.	0.	0.168	—0.261
4.000	—0.	—0.	0.	0.138	—0.223
4.200	—0.	—0.	0.	0.112	—0.191
4.400	—0.	—0.	0.	0.091	—0.162
4.600	—0.	—0.	0.	0.073	—0.137
4.800	—0.	—0.	0.	0.059	—0.115
5.000	—0.	—0.	0.	0.047	—0.097
5.200	—0.	—0.	0.	0.038	—0.081
5.400	—0.	—0.	0.	0.030	—0.068
5.600	—0.	—0.	0.	0.024	—0.057
5.800	—0.	—0.	0.	0.019	—0.047
6.000	—0.	—0.	0.	0.015	—0.039
6.200	—0.	—0.	0.	0.012	—0.032
6.400	—0.	—0.	0.	0.010	—0.027
6.600	—0.	—0.	0.	0.008	—0.022
6.800	—0.	—0.	0.	0.006	—0.018
7.000	—0.	—0.	0.	0.005	—0.015
7.200	—0.	—0.	0.	0.004	—0.012
7.400	—0.	—0.	0.	0.003	—0.010
7.600	—0.	—0.	0.	0.002	—0.008
7.800	—0.	—0.	0.	0.002	—0.007
8.000	—0.	—0.	0.	0.001	—0.006
8.200	—0.	—0.	0.	0.001	—0.005
8.400	—0.	—0.	0.	0.001	—0.004
8.600	—0.	—0.	0.	0.001	—0.003
8.800	—0.	—0.	0.	0.001	—0.002
9.000	—0.	—0.	0.	0.	—0.002
9.500	—0.	—0.	0.	0.	—0.001
10.000	—0.	—0.	0.	0.	—0.001
λ	161.	15.8	11.6	2.06	1.52
$\langle r^{-2}\rangle$	424.	32.8	10.3	2.94	0.854
$\langle r^{-1}\rangle$	14.6	2.83	2.71	0.725	0.623
$\langle r\rangle$	0.104	0.515	0.483	1.85	2.12
$\langle r^2\rangle$	0.014	0.315	0.292	3.94	5.22

P^+ ^1D

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.111	0.030	0.	0.009	0.
0.002	0.219	0.059	0.	0.017	0.
0.004	0.425	0.115	0.002	0.033	0.
0.006	0.619	0.168	0.004	0.048	0.001
0.008	0.801	0.217	0.006	0.063	0.002
0.010	0.971	0.263	0.010	0.076	0.003
0.015	1.352	0.365	0.021	0.105	0.005
0.020	1.673	0.450	0.036	0.130	0.009
0.025	1.941	0.519	0.055	0.150	0.014
0.030	2.163	0.573	0.076	0.165	0.020
0.035	2.343	0.615	0.100	0.177	0.026
0.040	2.486	0.645	0.126	0.185	0.032
0.050	2.680	0.674	0.183	0.193	0.047
0.060	2.775	0.669	0.246	0.191	0.063
0.070	2.795	0.636	0.312	0.181	0.080
0.080	2.759	0.582	0.381	0.164	0.098
0.090	2.681	0.511	0.450	0.142	0.115
0.100	2.575	0.427	0.520	0.117	0.133
0.120	2.311	0.234	0.655	0.059	0.167
0.140	2.018	0.024	0.783	—0.004	0.198
0.160	1.729	—0.187	0.899	—0.066	0.226
0.180	1.460	—0.391	1.003	—0.126	0.249
0.200	1.219	—0.580	1.094	—0.180	0.269
0.220	1.009	—0.752	1.171	—0.228	0.284
0.240	0.829	—0.904	1.235	—0.269	0.295
0.260	0.677	—1.035	1.286	—0.303	0.302
0.280	0.551	—1.146	1.326	—0.329	0.306
0.300	0.446	—1.237	1.354	—0.348	0.305
0.350	0.260	—1.389	1.386	—0.368	0.291
0.400	0.150	—1.450	1.371	—0.352	0.260
0.450	0.086	—1.443	1.323	—0.310	0.217
0.500	0.050	—1.390	1.252	—0.248	0.166
0.550	0.029	—1.306	1.169	—0.173	0.109
0.600	0.017	—1.205	1.078	—0.090	0.048
0.650	0.010	—1.095	0.984	—0.002	—0.015
0.700	0.006	—0.984	0.892	0.086	—0.078
0.750	0.004	—0.875	0.803	0.172	—0.140
0.800	0.002	—0.772	0.718	0.255	—0.200
0.850	0.002	—0.677	0.639	0.333	—0.258
0.900	0.001	—0.590	0.567	0.406	—0.313
0.950	0.001	—0.511	0.501	0.473	—0.365
1.000	0.001	—0.441	0.441	0.533	—0.413
1.100	0.	—0.325	0.339	0.634	—0.498
1.200	0.	—0.237	0.258	0.710	—0.568
1.300	0.	—0.171	0.195	0.762	—0.623
1.400	0.	—0.122	0.147	0.794	—0.665
1.500	0.	—0.087	0.110	0.809	—0.694
1.600	0.	—0.062	0.082	0.809	—0.713
1.700	0.	—0.044	0.061	0.798	—0.723
1.800	—0.	—0.031	0.046	0.778	—0.724
1.900	—0.	—0.022	0.034	0.751	—0.718
2.000	—0.	—0.015	0.025	0.719	—0.707
2.100	—0.	—0.011	0.019	0.683	—0.692
2.200	—0.	—0.008	0.014	0.646	—0.672
2.300	—0.	—0.005	0.011	0.607	—0.650
2.400	—0.	—0.004	0.008	0.568	—0.626
2.500	—0.	—0.003	0.006	0.529	—0.601
2.600	—0.	—0.002	0.004	0.491	—0.574
2.700	—0.	—0.001	0.003	0.455	—0.547
2.800	—0.	—0.001	0.003	0.420	—0.519
2.900	—0.	—0.001	0.002	0.386	—0.492
3.000	—0.	—0.001	0.002	0.354	—0.465
3.200	—0.	—0.	0.001	0.297	—0.413
3.400	—0.	—0.	0.001	0.247	—0.364
3.600	—0.	—0.	0.	0.204	—0.318
3.800	—0.	—0.	0.	0.167	—0.277
4.000	—0.	—0.	0.	0.137	—0.240
4.200	—0.	—0.	0.	0.111	—0.207
4.400	—0.	—0.	0.	0.090	—0.177
4.600	—0.	—0.	0.	0.073	—0.152
4.800	—0.	—0.	0.	0.059	—0.129
5.000	—0.	—0.	0.	0.047	—0.110
5.200	—0.	—0.	0.	0.038	—0.093
5.400	—0.	—0.	0.	0.030	—0.079
5.600	—0.	—0.	0.	0.024	—0.067
5.800	—0.	—0.	0.	0.019	—0.056
6.000	—0.	—0.	0.	0.015	—0.047
6.200	—0.	—0.	0.	0.012	—0.039
6.400	—0.	—0.	0.	0.009	—0.033
6.600	—0.	—0.	0.	0.007	—0.028

r	$1s$	$2s$	$2p$	$3s$	$3p$
6.800	—0.	—0.	0.	0.006	—0.023
7.000	—0.	—0.	0.	0.005	—0.019
7.200	—0.	—0.	0.	0.004	—0.016
7.400	—0.	—0.	0.	0.003	—0.013
7.600	—0.	—0.	0.	0.002	—0.011
7.800	—0.	—0.	0.	0.002	—0.009
8.000	—0.	—0.	0.	0.001	—0.008
8.200	—0.	—0.	0	0.001	—0.006
8.400	—0.	—0.	0.	0.001	—0.005
8.600	—0.	—0.	0.	0.001	—0.004
8.800	—0.	—0.	0.	0.001	—0.004
9.000	—0.	—0.	0.	0.	—0.003
9.500	—0.	—0.	0.	0.	—0.002
10.000	—0.	—0.	0.	0.	—0.001
10.500	—0.	—0,	0,	0,	—0.001
λ	161.	15.9	11.6	2.08	1.34
$\langle r^{-3}\rangle$	424.	32.8	10.3	2.95	0.820
$\langle r^{-1}\rangle$	14.6	2.83	2.71	0.726	0.610
$\langle r\rangle$	0.104	0.515	0.483	1.85	2.16
$\langle r^2\rangle$	0.014	0.315	0.292	3.92	5.48

P^{++} ^2P

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.111	0.030	0.	0.009	0.
0.002	0.219	0.060	0.	0.018	0.
0.004	0.425	0.116	0.002	0.035	0.
0.006	0.619	0.168	0.004	0.051	0.001
0.008	0.801	0.217	0.006	0.066	0.002
0.010	0.971	0.264	0.010	0.080	0.003
0.015	1.352	0.366	0.021	0.111	0.006
0.020	1.673	0.450	0.036	0.136	0.010
0.025	1.941	0.519	0.055	0.157	0.016
0.030	2.163	0.574	0.076	0.174	0.022
0.035	2.343	0.616	0.100	0.186	0.028
0.040	2.486	0.646	0.126	0.195	0.036
0.050	2.680	0.675	0.183	0.203	0.052
0.060	2.775	0.669	0.246	0.201	0.070
0.070	2.795	0.637	0.313	0.190	0.089
0.080	2.759	0.582	0.381	0.172	0.108
0.090	2.681	0.511	0.451	0.149	0.127
0.100	2.575	0.427	0.520	0.123	0.147
0.120	2.311	0.234	0.656	0.062	0.184
0.140	2.018	0.024	0.783	—0.004	0.218
0.160	1.729	—0.188	0.900	—0.070	0.249
0.180	1.460	—0.391	1.004	—0.132	0.275
0.200	1.219	—0.581	1.095	—0.190	0.297
0.220	1.009	—0.753	1.172	—0.240	0.313
0.240	0.829	—0.905	1.235	—0.283	0.326
0.260	0.677	—1.036	1.287	—0.318	0.333
0.280	0.551	—1.147	1.326	—0.346	0.337
0.300	0.446	—1.239	1.355	—0.366	0.336
0.350	0.260	—1.390	1.386	—0.386	0.320
0.400	0.150	—1.451	1.371	—0.369	0.285
0.450	0.086	—1.444	1.323	—0.324	0.237
0.500	0.050	—1.390	1.253	—0.258	0.180
0.550	0.029	—1.306	1.169	—0.178	0.116
0.600	0.017	—1.204	1.077	—0.090	0.048
0.650	0.010	—1.095	0.984	0.002	—0.022
0.700	0.006	—0.983	0.891	0.095	—0.091
0.750	0.004	—0.874	0.802	0.186	—0.160
0.800	0.002	—0.771	0.718	0.273	—0.227
0.850	0.002	—0.676	0.639	0.355	—0.291

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.900	0.001	—0.589	0.566	0.431	—0.351
0.950	0.001	—0.510	0.500	0.501	—0.407
1.000	0.001	—0.440	0.440	0.563	—0.460
1.100	0.	—0.324	0.338	0.667	—0.551
1.200	0.	—0.236	0.257	0.744	—0.625
1.300	0.	—0.170	0.194	0.795	—0.682
1.400	0.	—0.121	0.146	0.824	—0.724
1.500	0.	—0.086	0.109	0.835	—0.751
1.600	0.	—0.061	0.082	0.831	—0.765
1.700	0.	—0.043	0.061	0.814	—0.768
1.800	0.	—0.030	0.045	0.788	—0.763
1.900	0.	—0.021	0.033	0.755	—0.749
2.000	—0.	—0.015	0.025	0.717	—0.730
2.100	—0.	—0.010	0.018	0.676	—0.706
2.200	—0.	—0.007	0.014	0.633	—0.678
2.300	—0.	—0.005	0.010	0.589	—0.647
2.400	—0.	—0.004	0.008	0.546	—0.615
2.500	—0.	—0.003	0.006	0.503	—0.581
2.600	—0.	—0.002	0.004	0.462	—0.547
2.700	—0.	—0.001	0.003	0.423	—0.513
2.800	—0.	—0.001	0.002	0.386	—0.479
2.900	—0.	—0.001	0.002	0.351	—0.446
3.000	—0.	—0.	0.001	0.318	—0.415
3.200	—0.	—0.	0.001	0.259	—0.355
3.400	—0.	—0.	0.	0.209	—0.301
3.600	—0.	—0.	0.	0.168	—0.253
3.800	—0.	—0.	0.	0.134	—0.211
4.000	—0.	—0.	0.	0.106	—0.175
4.200	—0.	—0.	0.	0.083	—0.144
4.400	—0.	—0.	0.	0.065	—0.119
4.600	—0.	—0.	0.	0.051	—0.097
4.800	—0.	—0.	0.	0.040	—0.079
5.000	—0.	—0.	0.	0.031	—0.064
5.200	—0.	—0.	0.	0.024	—0.052
5.400	—0.	—0.	0.	0.018	—0.041
5.600	—0.	—0.	0.	0.014	—0.033
5.800	—0.	—0.	0.	0.011	—0.027
6.000	—0.	—0.	0.	0.008	—0.021
6.200	—0.	—0.	0.	0.006	—0.017
6.400	—0.	—0.	0.	0.005	—0.013
6.600	—0.	—0.	0.	0.004	—0.011
6.800	—0.	—0.	0.	0.003	—0.008
7.000	—0.	—0.	0.	0.002	—0.007
7.200	—0.	—0.	0,	0.002	—0.005
7.400	—0.	—0.	0.	0.001	—0.004
7.600	—0.	—0.	0.	0.001	—0.003
7.800	—0.	—0.	0.	0.001	—0.003
8.000	—0.	—0.	0.	0.	—0.002
8.200	—0.	—0.	0.	0.	—0.002
8.400	—0.	—0.	0.	0.	—0.001
8.600	—0.	—0.	0.	0.	—0.001
8.800	—0.	—0.	0.	0.	—0.001
9.000	—0.	—0.	0.	0.	—0.001
λ	162.	16.8	12.6	2.83	2.18
$\langle r^{-2}\rangle$	424.	32.8	10.3	3.24	0.965
$\langle r^{-1}\rangle$	14.6	2.84	2.71	0.758	0.663
$\langle r\rangle$	0.104	0.515	0.483	1.77	1.98
$\langle r^2\rangle$	0.014	0.315	0.291	3.58	4.55

S ^1S

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.123	0.034	0.	0.010	0.
0.002	0.241	0.067	0.001	0.019	0.
0.004	0.467	0.129	0.002	0.037	0.001
0.006	0.679	0.187	0.004	0.054	0.001
0.008	0.876	0.242	0.008	0.070	0.002
0.010	1.061	0.292	0.012	0.085	0.003

r	1s	2s	2p	3s	3p
0.015	1.469	0.403	0.026	0.117	0.006
0.020	1.809	0.494	0.044	0.143	0.011
0.025	2.089	0.566	0.066	0.164	0.017
0.030	2.316	0.622	0.091	0.180	0.023
0.035	2.496	0.662	0.120	0.192	0.030
0.040	2.636	0.690	0.150	0.199	0.038
0.050	2.814	0.710	0.218	0.204	0.055
0.060	2.885	0.691	0.291	0.198	0.073
0.070	2.878	0.643	0.367	0.183	0.092
0.080	2.813	0.571	0.446	0.161	0.112
0.090	2.707	0.482	0.525	0.134	0.131
0.100	2.575	0.381	0.603	0.103	0.150
0.120	2.266	0.154	0.754	0.034	0.187
0.140	1.942	−0.084	0.893	−0.037	0.219
0.160	1.632	−0.318	1.017	−0.106	0.247
0.180	1.352	−0.538	1.125	−0.170	0.270
0.200	1.108	−0.738	1.216	−0.227	0.288
0.220	0.900	−0.914	1.291	−0.275	0.301
0.240	0.726	−1.065	1.350	−0.314	0.309
0.260	0.582	−1.192	1.394	−0.345	0.312
0.280	0.465	−1.295	1.425	−0.366	0.310
0.300	0.370	−1.375	1.445	−0.379	0.305
0.350	0.206	−1.492	1.448	−0.380	0.277
0.400	0.114	−1.514	1.404	−0.342	0.233
0.450	0.063	−1.469	1.328	−0.277	0.176
0.500	0.035	−1.381	1.233	−0.194	0.112
0.550	0.019	−1.268	1.128	−0.099	0.043
0.600	0.011	−1.144	1.019	0.001	−0.028
0.650	0.006	−1.017	0.912	0.101	−0.099
0.700	0.004	−0.894	0.810	0.200	−0.168
0.750	0.002	−0.779	0.714	0.293	−0.234
0.800	0.001	−0.673	0.626	0.380	−0.297
0.850	0.001	−0.577	0.546	0.460	−0.356
0.900	0.001	−0.492	0.475	0.531	−0.411
0.950	0.	−0.418	0.411	0.594	−0.461
1.000	0.	−0.354	0.354	0.649	−0.506
1.100	0.	−0.250	0.262	0.735	−0.582
1.200	0.	−0.175	0.191	0.792	−0.640
1.300	0.	−0.122	0.139	0.824	−0.682
1.400	0.	−0.084	0.101	0.836	−0.709
1.500	−0.	−0.058	0.073	0.832	−0.725
1.600	−0.	−0.040	0.052	0.815	−0.731
1.700	−0.	−0.027	0.038	0.788	−0.728
1.800	−0.	−0.019	0.027	0.755	−0.719
1.900	−0.	−0.013	0.020	0.717	−0.704
2.000	−0.	−0.009	0.014	0.677	−0.686
2.100	−0.	−0.006	0.010	0.635	−0.664
2.200	−0.	−0.005	0.007	0.593	−0.640
2.300	−0.	−0.003	0.005	0.551	−0.615
2.400	−0.	−0.002	0.004	0.511	−0.588
2.500	−0.	−0.002	0.003	0.472	−0.562
2.600	−0.	−0.001	0.002	0.435	−0.535
2.700	−0.	−0.001	0.002	0.399	−0.508
2.800	−0.	−0.001	0.001	0.366	−0.481
2.900	−0.	−0.001	0.001	0.335	−0.455
3.000	−0.	−0.001	0.001	0.306	−0.430
3.200	−0.	−0.	0.	0.254	−0.382
3.400	−0.	−0.	0.	0.210	−0.338
3.600	−0.	−0.	0.	0.173	−0.298
3.800	−0.	−0.	0.	0.142	−0.261
4.000	−0.	−0.	0.	0.116	−0.229
4.200	−0.	−0.	0.	0.094	−0.200
4.400	−0.	−0.	0.	0.077	−0.174
4.600	−0.	−0.	0.	0.062	−0.151
4.800	−0.	−0.	0.	0.051	−0.131
5.000	−0.	−0.	0.	0.041	−0.113
5.200	−0.	−0.	0.	0.033	−0.098
5.400	−0.	−0.	0.	0.027	−0.085
5.600	−0.	−0.	0.	0.021	−0.073
5.800	−0.	−0.	0.	0.017	−0.063
6.000	−0.	−0.	0.	0.014	−0.054
6.200	−0.	−0.	0.	0.011	−0.047
6.400	−0.	−0.	0.	0.009	−0.040
6.600	−0.	−0.	0.	0.007	−0.034
6.800	−0.	−0.	0.	0.006	−0.029
7.000	−0.	−0.	0.	0.005	−0.025
7.200	−0.	−0.	0.	0.004	−0.022
7.400	−0.	−0.	0.	0.003	−0.018
7.600	−0.	−0.	0.	0.002	−0.016
7.800	−0.	−0.	0.	0.002	−0.013
8.000	−0.	−0.	0.	0.002	−0.011
8.200	−0.	−0.	0.	0.001	−0.010
8.400	−0.	−0.	0.	0.001	−0.008
8.600	−0.	−0.	0.	0.001	−0.007
8.800	−0.	−0.	0.	0.001	−0.006
9.000	−0.	−0.	0.	0.001	−0.005
9.500	−0.	−0.	0.	0.	−0.003
10.000	−0.	−0.	0.	0.	−0.002
10.500	−0.	−0.	0.	0.	−0.002
11.000	−0.	−0.	0.	0.	−0.001
11.500	−0.	−0.	0.	0.	−0.001
λ	184.	18.0	13.4	1.77	0.840
$\langle r^{-2} \rangle$	484.	38.5	12.2	3.51	0.928
$\langle r^{-1} \rangle$	15.6	3.07	2.95	0.787	0.647
$\langle r \rangle$	0.097	0.476	0.441	1.72	2.07
$\langle r^2 \rangle$	0.013	0.268	0.242	3.44	5.15

S ^{3}P

r	1s	2s	2p	3s	3p
0.001	0.123	0.034	0.	0.010	0.
0.002	0.241	0.067	0.001	0.019	0.
0.004	0.467	0.129	0.002	0.037	0.001
0.006	0.679	0.187	0.004	0.054	0.001
0.008	0.876	0.242	0.008	0.070	0.002
0.010	1.061	0.292	0.012	0.085	0.003
0.015	1.469	0.403	0.026	0.117	0.006
0.020	1.809	0.494	0.044	0.143	0.011
0.025	2.089	0.566	0.066	0.164	0.017
0.030	2.316	0.622	0.091	0.180	0.023
0.035	2.496	0.662	0.120	0.192	0.030
0.040	2.636	0.690	0.150	0.199	0.038
0.050	2.814	0.710	0.218	0.204	0.055
0.060	2.885	0.691	0.291	0.198	0.073
0.070	2.878	0.643	0.367	0.183	0.093
0.080	2.813	0.571	0.446	0.161	0.112
0.090	2.707	0.482	0.525	0.134	0.132
0.100	2.575	0.381	0.603	0.103	0.151
0.120	2.266	0.154	0.754	0.034	0.187
0.140	1.942	−0.084	0.893	−0.037	0.220
0.160	1.632	−0.318	1.017	−0.106	0.248
0.180	1.352	−0.538	1.125	−0.170	0.271
0.200	1.108	−0.738	1.216	−0.227	0.289
0.220	0.900	−0.914	1.291	−0.275	0.302
0.240	0.726	−1.065	1.350	−0.314	0.310
0.260	0.582	−1.192	1.394	−0.344	0.313
0.280	0.465	−1.295	1.425	−0.366	0.312
0.300	0.370	−1.375	1.445	−0.379	0.307
0.350	0.206	−1.492	1.448	−0.379	0.279
0.400	0.114	−1.514	1.404	−0.342	0.234
0.450	0.063	−1.469	1.328	−0.277	0.177
0.500	0.035	−1.381	1.233	−0.194	0.113
0.550	0.019	−1.268	1.128	−0.099	0.044
0.600	0.011	−1.144	1.019	0.	−0.027
0.650	0.006	−1.017	0.913	0.101	−0.099
0.700	0.004	−0.894	0.810	0.199	−0.168

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.750	0.002	—0.779	0.715	0.292	—0.235
0.800	0.001	—0.673	0.626	0.379	—0.298
0.850	0.001	—0.577	0.547	0.459	—0.357
0.900	0.001	—0.493	0.475	0.530	—0.412
0.950	0.	—0.418	0.411	0.593	—0.462
1.000	0.	—0.354	0.354	0.648	—0.507
1.100	0.	—0.250	0.262	0.734	—0.584
1.200	0.	—0.175	0.191	0.791	—0.642
1.300	0.	—0.122	0.139	0.824	—0.685
1.400	0.	—0.084	0.101	0.836	—0.713
1.500	—0.	—0.058	0.073	0.831	—0.729
1.600	—0.	—0.040	0.052	0.814	—0.734
1.700	—0.	—0.027	0.038	0.788	—0.732
1.800	—0.	—0.019	0.027	0.755	—0.722
1.900	—0.	—0.013	0.020	0.718	—0.707
2.000	—0.	—0.009	0.014	0.677	—0.688
2.100	—0.	—0.006	0.010	0.636	—0.666
2.200	—0.	—0.005	0.007	0.594	—0.642
2.300	—0.	—0.003	0.005	0.552	—0.616
2.400	—0.	—0.002	0.004	0.512	—0.589
2.500	—0.	—0.002	0.003	0.473	—0.562
2.600	—0.	—0.001	0.002	0.435	—0.534
2.700	—0.	—0.001	0.002	0.400	—0.507
2.800	—0.	—0.001	0.001	0.367	—0.480
2.900	—0.	—0.001	0.001	0.336	—0.453
3.000	—0.	—0.001	0.001	0.307	—0.428
3.200	—0.	—0.	0.	0.255	—0.379
3.400	—0.	—0.	0.	0.211	—0.334
3.600	—0.	—0.	0.	0.174	—0.293
3.800	—0.	—0.	0.	0.142	—0.257
4.000	—0.	—0.	0.	0.116	—0.224
4.200	—0.	—0.	0.	0.095	—0.195
4.400	—0.	—0.	0.	0.077	—0.169
4.600	—0.	—0.	0.	0.063	—0.146
4.800	—0.	—0.	0.	0.051	—0.126
5.000	—0.	—0.	0.	0.041	—0.109
5.200	—0.	—0.	0.	0.033	—0.094
5.400	—0.	—0.	0.	0.027	—0.081
5.600	—0.	—0.	0.	0.021	—0.069
5.800	—0.	—0.	0.	0.017	—0.060
6.000	—0.	—0.	0.	0.014	—0.051
6.200	—0.	—0.	0.	0.011	—0.044
6.400	—0.	—0.	0.	0.009	—0.037
6.600	—0.	—0.	0.	0.007	—0.032
6.800	—0.	—0.	0.	0.006	—0.027
7.000	—0.	—0.	0.	0.005	—0.023
7.200	—0.	—0.	0.	0.004	—0.020
7.400	—0.	—0.	0.	0.003	—0.017
7.600	—0.	—0.	0.	0.002	—0.014
7.800	—0.	—0.	0.	0.002	—0.012
8.000	—0.	—0.	0.	0.002	—0.010
8.200	—0.	—0.	0.	0.001	—0.009
8.400	—0.	—0.	0.	0.001	—0.007
8.600	—0.	—0.	0.	0.001	—0.006
8.800	—0.	—0.	0.	0.001	—0.005
9.000	—0.	—0.	0.	0.	—0.005
9.500	—0.	—0.	0.	0.	—0.003
10.000	—0.	—0.	0.	0.	—0.002
10.500	—0.	—0.	0.	0.	—0.001
11.000	—0.	—0.	0.	0.	—0.001
11.500	—0.	—0.	0.	0.	—0.001
λ	184.	18.0	13.4	1.76	0.875
$\langle r^{-2}\rangle$	484.	38.5	12.2	3.50	0.936
$\langle r^{-1}\rangle$	15.6	3.07	2.95	0.786	0.650
$\langle r\rangle$	0.097	0.476	0.441	1.72	2.06
$\langle r^{2}\rangle$	0.013	0.269	0.242	3.44	5.07

S ^{1}D

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.123	0.034	0.	0.010	0.
0.002	0.241	0.067	0.001	0.019	0.
0.004	0.467	0.129	0.002	0.037	0.001
0.006	0.679	0.187	0.004	0.054	0.001
0.008	0.876	0.242	0.008	0.070	0.002
0.010	1.061	0.292	0.012	0.085	0.003
0.015	1.469	0.403	0.026	0.117	0.006
0.020	1.809	0.494	0.044	0.143	0.011
0.025	2.089	0.566	0.066	0.164	0.017
0.030	2.316	0.622	0.091	0.180	0.023
0.035	2.496	0.662	0.120	0.192	0.030
0.040	2.636	0.690	0.150	0.200	0.038
0.050	2.814	0.710	0.218	0.205	0.055
0.060	2.885	0.691	0.291	0.198	0.073
0.070	2.878	0.643	0.367	0.183	0.092
0.080	2.813	0.571	0.446	0.161	0.112
0.090	2.707	0.482	0.525	0.134	0.131
0.100	2.575	0.381	0.603	0.103	0.150
0.120	2.266	0.154	0.754	0.034	0.186
0.140	1.942	—0.084	0.893	—0.037	0.219
0.160	1.632	—0.318	1.017	—0.106	0.247
0.180	1.352	—0.538	1.125	—0.170	0.270
0.200	1.108	—0.738	1.216	—0.227	0.288
0.220	0.900	—0.914	1.291	—0.275	0.300
0.240	0.726	—1.065	1.350	—0.315	0.308
0.260	0.582	—1.192	1.394	—0.345	0.311
0.280	0.465	—1.295	1.425	—0.366	0.310
0.300	0.370	—1.375	1.445	—0.379	0.305
0.350	0.206	—1.492	1.448	—0.380	0.277
0.400	0.114	—1.514	1.404	—0.342	0.232
0.450	0.063	—1.469	1.328	—0.277	0.176
0.500	0.035	—1.381	1.233	—0.194	0.112
0.550	0.019	—1.268	1.128	—0.099	0.043
0.600	0.011	—1.144	1.019	0.001	—0.028
0.650	0.006	—1.017	0.912	0.101	—0.099
0.700	0.004	—0.894	0.810	0.200	—0.168
0.750	0.002	—0.779	0.714	0.293	—0.234
0.800	0.001	—0.673	0.626	0.380	—0.297
0.850	0.001	—0.577	0.546	0.460	—0.356
0.900	0.001	—0.492	0.475	0.531	—0.410
0.950	0.	—0.418	0.411	0.594	—0.460
1.000	0.	—0.354	0.354	0.649	—0.505
1.100	0.	—0.250	0.262	0.735	—0.581
1.200	0.	—0.175	0.191	0.792	—0.639
1.300	0.	—0.122	0.139	0.825	—0.681
1.400	0.	—0.084	0.101	0.836	—0.709
1.500	—0.	—0.058	0.073	0.832	—0.724
1.600	—0.	—0.040	0.052	0.815	—0.730
1.700	—0.	—0.027	0.038	0.788	—0.727
1.800	—0.	—0.019	0.027	0.755	—0.718
1.900	—0.	—0.013	0.020	0.717	—0.704
2.000	—0.	—0.009	0.014	0.677	—0.685
2.100	—0.	—0.006	0.010	0.635	—0.664
2.200	—0.	—0.005	0.007	0.593	—0.640
2.300	—0.	—0.003	0.005	0.551	—0.615
2.400	—0.	—0.002	0.004	0.511	—0.588
2.500	—0.	—0.002	0.003	0.472	—0.562
2.600	—0.	—0.001	0.002	0.434	—0.535
2.700	—0.	—0.001	0.002	0.399	—0.508
2.800	—0.	—0.001	0.001	0.366	—0.482
2.900	—0.	—0.001	0.001	0.335	—0.456
3.000	—0.	—0.001	0.001	0.306	—0.431

r	$1s$	$2s$	$2p$	$3s$	$3p$
3.200	—0.	—0.	0.	0.254	—0.383
3.400	—0.	—0.	0.	0.210	—0.339
3.600	—0.	—0.	0.	0.173	—0.299
3.800	—0.	—0.	0.	0.142	—0.262
4.000	—0.	—0.	0.	0.116	—0.230
4.200	—0.	—0.	0.	0.094	—0.201
4.400	—0.	—0.	0.	0.077	—0.175
4.600	—0.	—0.	0.	0.062	—0.152
4.800	—0.	—0.	0.	0.050	—0.132
5.000	—0.	—0.	0.	0.041	—0.115
5.200	—0.	—0.	0.	0.033	—0.099
5.400	—0.	—0.	0.	0.027	—0.086
5.600	—0.	—0.	0.	0.021	—0.074
5.800	—0.	—0.	0.	0.017	—0.064
6.000	—0.	—0.	0.	0.014	—0.055
6.200	—0.	—0.	0.	0.011	—0.047
6.400	—0.	—0.	0.	0.009	—0.041
6.600	—0.	—0.	0.	0.007	—0.035
6.800	—0.	—0.	0.	0.006	—0.030
7.000	—0.	—0.	0.	0.005	—0.026
7.200	—0.	—0.	0.	0.004	—0.022
7.400	—0.	—0.	0.	0.003	—0.019
7.600	—0.	—0.	0.	0.002	—0.016
7.800	—0.	—0.	0.	0.002	—0.014
8.000	—0.	—0.	0.	0.002	—0.012
8.200	—0.	—0.	0.	0.001	—0.010
8.400	—0.	—0.	0.	0.001	—0.009
8.600	—0.	—0.	0.	0.001	—0.007
8.800	—0.	—0.	0.	0.001	—0.006
9.000	—0.	—0.	0.	0.001	—0.005
9.500	—0.	—0.	0.	0.	—0.004
10.000	—0.	—0.	0.	0.	—0.002
10.500	—0.	—0.	0.	0.	—0.002
11.000	—0.	—0.	0.	0.	—0.001
11.500	—0.	—0.	0.	0.	0.001
λ	184.	18.0	13.4	1.77	0.831
$\langle r^{-2}\rangle$	484.	38.5	12.2	3.51	0.927
$\langle r^{-1}\rangle$	15.6	3.07	2.95	0.787	0.646
$\langle r\rangle$	0.097	0.476	0.441	1.72	2.08
$\langle r^2\rangle$	0.013	0.268	0.242	3.43	5.17

S^+ ^4S

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.123	0.034	0.	0.010	0.
0.002	0.241	0.067	0.001	0.020	0.
0.004	0.467	0.129	0.002	0.039	0.001
0.006	0.679	0.187	0.004	0.056	0.001
0.008	0.876	0.242	0.008	0.073	0.002
0.010	1.061	0.292	0.012	0.088	0.003
0.015	1.470	0.403	0.026	0.121	0.007
0.020	1.809	0.494	0.044	0.149	0.012
0.025	2.089	0.566	0.066	0.170	0.018
0.030	2.316	0.622	0.091	0.187	0.025
0.035	2.496	0.663	0.120	0.199	0.033
0.040	2.636	0.690	0.150	0.207	0.042
0.050	2.814	0.710	0.218	0.212	0.060
0.060	2.885	0.692	0.291	0.205	0.080
0.070	2.878	0.643	0.368	0.190	0.101
0.080	2.813	0.572	0.446	0.167	0.123
0.090	2.707	0.482	0.525	0.139	0.144
0.100	2.575	0.381	0.603	0.107	0.165
0.120	2.266	0.154	0.754	0.036	0.205
0.140	1.942	—0.084	0.893	—0.038	0.241
0.160	1.632	—0.318	1.017	—0.110	0.272
0.180	1.352	—0.538	1.125	—0.177	0.297
0.200	1.108	—0.738	1.216	—0.236	0.317
0.220	0.900	—0.914	1.291	—0.286	0.331
0.240	0.726	—1.066	1.350	—0.326	0.339
0.260	0.582	—1.192	1.394	—0.357	0.343
0.280	0.465	—1.295	1.426	—0.380	0.341
0.300	0.370	—1.376	1.445	—0.393	0.335
0.350	0.206	—1.493	1.448	—0.393	0.304
0.400	0.114	—1.514	1.404	—0.354	0.255
0.450	0.063	—1.469	1.328	—0.286	0.193
0.500	0.035	—1.381	1.233	—0.199	0.121
0.550	0.019	—1.268	1.128	—0.101	0.045
0.600	0.011	—1.144	1.019	0.003	—0.033
0.650	0.006	—1.017	0.912	0.108	—0.111
0.700	0.004	—0.894	0.810	0.210	—0.187
0.750	0.002	—0.778	0.714	0.307	—0.260
0.800	0.001	—0.672	0.626	0.397	—0.329
0.850	0.001	—0.577	0.546	0.479	—0.394
0.900	0.001	—0.492	0.475	0.553	—0.453
0.950	0.	—0.418	0.411	0.617	—0.508
1.000	0.	—0.353	0.354	0.674	—0.556
1.100	0.	—0.250	0.261	0.761	—0.638
1.200	0.	—0.175	0.191	0.818	—0.699
1.300	0.	—0.121	0.139	0.848	—0.742
1.400	0.	—0.084	0.101	0.857	—0.768
1.500	—0.	—0.057	0.073	0.849	—0.780
1.600	—0.	—0.039	0.052	0.828	—0.781
1.700	—0.	—0.027	0.038	0.797	—0.772
1.800	—0.	—0.019	0.027	0.759	—0.755
1.900	—0.	—0.013	0.019	0.717	—0.732
2.000	—0.	—0.009	0.014	0.672	—0.705
2.100	—0.	—0.006	0.010	0.626	—0.674
2.200	—0.	—0.004	0.007	0.580	—0.641
2.300	—0.	—0.003	0.005	0.535	—0.607
2.400	—0.	—0.002	0.004	0.491	—0.572
2.500	—0.	—0.002	0.003	0.449	—0.538
2.600	—0.	—0.001	0.002	0.410	—0.503
2.700	—0.	—0.001	0.002	0.372	—0.470
2.800	—0.	—0.001	0.001	0.338	—0.437
2.900	—0.	—0.001	0.001	0.306	—0.406
3.000	—0.	—0.	0.001	0.276	—0.376
3.200	—0.	—0.	0.	0.223	—0.320
3.400	—0.	—0.	0.	0.180	—0.271
3.600	—0.	—0.	0.	0.144	—0.228
3.800	—0.	—0.	0.	0.114	—0.191
4.000	—0.	—0.	0.	0.090	—0.159
4.200	—0.	—0.	0.	0.071	—0.131
4.400	—0.	—0.	0.	0.056	—0.109
4.600	—0.	—0.	0.	0.044	—0.089
4.800	—0.	—0.	0.	0.034	—0.073
5.000	—0.	—0.	0.	0.027	—0.060
5.200	—0.	—0.	0.	0.021	—0.049
5.400	—0.	—0.	0.	0.016	—0.040
5.600	—0.	—0.	0.	0.012	—0.032
5.800	—0.	—0.	0.	0.010	—0.026
6.000	—0.	—0.	0.	0.007	—0.021
6.200	—0.	—0.	0.	0.006	—0.017
6.400	—0.	—0.	0.	0.004	—0.014
6.600	—0.	—0.	0.	0.003	—0.011
6.800	—0.	—0.	0.	0.003	—0.009
7.000	—0.	—0.	0.	0.002	—0.007
7.200	—0.	—0.	0.	0.001	—0.006
7.400	—0.	—0.	0.	0.001	—0.005
7.600	—0.	—0.	0.	0.001	—0.004
7.800	—0.	—0.	0.	0.001	—0.003
8.000	—0.	—0.	0.	0.001	—0.002
8.200	—0.	—0.	0.	0.	—0.002
8.400	—0.	—0.	0.	0.	—0.002
8.600	—0.	—0.	0.	0.	—0.001

r	$1s$	$2s$	$2p$	$3s$	$3p$
8.800	—0.	—0.	0.	0.	—0.001
9.000	—0.	—0.	0.	0.	—0.001
λ	185.	18.9	14.2	2.48	1.72
$\langle r^{-2}\rangle$	484.	38.5	12.2	3.76	1.09
$\langle r^{-1}\rangle$	15.6	3.07	2.96	0.813	0.705
$\langle r\rangle$	0.097	0.476	0.441	1.66	1.88
$\langle r^{2}\rangle$	0.013	0.268	0.242	3.17	4.13

S^+ ^2P

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.123	0.034	0.	0.010	0.
0.002	0.241	0.067	0.001	0.020	0.
0.004	0.467	0.129	0.002	0.039	0.001
0.006	0.679	0.187	0.004	0.057	0.001
0.008	0.876	0.242	0.008	0.073	0.002
0.010	1.061	0.292	0.012	0.088	0.003
0.015	1.470	0.404	0.026	0.122	0.007
0.020	1.809	0.494	0.044	0.149	0.012
0.025	2.089	0.566	0.066	0.171	0.018
0.030	2.316	0.622	0.091	0.187	0.025
0.035	2.496	0.663	0.120	0.200	0.033
0.040	2.636	0.690	0.150	0.207	0.041
0.050	2.814	0.710	0.218	0.213	0.059
0.060	2.885	0.692	0.291	0.206	0.079
0.070	2.878	0.643	0.368	0.190	0.100
0.080	2.813	0.572	0.446	0.167	0.121
0.090	2.707	0.483	0.525	0.139	0.142
0.100	2.575	0.381	0.603	0.107	0.163
0.120	2.266	0.154	0.754	0.036	0.202
0.140	1.942	—0.084	0.893	—0.039	0.237
0.160	1.632	—0.318	1.017	—0.111	0.268
0.180	1.352	—0.539	1.125	—0.177	0.292
0.200	1.108	—0.738	1.216	—0.236	0.312
0.220	0.900	—0.914	1.291	—0.286	0.325
0.240	0.726	—1.066	1.350	—0.327	0.333
0.260	0.582	—1.192	1.395	—0.359	0.337
0.280	0.465	—1.295	1.426	—0.381	0.335
0.300	0.370	—1.376	1.445	—0.394	0.329
0.350	0.206	—1.493	1.449	—0.394	0.299
0.400	0.114	—1.514	1.404	—0.355	0.250
0.450	0.063	—1.469	1.328	—0.287	0.188
0.500	0.035	—1.381	1.233	—0.199	0.117
0.550	0.019	—1.268	1.128	—0.101	0.042
0.600	0.011	—1.143	1.019	0.004	—0.035
0.650	0.006	—1.017	0.912	0.109	—0.112
0.700	0.004	—0.894	0.810	0.211	—0.187
0.750	0.002	—0.778	0.714	0.308	—0.259
0.800	0.001	—0.672	0.626	0.398	—0.327
0.850	0.001	—0.576	0.546	0.481	—0.390
0.900	0.001	—0.492	0.474	0.555	—0.448
0.950	0.	—0.417	0.411	0.620	—0.501
1.000	0.	—0.353	0.354	0.676	—0.549
1.100	0.	—0.249	0.261	0.763	—0.628
1.200	0.	—0.174	0.191	0.819	—0.688
1.300	0.	—0.121	0.139	0.850	—0.729
1.400	0.	—0.083	0.101	0.858	—0.755
1.500	—0.	—0.057	0.073	0.850	—0.767
1.600	—0.	—0.039	0.052	0.828	—0.768
1.700	—0.	—0.027	0.038	0.797	—0.760
1.800	—0.	—0.018	0.027	0.758	—0.745
1.900	—0.	—0.013	0.019	0.716	—0.724
2.000	—0.	—0.009	0.014	0.671	—0.699
2.100	—0.	—0.006	0.010	0.624	—0.670
2.200	—0.	—0.004	0.007	0.578	—0.640
2.300	—0.	—0.003	0.005	0.533	—0.608
2.400	—0.	—0.002	0.004	0.489	—0.576
2.500	—0.	—0.002	0.003	0.447	—0.544
2.600	—0.	—0.001	0.002	0.408	—0.511
2.700	—0.	—0.001	0.002	0.371	—0.480
2.800	—0.	—0.001	0.001	0.336	—0.449
2.900	—0.	—0.001	0.001	0.304	—0.419
3.000	—0.	—0.	0.001	0.274	—0.390
3.200	—0.	—0.	0.	0.222	—0.337
3.400	—0.	—0.	0.	0.178	—0.289
3.600	—0.	—0.	0.	0.143	—0.246
3.800	—0.	—0.	0.	0.113	—0.209
4.000	—0.	—0.	0.	0.090	—0.176
4.200	—0.	—0.	0.	0.071	—0.148
4.400	—0.	—0.	0.	0.056	—0.124
4.600	—0.	—0.	0.	0.044	—0.104
4.800	—0.	—0.	0.	0.034	—0.087
5.000	—0.	—0.	0.	0.026	—0.072
5.200	—0.	—0.	0.	0.021	—0.060
5.400	—0.	—0.	0.	0.016	—0.049
5.600	—0.	—0.	0.	0.012	—0.041
5.800	—0.	—0.	0.	0.010	—0.034
6.000	—0.	—0.	0.	0.007	—0.028
6.200	—0.	—0.	0.	0.006	—0.023
6.400	—0.	—0.	0.	0.004	—0.019
6.600	—0.	—0.	0.	0.003	—0.015
6.800	—0.	—0.	0.	0.003	—0.012
7.000	—0.	—0.	0.	0.002	—0.010
7.200	—0.	—0.	0.	0.002	—0.008
7.400	—0.	—0.	0.	0.001	—0.007
7.600	—0.	—0.	0.	0.001	—0.005
7.800	—0.	—0.	0.	0.001	—0.004
8.000	—0.	—0.	0.	0.001	—0.004
8.200	—0.	—0.	0.	0.	—0.003
8.400	—0.	—0.	0.	0.	—0.002
8.600	—0.	—0.	0.	0.	—0.002
8.800	—0.	—0.	0.	0.	—0.002
9.000	—0.	—0.	0.	0.	—0.001
9.500	—0.	—0.	0.	0.	—0.001
λ	185.	18.9	14.3	2.51	1.55
$\langle r^{-2}\rangle$	484.	38.5	12.2	3.78	1.06
$\langle r^{-1}\rangle$	15.6	3.08	2.96	0.815	0.693
$\langle r\rangle$	0.097	0.475	0.441	1.66	1.92
$\langle r^{2}\rangle$	0.013	0.268	0.242	3.16	4.33

S^+ ^2D

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.123	0.034	0.	0.010	0.
0.002	0.241	0.067	0.001	0.020	0.
0.004	0.467	0.129	0.002	0.039	0.001
0.006	0.679	0.187	0.004	0.057	0.001
0.008	0.876	0.242	0.008	0.073	0.002
0.010	1.061	0.292	0.012	0.088	0.003
0.015	1.470	0.403	0.026	0.122	0.007
0.020	1.809	0.494	0.044	0.149	0.012
0.025	2.089	0.566	0.066	0.171	0.018
0.030	2.316	0.622	0.091	0.187	0.025
0.035	2.496	0.663	0.120	0.199	0.033
0.040	2.636	0.690	0.150	0.207	0.041
0.050	2.814	0.710	0.218	0.212	0.060
0.060	2.885	0.692	0.291	0.206	0.080

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.070	2.878	0.643	0.368	0.190	0.100
0.080	2.813	0.572	0.446	0.167	0.122
0.090	2.707	0.483	0.525	0.139	0.143
0.100	2.575	0.381	0.603	0.107	0.164
0.120	2.266	0.154	0.754	0.036	0.203
0.140	1.942	—0.084	0.893	—0.039	0.239
0.160	1.632	—0.318	1.017	—0.111	0.269
0.180	1.352	—0.538	1.125	—0.177	0.294
0.200	1.108	—0.738	1.216	—0.236	0.314
0.220	0.900	—0.914	1.291	—0.286	0.327
0.240	0.726	—1.066	1.350	—0.327	0.336
0.260	0.582	—1.192	1.395	—0.358	0.339
0.280	0.465	—1.295	1.426	—0.380	0.337
0.300	0.370	—1.376	1.445	—0.394	0.332
0.350	0.206	—1.493	1.449	—0.394	0.301
0.400	0.114	—1.514	1.404	—0.354	0.252
0.450	0.063	—1.469	1.328	—0.286	0.190
0.500	0.035	—1.381	1.233	—0.199	0.119
0.550	0.019	—1.268	1.128	—0.101	0.043
0.600	0.011	—1.144	1.019	0.003	—0.034
0.650	0.006	—1.017	0.912	0.108	—0.111
0.700	0.004	—0.894	0.810	0.211	—0.187
0.750	0.002	—0.778	0.714	0.308	—0.259
0.800	0.001	—0.672	0.626	0.398	—0.328
0.850	0.001	—0.576	0.546	0.480	—0.392
0.900	0.001	—0.492	0.474	0.554	—0.450
0.950	0.	—0.417	0.411	0.619	—0.504
1.000	0.	—0.353	0.354	0.675	—0.552
1.100	0.	—0.250	0.261	0.762	—0.632
1.200	0.	—0.175	0.191	0.819	—0.692
1.300	0.	—0.121	0.139	0.849	—0.734
1.400	0.	—0.083	0.101	0.858	—0.760
1.500	—0.	—0.057	0.073	0.849	—0.772
1.600	—0.	—0.039	0.052	0.828	—0.773
1.700	—0.	—0.027	0.038	0.797	—0.765
1.800	—0.	—0.018	0.027	0.759	—0.749
1.900	—0.	—0.013	0.019	0.716	—0.727
2.000	—0.	—0.009	0.014	0.671	—0.701
2.100	—0.	—0.006	0.010	0.625	—0.672
2.200	—0.	—0.004	0.007	0.579	—0.641
2.300	—0.	—0.003	0.005	0.534	—0.608
2.400	—0.	—0.002	0.004	0.490	—0.575
2.500	—0.	—0.002	0.003	0.448	—0.541
2.600	—0.	—0.001	0.002	0.409	—0.508
2.700	—0.	—0.001	0.002	0.371	—0.476
2.800	—0.	—0.001	0.001	0.337	—0.444
2.900	—0.	—0.001	0.001	0.305	—0.414
3.000	—0.	—0.	0.001	0.275	—0.385
3.200	—0.	—0.	0.	0.222	—0.330
3.400	—0.	—0.	0.	0.179	—0.282
3.600	—0.	—0.	0.	0.143	—0.239
3.800	—0.	—0.	0.	0.114	—0.201
4.000	—0.	—0.	0.	0.090	—0.169
4.200	—0.	—0.	0.	0.071	—0.141
4.400	—0.	—0.	0.	0.056	—0.118
4.600	—0.	—0.	0.	0.044	—0.098
4.800	—0.	—0.	0.	0.034	—0.081
5.000	—0.	—0.	0.	0.027	—0.067
5.200	—0.	—0.	0.	0.021	—0.055
5.400	—0.	—0.	0.	0.016	—0.045
5.600	—0.	—0.	0.	0.012	—0.037
5.800	—0.	—0.	0.	0.010	—0.030
6.000	—0.	—0.	0.	0.007	—0.025
6.200	—0.	—0.	0.	0.006	—0.020
6.400	—0.	—0.	0.	0.004	—0.016
6.600	—0.	—0.	0.	0.003	—0.013
6.800	—0.	—0.	0.	0.003	—0.011
7.000	—0.	—0.	0.	0.002	—0.009
7.200	—0.	—0.	0.	0.001	—0.007
7.400	—0.	—0.	0.	0.001	—0.006
7.600	—0.	—0.	0.	0.001	—0.005
7.800	—0.	—0.	0.	0.001	—0.004
8.000	—0.	—0.	0.	0.001	—0.003
8.200	—0.	—0.	0.	0.	—0.002
8.400	—0.	—0.	0.	0.	—0.002
8.600	—0.	—0.	0.	0.	—0.002
8.800	—0.	—0.	0.	0.	—0.001
9.000	—0.	—0.	0.	0.	—0.001
9.500	—0.	—0.	0.	0.	—0.001
λ	185.	18.9	14.2	2.50	1.62
$\langle r^{-2}\rangle$	484.	38.5	12.2	3.77	1.07
$\langle r^{-1}\rangle$	15.6	3.07	2.96	0.815	0.698
$\langle r\rangle$	0.097	0.475	0.441	1.66	1.90
$\langle r^2\rangle$	0.013	0.268	0.242	3.17	4.25

S^{++} ^1S

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.123	0.034	0.	0.011	0.
0.002	0.241	0.067	0.001	0.021	0.
0.004	0.467	0.129	0.002	0.041	0.001
0.006	0.679	0.188	0.004	0.059	0.001
0.008	0.876	0.242	0.008	0.076	0.002
0.010	1.061	0.293	0.012	0.092	0.003
0.015	1.470	0.404	0.026	0.127	0.007
0.020	1.810	0.495	0.044	0.156	0.013
0.025	2.089	0.567	0.066	0.178	0.019
0.030	2.316	0.623	0.091	0.196	0.027
0.035	2.496	0.663	0.120	0.208	0.035
0.040	2.636	0.691	0.150	0.217	0.044
0.050	2.814	0.711	0.218	0.222	0.063
0.060	2.885	0.692	0.291	0.215	0.085
0.070	2.878	0.644	0.368	0.199	0.107
0.080	2.813	0.572	0.447	0.175	0.129
0.090	2.707	0.483	0.526	0.145	0.152
0.100	2.575	0.381	0.604	0.111	0.174
0.120	2.266	0.154	0.755	0.037	0.216
0.140	1.942	—0.084	0.894	—0.041	0.253
0.160	1.632	—0.319	1.018	—0.116	0.286
0.180	1.352	—0.539	1.126	—0.186	0.312
0.200	1.108	—0.739	1.217	—0.247	0.332
0.220	0.900	—0.916	1.292	—0.299	0.347
0.240	0.726	—1.067	1.351	—0.342	0.355
0.260	0.582	—1.194	1.395	—0.374	0.358
0.280	0.465	—1.297	1.426	—0.397	0.356
0.300	0.370	—1.377	1.446	—0.411	0.350
0.350	0.206	—1.494	1.449	—0.411	0.316
0.400	0.114	—1.515	1.405	—0.369	0.263
0.450	0.063	—1.470	1.328	—0.297	0.196
0.500	0.035	—1.381	1.233	—0.205	0.119
0.550	0.019	—1.268	1.127	—0.101	0.038
0.600	0.011	—1.143	1.019	0.008	—0.045
0.650	0.006	—1.016	0.912	0.118	—0.127
0.700	0.004	—0.893	0.809	0.225	—0.208
0.750	0.002	—0.777	0.714	0.327	—0.285
0.800	0.001	—0.671	0.625	0.421	—0.357
0.850	0.001	—0.575	0.545	0.506	—0.424
0.900	0.001	—0.490	0.474	0.582	—0.485
0.950	0.	—0.416	0.410	0.649	—0.540
1.000	0.	—0.351	0.353	0.707	—0.589
1.100	0.	—0.248	0.261	0.794	—0.670
1.200	0.	—0.173	0.190	0.849	—0.729

r	$1s$	$2s$	$2p$	$3s$	$3p$
1.300	0.	—0.120	0.138	0.876	—0.767
1.400	0.	—0.082	0.100	0.880	—0.789
1.500	0.	—0.056	0.072	0.866	—0.796
1.600	—0.	—0.038	0.052	0.839	—0.792
1.700	—0.	—0.026	0.037	0.801	—0.778
1.800	—0.	—0.018	0.027	0.757	—0.756
1.900	—0.	—0.012	0.019	0.709	—0.729
2.000	—0.	—0.008	0.014	0.658	—0.698
2.100	—0.	—0.006	0.010	0.607	—0.664
2.200	—0.	—0.004	0.007	0.556	—0.628
2.300	—0.	—0.003	0.005	0.507	—0.592
2.400	—0.	—0.002	0.004	0.461	—0.555
2.500	—0.	—0.001	0.003	0.416	—0.519
2.600	—0.	—0.001	0.002	0.375	—0.483
2.700	—0.	—0.001	0.001	0.337	—0.448
2.800	—0.	—0.001	0.001	0.301	—0.415
2.900	—0.	—0.	0.001	0.269	—0.383
3.000	—0.	—0.	0.001	0.239	—0.352
3.200	—0.	—0.	0.	0.188	—0.297
3.400	—0.	—0.	0.	0.147	—0.248
3.600	—0.	—0.	0.	0.114	—0.206
3.800	—0.	—0.	0.	0.088	—0.170
4.000	—0.	—0.	0.	0.067	—0.139
4.200	—0.	—0.	0.	0.051	—0.114
4.400	—0.	—0.	0.	0.039	—0.092
4.600	—0.	—0.	0.	0.029	—0.075
4.800	—0.	—0.	0.	0.022	—0.060
5.000	—0.	—0.	0.	0.017	—0.049
5.200	—0.	—0.	0.	0.012	—0.039
5.400	—0.	—0.	0.	0.009	—0.031
5.600	—0.	—0.	0.	0.007	—0.025
5.800	—0.	—0.	0.	0.005	—0.020
6.000	—0.	—0.	0.	0.004	—0.016
6.200	—0.	—0.	0.	0.003	—0.012
6.400	—0.	—0.	0.	0.002	—0.010
6.600	—0.	—0.	0.	0.002	—0.008
6.800	—0.	—0.	0.	0.001	—0.006
7.000	—0.	—0.	0.	0.001	—0.005
7.200	—0.	—0.	0.	0.001	—0.004
7.400	—0.	—0.	0.	0.	—0.003
7.600	—0.	—0.	0.	0.	—0.002
7.800	—0.	—0.	0.	0.	—0.002
8.000	—0.	—0.	0.	0.	—0.001
8.200	—0.	—0.	0.	0.	—0.001
8.400	—0.	—0.	0.	0.	—0.001
8.600	—0.	—0.	0.	0.	—0.001
8.800	—0.	—0.	0.	0.	—0.001
λ	186.	20.0	15.3	3.34	2.24
$\langle r^{-2}\rangle$	484.	38.6	12.2	4.10	1.18
$\langle r^{-1}\rangle$	15.6	3.08	2.96	0.847	0.732
$\langle r\rangle$	0.097	0.475	0.440	1.59	1.82
$\langle r^2\rangle$	0.013	0.267	0.241	2.91	3.85

S^{++} ^3P

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.123	0.034	0.	0.011	0.
0.002	0.241	0.067	0.001	0.021	0.
0.004	0.467	0.129	0.002	0.041	0.001
0.006	0.679	0.188	0.004	0.059	0.001
0.008	0.876	0.242	0.008	0.076	0.002
0.010	1.061	0.293	0.012	0.092	0.004
0.015	1.470	0.404	0.026	0.127	0.008
0.020	1.810	0.495	0.044	0.155	0.013
0.025	2.089	0.567	0.066	0.178	0.020
0.030	2.316	0.623	0.091	0.195	0.027
0.035	2.496	0.663	0.120	0.208	0.036
0.040	2.636	0.691	0.150	0.216	0.045
0.050	2.814	0.711	0.218	0.221	0.065
0.060	2.885	0.692	0.291	0.215	0.086
0.070	2.878	0.644	0.368	0.198	0.109
0.080	2.813	0.572	0.446	0.174	0.132
0.090	2.707	0.483	0.526	0.145	0.155
0.100	2.575	0.381	0.604	0.111	0.178
0.120	2.266	0.154	0.755	0.037	0.221
0.140	1.942	—0.084	0.894	—0.040	0.259
0.160	1.632	—0.319	1.018	—0.116	0.292
0.180	1.352	—0.539	1.126	—0.185	0.319
0.200	1.108	—0.739	1.217	—0.246	0.340
0.220	0.900	—0.915	1.292	—0.299	0.355
0.240	0.726	—1.067	1.351	—0.341	0.364
0.260	0.582	—1.194	1.395	—0.373	0.367
0.280	0.465	—1.296	1.426	—0.396	0.365
0.300	0.370	—1.377	1.445	—0.410	0.359
0.350	0.206	—1.494	1.449	—0.410	0.325
0.400	0.114	—1.515	1.405	—0.368	0.271
0.450	0.063	—1.469	1.328	—0.296	0.203
0.500	0.035	—1.381	1.233	—0.205	0.126
0.550	0.019	—1.268	1.128	—0.101	0.043
0.600	0.011	—1.143	1.019	0.008	—0.042
0.650	0.006	—1.016	0.912	0.118	—0.126
0.700	0.004	—0.893	0.809	0.224	—0.208
0.750	0.002	—0.777	0.714	0.325	—0.287
0.800	0.001	—0.671	0.626	0.419	—0.361
0.850	0.001	—0.575	0.546	0.505	—0.429
0.900	0.001	—0.491	0.474	0.581	—0.492
0.950	0.	—0.416	0.410	0.647	—0.549
1.000	0.	—0.352	0.353	0.705	—0.600
1.100	0.	—0.248	0.261	0.793	—0.684
1.200	0.	—0.173	0.191	0.848	—0.745
1.300	0.	—0.120	0.138	0.875	—0.785
1.400	0.	—0.082	0.100	0.879	—0.808
1.500	0.	—0.056	0.072	0.866	—0.814
1.600	—0.	—0.039	0.052	0.839	—0.808
1.700	—0.	—0.026	0.037	0.802	—0.792
1.800	—0.	—0.018	0.027	0.758	—0.767
1.900	—0.	—0.012	0.019	0.710	—0.737
2.000	—0.	—0.008	0.014	0.659	—0.702
2.100	—0.	—0.006	0.010	0.608	—0.665
2.200	—0.	—0.004	0.007	0.558	—0.625
2.300	—0.	—0.003	0.005	0.509	—0.585
2.400	—0.	—0.002	0.004	0.462	—0.544
2.500	—0.	—0.001	0.003	0.418	—0.505
2.600	—0.	—0.001	0.002	0.377	—0.466
2.700	—0.	—0.001	0.001	0.338	—0.429
2.800	—0.	—0.001	0.001	0.303	—0.394
2.900	—0.	—0.	0.001	0.270	—0.360
3.000	—0.	—0.	0.001	0.240	—0.328
3.200	—0.	—0.	0.	0.189	—0.271
3.400	—0.	—0.	0.	0.148	—0.222
3.600	—0.	—0.	0.	0.114	—0.181
3.800	—0.	—0.	0.	0.088	—0.146
4.000	—0.	—0.	0.	0.067	—0.117
4.200	—0.	—0.	0.	0.051	—0.094
4.400	—0.	—0.	0.	0.039	—0.074
4.600	—0.	—0.	0.	0.029	—0.059
4.800	—0.	—0.	0.	0.022	—0.047
5.000	—0.	—0.	0.	0.017	—0.037
5.200	—0.	—0.	0.	0.012	—0.029
5.400	—0.	—0.	0.	0.009	—0.022
5.600	—0.	—0.	0.	0.007	—0.017
5.800	—0.	—0.	0.	0.005	—0.014
6.000	—0.	—0.	0.	0.004	—0.011
6.200	—0.	—0.	0.	0.003	—0.008
6.400	—0.	—0.	0.	0.002	—0.006
6.600	—0.	—0.	0.	0.002	—0.005
6.800	—0.	—0.	0.	0.001	—0.004
7.000	—0.	—0.	0.	0.001	—0.003
7.200	—0.	—0.	0.	0.001	—0.002

r	1s	2s	2p	3s	3p
7.400	—0.	—0.	0.	0.	—0.002
7.600	—0.	—0.	0.	0.	—0.001
7.800	—0.	—0.	0.	0.	—0.001
8.000	—0.	—0.	0.	0.	—0.001
8.200	—0.	—0.	0.	0.	—0.001
λ	186.	19.9	15.3	3.32	2.54
$\langle r^{-2}\rangle$	484.	38.6	12.2	4.08	1.23
$\langle r^{-1}\rangle$	15.6	3.08	2.96	0.845	0.748
$\langle r\rangle$	0.097	0.475	0.440	1.60	1.77
$\langle r^2\rangle$	0.013	0.268	0.241	2.92	3.62

S^{++} ^1D

r	1s	2s	2p	3s	3p
0.001	0.123	0.034	0.	0.011	0.
0.002	0.241	0.067	0.001	0.021	0.
0.004	0.467	0.129	0.002	0.041	0.001
0.006	0.679	0.188	0.004	0.059	0.001
0.008	0.876	0.242	0.008	0.076	0.002
0.010	1.061	0.293	0.012	0.092	0.004
0.015	1.470	0.404	0.026	0.127	0.008
0.020	1.810	0.495	0.044	0.155	0.013
0.025	2.089	0.567	0.066	0.178	0.019
0.030	2.316	0.623	0.091	0.195	0.027
0.035	2.496	0.663	0.120	0.208	0.035
0.040	2.636	0.691	0.150	0.216	0.044
0.050	2.814	0.711	0.218	0.222	0.064
0.060	2.885	0.692	0.291	0.215	0.086
0.070	2.878	0.644	0.368	0.198	0.108
0.080	2.813	0.572	0.446	0.174	0.131
0.090	2.707	0.483	0.526	0.145	0.154
0.100	2.575	0.381	0.604	0.111	0.176
0.120	2.266	0.154	0.755	0.037	0.219
0.140	1.942	—0.084	0.894	—0.041	0.257
0.160	1.632	—0.319	1.018	—0.116	0.290
0.180	1.352	—0.539	1.126	—0.185	0.316
0.200	1.108	—0.739	1.217	—0.247	0.337
0.220	0.900	—0.915	1.292	—0.299	0.352
0.240	0.726	—1.067	1.351	—0.341	0.360
0.260	0.582	—1.194	1.395	—0.374	0.364
0.280	0.465	—1.296	1.426	—0.397	0.362
0.300	0.370	—1.377	1.445	—0.411	0.355
0.350	0.206	—1.494	1.449	—0.410	0.321
0.400	0.114	—1.515	1.405	—0.368	0.268
0.450	0.063	—1.470	1.328	—0.297	0.200
0.500	0.035	—1.381	1.233	—0.205	0.123
0.550	0.019	—1.268	1.128	—0.101	0.041
0.600	0.011	—1.143	1.019	0.008	—0.043
0.650	0.006	—1.016	0.912	0.118	—0.127
0.700	0.004	—0.893	0.809	0.225	—0.208
0.750	0.002	—0.777	0.714	0.326	—0.286
0.800	0.001	—0.671	0.625	0.420	—0.359
0.850	0.001	—0.575	0.546	0.505	—0.427
0.900	0.001	—0.490	0.474	0.581	—0.489
0.950	0.	—0.416	0.410	0.648	—0.546
1.000	0.	—0.352	0.353	0.705	—0.596
1.100	0.	—0.248	0.261	0.793	—0.679
1.200	0.	—0.173	0.190	0.848	—0.739
1.300	0.	—0.120	0.138	0.875	—0.778
1.400	0.	—0.082	0.100	0.880	—0.800
1.500	0.	—0.056	0.072	0.866	—0.807
1.600	—0.	—0.038	0.052	0.839	—0.802
1.700	—0.	—0.026	0.037	0.801	—0.786
1.800	—0.	—0.018	0.027	0.757	—0.763
1.900	—0.	—0.012	0.019	0.709	—0.734
2.000	—0.	—0.008	0.014	0.659	—0.701
2.100	—0.	—0.006	0.010	0.608	—0.665
2.200	—0.	—0.004	0.007	0.557	—0.627
2.300	—0.	—0.003	0.005	0.508	—0.588
2.400	—0.	—0.002	0.004	0.462	—0.549
2.500	—0.	—0.001	0.003	0.417	—0.511
2.600	—0.	—0.001	0.002	0.376	—0.473
2.700	—0.	—0.001	0.001	0.338	—0.437
2.800	—0.	—0.001	0.001	0.302	—0.402
2.900	—0.	—0.	0.001	0.270	—0.369
3.000	—0.	—0.	0.001	0.240	—0.338
3.200	—0.	—0.	0.	0.189	—0.282
3.400	—0.	—0.	0.	0.147	—0.232
3.600	—0.	—0.	0.	0.114	—0.191
3.800	—0.	—0.	0.	0.088	—0.155
4.000	—0.	—0.	0.	0.067	—0.126
4.200	—0.	—0.	0.	0.051	—0.101
4.400	—0.	—0.	0.	0.039	—0.081
4.600	—0.	—0.	0.	0.029	—0.065
4.800	—0.	—0.	0.	0.022	—0.052
5.000	—0.	—0.	0.	0.017	—0.041
5.200	—0.	—0.	0.	0.012	—0.032
5.400	—0.	—0.	0.	0.009	—0.026
5.600	—0.	—0.	0.	0.007	—0.020
5.800	—0.	—0.	0.	0.005	—0.016
6.000	—0.	—0.	0.	0.004	—0.012
6.200	—0.	—0.	0.	0.003	—0.010
6.400	—0.	—0.	0.	0.002	—0.007
6.600	—0.	—0.	0.	0.002	—0.006
6.800	—0.	—0.	0.	0.001	—0.005
7.000	—0.	—0.	0.	0.001	—0.003
7.200	—0.	—0.	0.	0.001	—0.003
7.400	—0.	—0.	0.	0.	—0.002
7.600	—0.	—0.	0.	0.	—0.002
7.800	—0.	—0.	0.	0.	—0.001
8.000	—0.	—0.	0.	0.	—0.001
8.200	—0.	—0.	0.	0.	—0.001
8.400	—0.	—0.	0.	0.	—0.001
λ	186.	19.9	15.3	3.32	2.42
$\langle r^{-2}\rangle$	484.	38.6	12.2	4.09	1.21
$\langle r^{-1}\rangle$	15.6	3.08	2.96	0.846	0.742
$\langle r\rangle$	0.097	0.475	0.440	1.60	1.79
$\langle r^2\rangle$	0.013	0.268	0.241	2.92	3.71

Cl ^2P

r	1s	2s	2p	3s	3p
0.001	0.134	0.038	0.	0.011	0.
0.002	0.264	0.074	0.001	0.022	0.
0.004	0.510	0.143	0.002	0.043	0.001
0.006	0.740	0.207	0.005	0.063	0.001
0.008	0.953	0.267	0.009	0.081	0.002
0.010	1.152	0.322	0.014	0.097	0.004
0.015	1.588	0.442	0.031	0.134	0.008
0.020	1.945	0.538	0.052	0.162	0.014
0.025	2.235	0.613	0.078	0.185	0.021
0.030	2.465	0.669	0.108	0.202	0.029
0.035	2.644	0.708	0.141	0.213	0.038
0.040	2.778	0.731	0.177	0.220	0.047
0.050	2.937	0.740	0.255	0.222	0.068
0.060	2.982	0.707	0.339	0.210	0.090
0.070	2.945	0.641	0.426	0.189	0.113
0.080	2.850	0.551	0.515	0.160	0.136
0.090	2.717	0.443	0.604	0.126	0.159
0.100	2.559	0.324	0.690	0.088	0.182
0.120	2.209	0.064	0.855	0.006	0.223
0.140	1.857	—0.202	1.004	—0.076	0.259

r	1s	2s	2p	3s	3p
0.160	1.531	—0.456	1.134	—0.154	0.289
0.180	1.245	—0.689	1.243	—0.223	0.312
0.200	1.001	—0.895	1.333	—0.283	0.329
0.220	0.798	—1.072	1.403	—0.331	0.339
0.240	0.632	—1.219	1.454	—0.368	0.343
0.260	0.497	—1.337	1.490	—0.394	0.341
0.280	0.390	—1.429	1.511	—0.409	0.334
0.300	0.305	—1.496	1.518	—0.415	0.322
0.350	0.163	—1.573	1.492	—0.392	0.276
0.400	0.086	—1.553	1.417	—0.328	0.212
0.450	0.046	—1.469	1.313	—0.236	0.135
0.500	0.024	—1.349	1.195	—0.128	0.052
0.550	0.013	—1.211	1.071	—0.011	—0.034
0.600	0.007	—1.068	0.948	0.107	—0.119
0.650	0.004	—0.929	0.831	0.222	—0.202
0.700	0.002	—0.799	0.723	0.331	—0.281
0.750	0.001	—0.681	0.624	0.430	—0.355
0.800	0.001	—0.576	0.536	0.520	—0.423
0.850	0.001	—0.484	0.458	0.599	—0.484
0.900	0.	—0.404	0.390	0.667	—0.539
0.950	0.	—0.336	0.331	0.725	—0.587
1.000	0.	—0.279	0.279	0.772	—0.629
1.100	0.	—0.189	0.198	0.839	—0.695
1.200	0.	—0.128	0.139	0.873	—0.740
1.300	—0.	—0.085	0.098	0.882	—0.766
1.400	—0.	—0.057	0.068	0.870	—0.777
1.500	—0.	—0.038	0.047	0.845	—0.776
1.600	—0.	—0.025	0.033	0.809	—0.765
1.700	—0.	—0.017	0.023	0.766	—0.748
1.800	—0.	—0.012	0.016	0.719	—0.724
1.900	—0.	—0.008	0.011	0.670	—0.697
2.000	—0.	—0.005	0.008	0.620	—0.667
2.100	—0.	—0.004	0.006	0.572	—0.636
2.200	—0.	—0.003	0.004	0.525	—0.603
2.300	—0.	—0.002	0.003	0.480	—0.571
2.400	—0.	—0.002	0.002	0.437	—0.538
2.500	—0.	—0.001	0.002	0.397	—0.506
2.600	—0.	—0.001	0.001	0.360	—0.475
2.700	—0.	—0.001	0.001	0.326	—0.445
2.800	—0.	—0.001	0.001	0.294	—0.416
2.900	—0.	—0.	0.	0.265	—0.389
3.000	—0.	—0.	0.	0.239	—0.363
3.200	—0.	—0.	0.	0.192	—0.314
3.400	—0.	—0.	0.	0.155	—0.271
3.600	—0.	—0.	0.	0.124	—0.233
3.800	—0.	—0.	0.	0.099	—0.200
4.000	—0.	—0.	0.	0.078	—0.171
4.200	—0.	—0.	0.	0.062	—0.146
4.400	—0.	—0.	0.	0.049	—0.124
4.600	—0.	—0.	0.	0.039	—0.106
4.800	—0.	—0.	0.	0.031	—0.090
5.000	—0.	—0.	0.	0.024	—0.076
5.200	—0.	—0.	0.	0.019	—0.064
5.400	—0.	—0.	0.	0.015	—0.054
5.600	—0.	—0.	0.	0.012	—0.046
5.800	—0.	—0.	0.	0.009	—0.039
6.000	—0.	—0.	0.	0.007	—0.033
6.200	—0.	—0.	0.	0.006	—0.027
6.400	—0.	—0.	0.	0.004	—0.023
6.600	—0.	—0.	0.	0.003	—0.019
6.800	—0.	—0.	0.	0.003	—0.016
7.000	—0.	—0.	0.	0.002	—0.014
7.200	—0.	—0.	0.	0.002	—0.011
7.400	—0.	—0.	0.	0.001	—0.010
7.600	—0.	—0.	0.	0.001	—0.008
7.800	—0.	—0.	0.	0.001	—0.007
8.000	—0.	—0.	0.	0.001	—0.006
8.200	—0.	—0.	0.	0.	—0.005
8.400	—0.	—0.	0.	0.	—0.004
8.600	—0.	—0.	0.	0.	—0.003
8.800	—0.	—0.	0.	0.	—0.003
9.000	—0.	—0.	0.	0.	—0.002
9.500	—0.	—0.	0.	0.	—0.001
10.000	—0.	—0.	0.	0.	—0.001
10.500	—0.	—0.	0.	0.	—0.001
λ	210.	21.2	16.1	2.15	1.01
$\langle r^{-2}\rangle$	547.	44.7	14.3	4.39	1.19
$\langle r^{-1}\rangle$	16.6	3.31	3.20	0.875	0.732
$\langle r\rangle$	0.091	0.442	0.405	1.56	1.84
$\langle r^{2}\rangle$	0.011	0.231	0.204	2.81	4.06

Cl^+ ^1S

r	1s	2s	2p	3s	3p
0.001	0.134	0.038	0.	0.012	0.
0.002	0.264	0.074	0.001	0.023	0.
0.004	0.510	0.143	0.002	0.045	0.001
0.006	0.740	0.207	0.005	0.065	0.002
0.008	0.953	0.267	0.009	0.084	0.003
0.010	1.152	0.322	0.014	0.101	0.004
0.015	1.588	0.442	0.031	0.138	0.009
0.020	1.945	0.538	0.052	0.168	0.015
0.025	2.235	0.613	0.078	0.192	0.022
0.030	2.465	0.669	0.108	0.209	0.031
0.035	2.644	0.708	0.141	0.221	0.040
0.040	2.778	0.732	0.177	0.228	0.050
0.050	2.937	0.740	0.255	0.230	0.072
0.060	2.982	0.707	0.339	0.218	0.096
0.070	2.945	0.641	0.426	0.196	0.121
0.080	2.851	0.551	0.515	0.166	0.145
0.090	2.717	0.444	0.604	0.130	0.170
0.100	2.559	0.324	0.691	0.091	0.193
0.120	2.209	0.064	0.855	0.007	0.238
0.140	1.857	—0.202	1.004	—0.079	0.276
0.160	1.531	—0.456	1.134	—0.160	0.308
0.180	1.245	—0.690	1.243	—0.232	0.332
0.200	1.001	—0.896	1.333	—0.293	0.350
0.220	0.798	—1.073	1.403	—0.343	0.360
0.240	0.632	—1.220	1.455	—0.382	0.364
0.260	0.497	—1.338	1.490	—0.408	0.362
0.280	0.390	—1.430	1.511	—0.424	0.354
0.300	0.305	—1.496	1.518	—0.429	0.342
0.350	0.163	—1.574	1.492	—0.405	0.292
0.400	0.086	—1.553	1.417	—0.338	0.222
0.450	0.046	—1.469	1.313	—0.243	0.140
0.500	0.024	—1.349	1.195	—0.130	0.051
0.550	0.013	—1.210	1.070	—0.008	—0.041
0.600	0.007	—1.067	0.948	0.114	—0.133
0.650	0.004	—0.928	0.831	0.234	—0.221
0.700	0.002	—0.798	0.723	0.346	—0.305
0.750	0.001	—0.680	0.624	0.449	—0.383
0.800	0.001	—0.575	0.536	0.542	—0.455
0.850	0.001	—0.483	0.458	0.623	—0.519
0.900	0.	—0.403	0.390	0.693	—0.577
0.950	0.	—0.335	0.331	0.751	—0.627
1.000	0.	—0.278	0.279	0.799	—0.670
1.100	0.	—0.189	0.198	0.864	—0.736
1.200	0.	—0.127	0.139	0.896	—0.779
1.300	—0.	—0.085	0.097	0.902	—0.802
1.400	—0.	—0.057	0.068	0.886	—0.809
1.500	—0.	—0.038	0.047	0.855	—0.803
1.600	—0.	—0.025	0.033	0.814	—0.786
1.700	—0.	—0.017	0.023	0.765	—0.763
1.800	—0.	—0.011	0.016	0.713	—0.733

r	$1s$	$2s$	$2p$	$3s$	$3p$
1.900	—0.	—0.008	0.011	0.660	—0.700
2.000	—0.	—0.005	0.008	0.606	—0.665
2.100	—0.	—0.004	0.006	0.553	—0.628
2.200	—0.	—0.003	0.004	0.503	—0.590
2.300	—0.	—0.002	0.003	0.455	—0.553
2.400	—0.	—0.001	0.002	0.411	—0.516
2.500	—0.	—0.001	0.001	0.369	—0.480
2.600	—0.	—0.001	0.001	0.331	—0.446
2.700	—0.	—0.001	0.001	0.295	—0.413
2.800	—0.	—0.	0.001	0.263	—0.381
2.900	—0.	—0.	0.	0.234	—0.351
3.000	—0.	—0.	0.	0.208	—0.324
3.200	—0.	—0.	0.	0.163	—0.273
3.400	—0.	—0.	0.	0.127	—0.229
3.600	—0.	—0.	0.	0.099	—0.191
3.800	—0.	—0.	0.	0.076	—0.158
4.000	—0.	—0.	0.	0.058	—0.131
4.200	—0.	—0.	0.	0.045	—0.108
4.400	—0.	—0.	0.	0.034	—0.089
4.600	—0.	—0.	0.	0.026	—0.073
4.800	—0.	—0.	0.	0.020	—0.059
5.000	—0.	—0.	0.	0.015	—0.048
5.200	—0.	—0.	0.	0.011	—0.039
5.400	—0.	—0.	0.	0.009	—0.032
5.600	—0.	—0.	0.	0.006	—0.026
5.800	—0.	—0.	0.	0.005	—0.021
6.000	—0.	—0.	0.	0.004	—0.017
6.200	—0.	—0.	0.	0.003	—0.014
6.400	—0.	—0.	0.	0.002	—0.011
6.600	—0.	—0.	0.	0.002	—0.009
6.800	—0.	—0.	0.	0.001	—0.007
7.000	—0.	—0.	0.	0.001	—0.006
7.200	—0.	—0.	0.	0.001	—0.005
7.400	—0.	—0.	0.	0.	—0.004
7.600	—0.	—0.	0.	0.	—0.003
7.800	—0.	—0.	0.	0.	—0.002
8.000	—0.	—0.	0.	0.	—0.002
8.200	—0.	—0.	0.	0.	—0.001
8.400	—0.	—0.	0.	0.	—0.001
8.600	—0.	—0.	0.	0.	—0.001
8.800	—0.	—0.	0.	0.	—0.001
9.000	—0.	—0.	0.	0.	—0.001
λ	211.	22.2	17.1	2.97	1.74
$\langle r^{-2}\rangle$	547.	44.8	14.3	4.69	1.32
$\langle r^{-1}\rangle$	16.6	3.32	3.20	0.904	0.773
$\langle r\rangle$	0.091	0.441	0.405	1.50	1.73
$\langle r^2\rangle$	0.011	0.231	0.204	2.61	3.54

Cl^+ ^3P

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.134	0.038	0.	0.012	0.
0.002	0.264	0.074	0.001	0.023	0.
0.004	0.510	0.143	0.002	0.045	0.001
0.006	0.740	0.207	0.005	0.065	0.002
0.008	0.953	0.267	0.009	0.083	0.003
0.010	1.152	0.322	0.014	0.101	0.004
0.015	1.588	0.442	0.031	0.138	0.009
0.020	1.945	0.538	0.052	0.168	0.015
0.025	2.235	0.613	0.078	0.191	0.022
0.030	2.465	0.669	0.108	0.208	0.031
0.035	2.644	0.708	0.141	0.220	0.040
0.040	2.778	0.732	0.177	0.227	0.051
0.050	2.937	0.740	0.255	0.229	0.073
0.060	2.982	0.707	0.339	0.217	0.097
0.070	2.945	0.641	0.427	0.195	0.122
0.080	2.851	0.551	0.515	0.165	0.147
0.090	2.717	0.444	0.604	0.130	0.171
0.100	2.559	0.324	0.691	0.091	0.195
0.120	2.209	0.064	0.856	0.007	0.240
0.140	1.857	—0.202	1.004	—0.079	0.279
0.160	1.531	—0.456	1.134	—0.159	0.311
0.180	1.245	—0.690	1.244	—0.231	0.336
0.200	1.001	—0.896	1.333	—0.293	0.354
0.220	0.798	—1.073	1.403	—0.342	0.364
0.240	0.632	—1.220	1.455	—0.381	0.368
0.260	0.497	—1.338	1.490	—0.407	0.366
0.280	0.390	—1.429	1.511	—0.423	0.358
0.300	0.305	—1.496	1.518	—0.428	0.346
0.350	0.163	—1.573	1.491	—0.404	0.295
0.400	0.086	—1.553	1.417	—0.338	0.226
0.450	0.046	—1.469	1.313	—0.242	0.143
0.500	0.024	—1.349	1.194	—0.130	0.053
0.550	0.013	—1.210	1.070	—0.009	—0.040
0.600	0.007	—1.067	0.948	0.114	—0.132
0.650	0.004	—0.928	0.831	0.233	—0.221
0.700	0.002	—0.798	0.723	0.345	—0.306
0.750	0.001	—0.680	0.624	0.448	—0.385
0.800	0.001	—0.575	0.536	0.540	—0.458
0.850	0.001	—0.483	0.458	0.621	—0.523
0.900	0.	—0.403	0.390	0.691	—0.581
0.950	0.	—0.335	0.331	0.749	—0.632
1.000	0.	—0.278	0.279	0.797	—0.676
1.100	0.	—0.189	0.198	0.863	—0.744
1.200	0.	—0.127	0.139	0.895	—0.788
1.300	—0.	—0.085	0.097	0.901	—0.811
1.400	—0.	—0.057	0.068	0.885	—0.818
1.500	—0.	—0.038	0.047	0.855	—0.811
1.600	—0.	—0.025	0.033	0.814	—0.794
1.700	—0.	—0.017	0.023	0.766	—0.769
1.800	—0.	—0.011	0.016	0.714	—0.738
1.900	—0.	—0.008	0.011	0.661	—0.703
2.000	—0.	—0.005	0.008	0.607	—0.666
2.100	—0.	—0.004	0.005	0.555	—0.627
2.200	—0.	—0.003	0.004	0.505	—0.587
2.300	—0.	—0.002	0.003	0.457	—0.548
2.400	—0.	—0.001	0.002	0.412	—0.510
2.500	—0.	—0.001	0.001	0.370	—0.473
2.600	—0.	—0.001	0.001	0.332	—0.437
2.700	—0.	—0.001	0.001	0.297	—0.403
2.800	—0.	—0.	0.001	0.265	—0.371
2.900	—0.	—0.	0.	0.236	—0.340
3.000	—0.	—0.	0.	0.209	—0.312
3.200	—0.	—0.	0.	0.164	—0.260
3.400	—0.	—0.	0.	0.128	—0.216
3.600	—0.	—0.	0.	0.099	—0.178
3.800	—0.	—0.	0.	0.076	—0.146
4.000	—0.	—0.	0.	0.059	—0.120
4.200	—0.	—0.	0.	0.045	—0.097
4.400	—0.	—0.	0.	0.034	—0.079
4.600	—0.	—0.	0.	0.026	—0.064
4.800	—0.	—0.	0.	0.020	—0.052
5.000	—0.	—0.	0.	0.015	—0.042
5.200	—0.	—0.	0.	0.011	—0.033
5.400	—0.	—0.	0.	0.009	—0.027
5.600	—0.	—0.	0.	0.006	—0.021
5.800	—0.	—0.	0.	0.005	—0.017
6.000	—0.	—0.	0.	0.004	—0.014
6.200	—0.	—0.	0.	0.003	—0.011
6.400	—0.	—0.	0.	0.002	—0.009
6.600	—0.	—0.	0.	0.002	—0.007
6.800	—0.	—0.	0.	0.001	—0.005
7.000	—0.	—0.	0.	0.001	—0.004
7.200	—0.	—0.	0.	0.001	—0.003

r	1s	2s	2p	3s	3p
7.400	—0.	—0.	0.	0.	—0.003
7.600	—0.	—0.	0.	0.	—0.002
7.800	—0.	—0.	0.	0.	—0.002
8.000	—0.	—0.	0.	0.	—0.001
8.200	—0.	—0.	0.	0.	—0.001
8.400	—0.	—0.	0.	0.	—0.001
8.600	—0.	—0.	0.	0.	—0.001
8.800	—0.	—0.	0.	0.	—0.001
λ	211.	22.2	17.1	2.94	1.88
$\langle r^{-2}\rangle$	547.	44.7	14.3	4.67	1.35
$\langle r^{-1}\rangle$	16.6	3.32	3.20	0.902	0.782
$\langle r\rangle$	0.091	0.441	0.405	1.51	1.71
$\langle r^2\rangle$	0.011	0.231	0.204	2.62	3.43

Cl^+ ^1D

r	1s	2s	2p	3s	3p
0.001	0.134	0.038	0.	0.012	0.
0.002	0.264	0.074	0.001	0.023	0.
0.004	0.510	0.143	0.002	0.045	0.001
0.006	0.740	0.207	0.005	0.065	0.002
0.008	0.953	0.267	0.009	0.083	0.003
0.010	1.152	0.322	0.014	0.101	0.004
0.015	1.588	0.442	0.031	0.138	0.009
0.020	1.945	0.538	0.052	0.168	0.015
0.025	2.235	0.613	0.078	0.191	0.022
0.030	2.465	0.669	0.108	0.209	0.031
0.035	2.644	0.708	0.141	0.220	0.040
0.040	2.778	0.732	0.177	0.227	0.051
0.050	2.937	0.740	0.255	0.229	0.073
0.060	2.982	0.707	0.339	0.217	0.097
0.070	2.945	0.641	0.426	0.195	0.121
0.080	2.851	0.551	0.515	0.166	0.146
0.090	2.717	0.444	0.604	0.130	0.171
0.100	2.559	0.324	0.691	0.091	0.195
0.120	2.209	0.064	0.855	0.007	0.239
0.140	1.857	—0.202	1.004	—0.079	0.278
0.160	1.531	—0.456	1.134	—0.159	0.310
0.180	1.245	—0.690	1.243	—0.231	0.335
0.200	1.001	—0.896	1.333	—0.293	0.352
0.220	0.798	—1.073	1.403	—0.343	0.363
0.240	0.632	—1.220	1.455	—0.381	0.367
0.260	0.497	—1.338	1.490	—0.407	0.365
0.280	0.390	—1.429	1.511	—0.423	0.357
0.300	0.305	—1.496	1.518	—0.429	0.344
0.350	0.163	—1.573	1.491	—0.405	0.294
0.400	0.086	—1.553	1.417	—0.338	0.225
0.450	0.046	—1.469	1.313	—0.243	0.142
0.500	0.024	—1.349	1.195	—0.130	0.052
0.550	0.013	—1.210	1.070	—0.009	—0.040
0.600	0.007	—1.067	0.948	0.114	—0.132
0.650	0.004	—0.928	0.831	0.233	—0.221
0.700	0.002	—0.798	0.723	0.345	—0.306
0.750	0.001	—0.680	0.624	0.448	—0.385
0.800	0.001	—0.575	0.536	0.541	—0.457
0.850	0.001	—0.483	0.458	0.622	—0.522
0.900	0.	—0.403	0.390	0.691	—0.579
0.950	0.	—0.335	0.331	0.750	—0.630
1.000	0.	—0.278	0.279	0.797	—0.673
1.100	0.	—0.189	0.198	0.863	—0.741
1.200	0.	—0.127	0.139	0.896	—0.784
1.300	—0.	—0.085	0.097	0.901	—0.808

r	1s	2s	2p	3s	3p
1.400	—0.	—0.057	0.068	0.885	—0.814
1.500	—0.	—0.038	0.047	0.855	—0.808
1.600	—0.	—0.025	0.033	0.814	—0.791
1.700	—0.	—0.017	0.023	0.766	—0.766
1.800	—0.	—0.011	0.016	0.714	—0.736
1.900	—0.	—0.008	0.011	0.660	—0.702
2.000	—0.	—0.005	0.008	0.607	—0.665
2.100	—0.	—0.004	0.005	0.554	—0.627
2.200	—0.	—0.003	0.004	0.504	—0.589
2.300	—0.	—0.002	0.003	0.456	—0.550
2.400	—0.	—0.001	0.002	0.411	—0.512
2.500	—0.	—0.001	0.001	0.370	—0.476
2.600	—0.	—0.001	0.001	0.331	—0.440
2.700	—0.	—0.001	0.001	0.296	—0.407
2.800	—0.	—0.	0.001	0.264	—0.375
2.900	—0.	—0.	0.	0.235	—0.345
3.000	—0.	—0.	0.	0.209	—0.316
3.200	—0.	—0.	0.	0.164	—0.265
3.400	—0.	—0.	0.	0.128	—0.221
3.600	—0.	—0.	0.	0.099	—0.183
3.800	—0.	—0.	0.	0.076	—0.151
4.000	—0.	—0.	0.	0.059	—0.124
4.200	—0.	—0.	0.	0.045	—0.101
4.400	—0.	—0.	0.	0.034	—0.083
4.600	—0.	—0.	0.	0.026	—0.067
4.800	—0.	—0.	0.	0.020	—0.055
5.000	—0.	—0.	0.	0.015	—0.044
5.200	—0.	—0.	0.	0.011	—0.036
5.400	—0.	—0.	0.	0.009	—0.029
5.600	—0.	—0.	0.	0.006	—0.023
5.800	—0.	—0.	0.	0.005	—0.019
6.000	—0.	—0.	0.	0.004	—0.015
6.200	—0.	—0.	0.	0.003	—0.012
6.400	—0.	—0.	0.	0.002	—0.010
6.600	—0.	—0.	0.	0.002	—0.008
6.800	—0.	—0.	0.	0.001	—0.006
7.000	—0.	—0.	0.	0.001	—0.005
7.200	—0.	—0.	0.	0.001	—0.004
7.400	—0.	—0.	0.	0.	—0.003
7.600	—0.	—0.	0.	0.	—0.002
7.800	—0.	—0.	0.	0.	—0.002
8.000	—0.	—0.	0.	0.	—0.002
8.200	—0.	—0.	0.	0.	—0.001
8.400	—0.	—0.	0.	0.	—0.001
8.600	—0.	—0.	0.	0.	—0.001
8.800	—0.	—0.	0.	0.	—0.001
λ	211.	22.2	17.1	2.95	1.82
$\langle r^{-2}\rangle$	547.	44.8	14.3	4.68	1.34
$\langle r^{-1}\rangle$	16.6	3.32	3.20	0.902	0.778
$\langle r\rangle$	0.091	0.441	0.405	1.51	1.72
$\langle r^2\rangle$	0.011	0.231	0.204	2.61	3.47

Cl^{++} ^4S

r	1s	2s	2p	3s	3p
0.001	0.134	0.038	0.	0.012	0.
0.002	0.264	0.074	0.001	0.024	0.
0.004	0.510	0.143	0.002	0.046	0.001
0.006	0.740	0.207	0.005	0.067	0.002
0.008	0.953	0.267	0.009	0.086	0.003
0.010	1.152	0.322	0.014	0.104	0.004
0.015	1.588	0.442	0.031	0.143	0.009
0.020	1.945	0.539	0.052	0.174	0.016

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.025	2.235	0.613	0.078	0.198	0.024
0.030	2.465	0.669	0.108	0.216	0.033
0.035	2.644	0.708	0.141	0.228	0.044
0.040	2.778	0.732	0.177	0.236	0.055
0.050	2.937	0.741	0.255	0.237	0.079
0.060	2.982	0.708	0.339	0.225	0.104
0.070	2.945	0.642	0.427	0.202	0.131
0.080	2.851	0.552	0.515	0.171	0.158
0.090	2.717	0.444	0.604	0.135	0.184
0.100	2.559	0.324	0.691	0.094	0.210
0.120	2.209	0.064	0.856	0.007	0.258
0.140	1.857	−0.202	1.005	−0.082	0.300
0.160	1.531	−0.457	1.134	−0.165	0.334
0.180	1.245	−0.690	1.244	−0.240	0.361
0.200	1.001	−0.897	1.333	−0.303	0.380
0.220	0.798	−1.074	1.403	−0.355	0.391
0.240	0.631	−1.221	1.455	−0.394	0.395
0.260	0.497	−1.339	1.491	−0.422	0.393
0.280	0.390	−1.430	1.511	−0.438	0.384
0.300	0.305	−1.497	1.519	−0.444	0.370
0.350	0.163	−1.574	1.492	−0.418	0.316
0.400	0.086	−1.554	1.417	−0.348	0.240
0.450	0.046	−1.470	1.313	−0.249	0.151
0.500	0.024	−1.349	1.194	−0.131	0.054
0.550	0.013	−1.210	1.070	−0.005	−0.046
0.600	0.007	−1.067	0.948	0.122	−0.146
0.650	0.004	−0.927	0.831	0.246	−0.242
0.700	0.002	−0.797	0.722	0.362	−0.333
0.750	0.001	−0.679	0.624	0.468	−0.418
0.800	0.001	−0.574	0.536	0.563	−0.495
0.850	0.001	−0.482	0.458	0.646	−0.564
0.900	0.	−0.402	0.389	0.717	−0.626
0.950	0.	−0.334	0.330	0.777	−0.679
1.000	0.	−0.277	0.279	0.824	−0.725
1.100	0.	−0.188	0.197	0.889	−0.793
1.200	0.	−0.126	0.139	0.918	−0.835
1.300	0.	−0.084	0.097	0.919	−0.855
1.400	−0.	−0.056	0.067	0.899	−0.855
1.500	−0.	−0.037	0.047	0.863	−0.841
1.600	−0.	−0.024	0.032	0.816	−0.815
1.700	−0.	−0.016	0.022	0.762	−0.780
1.800	−0.	−0.011	0.016	0.705	−0.740
1.900	−0.	−0.007	0.011	0.646	−0.696
2.000	−0.	−0.005	0.008	0.588	−0.650
2.100	−0.	−0.003	0.005	0.532	−0.603
2.200	−0.	−0.002	0.004	0.479	−0.557
2.300	−0.	−0.002	0.003	0.429	−0.511
2.400	−0.	−0.001	0.002	0.382	−0.468
2.500	−0.	−0.001	0.001	0.340	−0.426
2.600	−0.	−0.001	0.001	0.301	−0.386
2.700	−0.	−0.	0.001	0.265	−0.350
2.800	−0.	−0.	0.001	0.233	−0.315
2.900	−0.	−0.	0.	0.205	−0.284
3.000	−0.	−0.	0.	0.179	−0.254
3.200	−0.	−0.	0.	0.136	−0.203
3.400	−0.	−0.	0.	0.103	−0.161
3.600	−0.	−0.	0.	0.077	−0.127
3.800	−0.	−0.	0.	0.058	−0.100
4.000	−0.	−0.	0.	0.043	−0.078
4.200	−0.	−0.	0.	0.031	−0.060
4.400	−0.	−0.	0.	0.023	−0.046
4.600	−0.	−0.	0.	0.017	−0.036
4.800	−0.	−0.	0.	0.012	−0.027
5.000	−0.	−0.	0.	0.009	−0.021
5.200	−0.	−0.	0.	0.007	−0.016
5.400	−0.	−0.	0.	0.005	−0.012
5.600	−0.	−0.	0.	0.003	−0.009
5.800	−0.	−0.	0.	0.002	−0.007
6.000	−0.	−0.	0.	0.002	−0.005
6.200	−0.	−0.	0.	0.001	−0.004
6.400	−0.	−0.	0.	0.001	−0.003
6.600	−0.	−0.	0.	0.001	−0.002
6.800	−0.	−0.	0.	0.	−0.002
7.000	−0.	−0.	0.	0.	−0.001
7.200	−0.	−0.	0.	0.	−0.001
7.400	−0.	−0.	0.	0.	−0.001
7.600	−0.	−0.	0.	0.	−0.001
λ	212.	23.2	18.2	3.83	2.92
$\langle r^{-2}\rangle$	547.	44.8	14.3	5.00	1.52
$\langle r^{-1}\rangle$	16.6	3.32	3.20	0.931	0.833
$\langle r\rangle$	0.091	0.441	0.405	1.46	1.60
$\langle r^{1}\rangle$	0.011	0.230	0.204	2.44	2.96

$Cl^{++}\ ^2P$

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.134	0.038	0.	0.012	0.
0.002	0.264	0.074	0.001	0.024	0.
0.004	0.510	0.143	0.002	0.046	0.001
0.006	0.740	0.207	0.005	0.067	0.002
0.008	0.953	0.267	0.009	0.087	0.003
0.010	1.152	0.322	0.014	0.104	0.004
0.015	1.588	0.442	0.031	0.143	0.009
0.020	1.945	0.539	0.052	0.174	0.016
0.025	2.235	0.614	0.078	0.199	0.024
0.030	2.465	0.670	0.108	0.216	0.033
0.035	2.644	0.708	0.141	0.229	0.043
0.040	2.778	0.732	0.177	0.236	0.054
0.050	2.937	0.741	0.255	0.238	0.078
0.060	2.982	0.708	0.339	0.226	0.103
0.070	2.945	0.642	0.427	0.203	0.129
0.080	2.851	0.552	0.516	0.172	0.156
0.090	2.717	0.444	0.604	0.135	0.182
0.100	2.559	0.324	0.691	0.094	0.207
0.120	2.209	0.064	0.856	0.007	0.255
0.140	1.857	−0.202	1.005	−0.082	0.296
0.160	1.531	−0.457	1.135	−0.166	0.330
0.180	1.245	−0.690	1.244	−0.240	0.356
0.200	1.001	−0.897	1.333	−0.304	0.375
0.220	0.798	−1.074	1.403	−0.356	0.386
0.240	0.631	−1.221	1.455	−0.395	0.390
0.260	0.497	−1.339	1.491	−0.423	0.387
0.280	0.390	−1.431	1.511	−0.439	0.379
0.300	0.305	−1.497	1.519	−0.444	0.365
0.350	0.163	−1.574	1.492	−0.419	0.311
0.400	0.086	−1.554	1.417	−0.349	0.235
0.450	0.046	−1.470	1.313	−0.249	0.147
0.500	0.024	−1.349	1.194	−0.131	0.051
0.550	0.013	−1.210	1.070	−0.005	−0.049
0.600	0.007	−1.067	0.947	0.123	−0.147
0.650	0.004	−0.927	0.831	0.247	−0.242
0.700	0.002	−0.797	0.722	0.363	−0.332
0.750	0.001	−0.679	0.624	0.469	−0.415
0.800	0.001	−0.574	0.536	0.565	−0.491
0.850	0.001	−0.482	0.458	0.648	−0.559
0.900	0.	−0.402	0.389	0.719	−0.620
0.950	0.	−0.334	0.330	0.778	−0.672
1.000	0.	−0.277	0.279	0.826	−0.716
1.100	0.	−0.188	0.197	0.890	−0.783
1.200	0.	−0.126	0.139	0.919	−0.824

r	$1s$	$2s$	$2p$	$3s$	$3p$
1.300	0.	—0.084	0.097	0.920	—0.843
1.400	—0.	—0.056	0.067	0.899	—0.844
1.500	—0.	—0.037	0.047	0.862	—0.831
1.600	—0.	—0.024	0.032	0.815	—0.807
1.700	—0.	—0.016	0.022	0.761	—0.775
1.800	—0.	—0.011	0.016	0.704	—0.738
1.900	—0.	—0.007	0.011	0.645	—0.696
2.000	—0.	—0.005	0.008	0.587	—0.653
2.100	—0.	—0.003	0.005	0.531	—0.608
2.200	—0.	—0.002	0.004	0.478	—0.564
2.300	—0.	—0.002	0.003	0.428	—0.521
2.400	—0.	—0.001	0.002	0.381	—0.479
2.500	—0.	—0.001	0.001	0.338	—0.438
2.600	—0.	—0.001	0.001	0.300	—0.400
2.700	—0.	—0.	0.001	0.264	—0.364
2.800	—0.	—0.	0.001	0.232	—0.331
2.900	—0.	—0.	0.	0.204	—0.299
3.000	—0.	—0.	0.	0.178	—0.270
3.200	—0.	—0.	0.	0.136	—0.219
3.400	—0.	—0.	0.	0.103	—0.176
3.600	—0.	—0.	0.	0.077	—0.141
3.800	—0.	—0.	0.	0.057	—0.112
4.000	—0.	—0.	0.	0.043	—0.088
4.200	—0.	—0.	0.	0.031	—0.070
4.400	—0.	—0.	0.	0.023	—0.055
4.600	—0.	—0.	0.	0.017	—0.043
4.800	—0.	—0.	0.	0.012	—0.033
5.000	—0.	—0.	0.	0.009	—0.026
5.200	—0.	—0.	0.	0.007	—0.020
5.400	—0.	—0.	0.	0.005	—0.015
5.600	—0.	—0.	0.	0.003	—0.012
5.800	—0.	—0.	0.	0.002	—0.009
6.000	—0.	—0.	0.	0.002	—0.007
6.200	—0.	—0.	0.	0.001	—0.005
6.400	—0.	—0.	0.	0.001	—0.004
6.600	—0.	—0.	0.	0.001	—0.003
6.800	—0.	—0.	0.	0.	—0.002
7.000	—0.	—0.	0.	0.	—0.002
7.200	—0.	—0.	0.	0.	—0.002
7.400	—0.	—0.	0.	0.	—0.001
7.600	—0.	—0.	0.	0.	—0.001
7.800	—0.	—0.	0.	0.	—0.001
λ	212.	23.3	18.2	3.85	2.70
$\langle r^{-2}\rangle$	547.	44.8	14.3	5.01	1.49
$\langle r^{-1}\rangle$	16.6	3.32	3.20	0.933	0.822
$\langle r\rangle$	0.091	0.441	0.405	1.46	1.62
$\langle r^2\rangle$	0.011	0.230	0.203	2.43	3.06

Cl^{++} ^1D

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.134	0.038	0.	0.012	0.
0.002	0.264	0.074	0.001	0.024	0.
0.004	0.510	0.143	0.002	0.046	0.001
0.006	0.740	0.207	0.005	0.067	0.002
0.008	0.953	0.267	0.009	0.087	0.003
0.010	1.152	0.322	0.014	0.104	0.004
0.015	1.588	0.442	0.031	0.143	0.009
0.020	1.945	0.539	0.052	0.174	0.016
0.025	2.235	0.614	0.078	0.198	0.024
0.030	2.465	0.669	0.108	0.216	0.033
0.035	2.644	0.708	0.141	0.229	0.043
0.040	2.778	0.732	0.177	0.236	0.054
0.050	2.937	0.741	0.255	0.238	0.078
0.060	2.982	0.708	0.339	0.225	0.103
0.070	2.945	0.642	0.427	0.203	0.130
0.080	2.851	0.552	0.516	0.172	0.157
0.090	2.717	0.444	0.604	0.135	0.183
0.100	2.559	0.324	0.691	0.094	0.208
0.120	2.209	0.064	0.856	0.007	0.256
0.140	1.857	—0.202	1.005	—0.082	0.298
0.160	1.531	—0.457	1.134	—0.165	0.332
0.180	1.245	—0.690	1.244	—0.240	0.358
0.200	1.001	—0.897	1.333	—0.304	0.377
0.220	0.798	—1.074	1.403	—0.356	0.388
0.240	0.631	—1.221	1.455	—0.395	0.392
0.260	0.497	—1.339	1.491	—0.422	0.389
0.280	0.390	—1.430	1.511	—0.438	0.381
0.300	0.305	—1.497	1.519	—0.444	0.367
0.350	0.163	—1.574	1.492	—0.418	0.313
0.400	0.086	—1.554	1.417	—0.349	0.237
0.450	0.046	—1.470	1.313	—0.249	0.148
0.500	0.024	—1.349	1.194	—0.131	0.052
0.550	0.013	—1.210	1.070	—0.005	—0.048
0.600	0.007	—1.067	0.948	0.123	—0.146
0.650	0.004	—0.927	0.831	0.246	—0.242
0.700	0.002	—0.797	0.722	0.362	—0.332
0.750	0.001	—0.679	0.624	0.469	—0.416
0.800	0.001	—0.574	0.536	0.564	—0.493
0.850	0.001	—0.482	0.458	0.647	—0.561
0.900	0.	—0.402	0.389	0.718	—0.622
0.950	0.	—0.334	0.330	0.777	—0.675
1.000	0.	—0.277	0.279	0.825	—0.720
1.100	0.	—0.188	0.197	0.890	—0.787
1.200	0.	—0.126	0.139	0.919	—0.829
1.300	0.	—0.084	0.097	0.920	—0.848
1.400	—0.	—0.056	0.067	0.899	—0.849
1.500	—0.	—0.037	0.047	0.863	—0.835
1.600	—0.	—0.024	0.032	0.815	—0.810
1.700	—0.	—0.016	0.022	0.762	—0.777
1.800	—0.	—0.011	0.016	0.704	—0.739
1.900	—0.	—0.007	0.011	0.646	—0.696
2.000	—0.	—0.005	0.008	0.588	—0.652
2.100	—0.	—0.003	0.005	0.532	—0.606
2.200	—0.	—0.002	0.004	0.478	—0.561
2.300	—0.	—0.002	0.003	0.428	—0.517
2.400	—0.	—0.001	0.002	0.382	—0.474
2.500	—0.	—0.001	0.001	0.339	—0.433
2.600	—0.	—0.001	0.001	0.300	—0.395
2.700	—0.	—0.	0.001	0.265	—0.358
2.800	—0.	—0.	0.001	0.233	—0.324
2.900	—0.	—0.	0.	0.204	—0.293
3.000	—0.	—0.	0.	0.179	—0.264
3.200	—0.	—0.	0.	0.136	—0.213
3.400	—0.	—0.	0.	0.103	—0.170
3.600	—0.	—0.	0.	0.077	—0.135
3.800	—0.	—0.	0.	0.057	—0.107
4.000	—0.	—0.	0.	0.043	—0.084
4.200	—0.	—0.	0.	0.031	—0.066
4.400	—0.	—0.	0.	0.023	—0.051
4.600	—0.	—0.	0.	0.017	—0.040
4.800	—0.	—0.	0.	0.012	—0.031
5.000	—0.	—0.	0.	0.009	—0.024
5.200	—0.	—0.	0.	0.007	—0.018
5.400	—0.	—0.	0.	0.005	—0.014
5.600	—0.	—0.	0.	0.003	—0.011
5.800	—0.	—0.	0.	0.002	—0.008
6.000	—0.	—0.	0.	0.002	—0.006
6.200	—0.	—0.	0.	0.001	—0.005
6.400	—0.	—0.	0.	0.001	—0.004
6.600	—0.	—0.	0.	0.001	—0.003
6.800	—0.	—0.	0.	0.	—0.002
7.000	—0.	—0.	0.	0.	—0.002
7.200	—0.	—0.	0.	0.	—0.001
7.400	—0.	—0.	0.	0.	—0.001
7.600	—0.	—0.	0.	0.	—0.001

r	$1s$	$2s$	$2p$	$3s$	$3p$
λ	212.	23.3	18.2	3.84	2.79
$\langle r^{-2}\rangle$	547.	44.8	14.3	5.01	1.50
$\langle r^{-1}\rangle$	16.6	3.32	3.20	0.932	0.826
$\langle r\rangle$	0.091	0.441	0.405	1.46	1.61
$\langle r^{2}\rangle$	0.011	0.230	0.203	2.44	3.02

Ar ^{1}S

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.146	0.042	0.	0.013	0.
0.002	0.287	0.082	0.001	0.025	0.
0.004	0.554	0.157	0.003	0.049	0.001
0.006	0.802	0.227	0.006	0.071	0.002
0.008	1.032	0.292	0.011	0.091	0.003
0.010	1.244	0.352	0.017	0.110	0.005
0.015	1.706	0.480	0.036	0.150	0.010
0.020	2.080	0.581	0.061	0.181	0.017
0.025	2.378	0.658	0.091	0.205	0.025
0.030	2.610	0.714	0.126	0.222	0.035
0.035	2.785	0.750	0.164	0.233	0.046
0.040	2.912	0.769	0.205	0.239	0.057
0.050	3.048	0.765	0.295	0.236	0.082
0.060	3.065	0.715	0.390	0.219	0.108
0.070	2.998	0.631	0.488	0.191	0.135
0.080	2.873	0.521	0.588	0.155	0.162
0.090	2.713	0.394	0.685	0.113	0.188
0.100	2.530	0.256	0.780	0.068	0.214
0.120	2.142	−0.036	0.958	−0.027	0.260
0.140	1.766	−0.327	1.115	−0.119	0.298
0.160	1.429	−0.599	1.248	−0.204	0.329
0.180	1.140	−0.841	1.357	−0.278	0.351
0.200	0.899	−1.050	1.442	−0.338	0.365
0.220	0.704	−1.223	1.504	−0.384	0.370
0.240	0.547	−1.362	1.547	−0.417	0.369
0.260	0.423	−1.469	1.571	−0.436	0.361
0.280	0.326	−1.546	1.580	−0.443	0.346
0.300	0.250	−1.597	1.575	−0.439	0.327
0.350	0.128	−1.631	1.516	−0.389	0.260
0.400	0.065	−1.568	1.411	−0.296	0.174
0.450	0.033	−1.448	1.281	−0.177	0.078
0.500	0.017	−1.298	1.141	−0.044	−0.023
0.550	0.009	−1.139	1.002	0.093	−0.125
0.600	0.005	−0.982	0.869	0.226	−0.222
0.650	0.003	−0.836	0.746	0.351	−0.315
0.700	0.002	−0.704	0.636	0.466	−0.400
0.750	0.001	−0.587	0.538	0.567	−0.477
0.800	0.001	−0.486	0.453	0.654	−0.545
0.850	0.	−0.400	0.379	0.728	−0.605
0.900	0.	−0.327	0.316	0.788	−0.657
0.950	0.	−0.267	0.263	0.836	−0.700
1.000	0.	−0.217	0.218	0.872	−0.735
1.100	−0.	−0.142	0.148	0.915	−0.786
1.200	−0.	−0.092	0.100	0.924	−0.813
1.300	−0.	−0.060	0.068	0.908	−0.821
1.400	−0.	−0.039	0.046	0.875	−0.814
1.500	−0.	−0.025	0.031	0.831	−0.796
1.600	−0.	−0.017	0.021	0.779	−0.770
1.700	−0.	−0.011	0.014	0.723	−0.739
1.800	−0.	−0.007	0.010	0.666	−0.704
1.900	−0.	−0.005	0.007	0.610	−0.667
2.000	−0.	−0.004	0.004	0.555	−0.629
2.100	−0.	−0.003	0.003	0.503	−0.591
2.200	−0.	−0.002	0.002	0.454	−0.553
2.300	−0.	−0.001	0.002	0.409	−0.516
2.400	−0.	−0.001	0.001	0.367	−0.481
2.500	−0.	−0.001	0.001	0.328	−0.447
2.600	−0.	−0.001	0.001	0.293	−0.414
2.700	−0.	−0.001	0.	0.261	−0.383
2.800	−0.	−0.	0.	0.232	−0.355
2.900	−0.	−0.	0.	0.207	−0.327
3.000	−0.	−0.	0.	0.183	−0.302
3.200	−0.	−0.	0.	0.144	−0.256
3.400	−0.	−0.	0.	0.112	−0.216
3.600	−0.	−0.	0.	0.087	−0.182
3.800	−0.	−0.	0.	0.068	−0.153
4.000	−0.	−0.	0.	0.053	−0.128
4.200	−0.	−0.	0.	0.041	−0.107
4.400	−0.	−0.	0.	0.031	−0.090
4.600	−0.	−0.	0.	0.024	−0.075
4.800	−0.	−0.	0.	0.019	−0.062
5.000	−0.	−0.	0.	0.014	−0.052
5.200	−0.	−0.	0.	0.011	−0.043
5.400	−0.	−0.	0.	0.008	−0.036
5.600	−0.	−0.	0.	0.006	−0.029
5.800	−0.	−0.	0.	0.005	−0.024
6.000	−0.	−0.	0.	0.004	−0.020
6.200	−0.	−0.	0.	0.003	−0.017
6.400	−0.	−0.	0.	0.002	−0.014
6.600	−0.	−0.	0.	0.002	−0.011
6.800	−0.	−0.	0.	0.001	−0.009
7.000	−0.	−0.	0.	0.001	−0.008
7.200	−0.	−0.	0.	0.001	−0.006
7.400	−0.	−0.	0.	0.001	−0.005
7.600	−0.	−0.	0.	0.	−0.004
7.800	−0.	−0.	0.	0.	−0.004
8.000	−0.	−0.	0.	0.	−0.003
8.200	−0.	−0.	0.	0.	−0.002
8.400	−0.	−0.	0.	0.	−0.002
8.600	−0.	−0.	0.	0.	−0.002
8.800	−0.	−0.	0.	0.	−0.001
9.000	−0.	−0.	0.	0.	−0.001
9.500	−0.	−0.	0.	0.	−0.001
λ	237.	24.6	19.1	2.55	1.18
$\langle r^{-2}\rangle$	614.	51.4	16.5	5.36	1.47
$\langle r^{-1}\rangle$	17.6	3.56	3.45	0.962	0.814
$\langle r\rangle$	0.086	0.412	0.375	1.42	1.66
$\langle r^{2}\rangle$	0.010	0.201	0.174	2.35	3.31

Ar$^+$ ^{2}P

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.146	0.042	0.	0.013	0.
0.002	0.287	0.082	0.001	0.026	0.
0.004	0.554	0.157	0.003	0.051	0.001
0.006	0.802	0.228	0.006	0.073	0.002
0.008	1.032	0.292	0.011	0.094	0.003
0.010	1.244	0.352	0.017	0.113	0.005
0.015	1.706	0.481	0.036	0.154	0.011
0.020	2.080	0.582	0.061	0.187	0.018
0.025	2.378	0.659	0.091	0.211	0.027
0.030	2.610	0.714	0.126	0.229	0.037
0.035	2.785	0.750	0.164	0.240	0.049
0.040	2.912	0.769	0.205	0.246	0.061
0.050	3.048	0.765	0.295	0.243	0.087
0.060	3.065	0.715	0.390	0.225	0.115
0.070	2.998	0.631	0.489	0.196	0.144
0.080	2.873	0.522	0.588	0.159	0.172
0.090	2.713	0.395	0.685	0.116	0.200
0.100	2.530	0.256	0.780	0.070	0.227

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.120	2.142	—0.036	0.958	—0.028	0.276
0.140	1.766	—0.327	1.115	—0.123	0.317
0.160	1.429	—0.599	1.248	—0.211	0.350
0.180	1.140	—0.841	1.357	—0.286	0.373
0.200	0.899	—1.050	1.442	—0.348	0.387
0.220	0.704	—1.224	1.505	—0.396	0.393
0.240	0.547	—1.363	1.547	—0.429	0.392
0.260	0.423	—1.470	1.572	—0.449	0.383
0.280	0.326	—1.547	1.580	—0.456	0.367
0.300	0.250	—1.598	1.575	—0.452	0.347
0.350	0.128	—1.631	1.516	—0.400	0.275
0.400	0.065	—1.568	1.411	—0.303	0.183
0.450	0.033	—1.448	1.281	—0.180	0.080
0.500	0.017	—1.298	1.141	—0.043	—0.028
0.550	0.009	—1.139	1.002	0.098	—0.136
0.600	0.005	—0.982	0.869	0.236	—0.240
0.650	0.003	—0.835	0.746	0.365	—0.338
0.700	0.002	—0.703	0.636	0.482	—0.428
0.750	0.001	—0.586	0.538	0.586	—0.510
0.800	0.001	—0.485	0.453	0.675	—0.582
0.850	0.	—0.399	0.379	0.750	—0.644
0.900	0.	—0.327	0.316	0.812	—0.698
0.950	0.	—0.266	0.262	0.860	—0.742
1.000	0.	—0.216	0.217	0.895	—0.778
1.100	0.	—0.141	0.148	0.936	—0.828
1.200	—0.	—0.092	0.100	0.941	—0.852
1.300	—0.	—0.059	0.068	0.922	—0.855
1.400	—0.	—0.038	0.045	0.884	—0.842
1.500	—0.	—0.025	0.031	0.834	—0.818
1.600	—0.	—0.016	0.021	0.777	—0.785
1.700	—0.	—0.011	0.014	0.716	—0.747
1.800	—0.	—0.007	0.009	0.655	—0.704
1.900	—0.	—0.005	0.006	0.595	—0.660
2.000	—0.	—0.003	0.004	0.536	—0.615
2.100	—0.	—0.002	0.003	0.482	—0.571
2.200	—0.	—0.002	0.002	0.430	—0.528
2.300	—0.	—0.001	0.001	0.383	—0.486
2.400	—0.	—0.001	0.001	0.340	—0.446
2.500	—0.	—0.001	0.001	0.301	—0.408
2.600	—0.	—0.001	0.001	0.265	—0.372
2.700	—0.	—0.	0.	0.233	—0.339
2.800	—0.	—0.	0.	0.205	—0.308
2.900	—0.	—0.	0.	0.179	—0.280
3.000	—0.	—0.	0.	0.157	—0.253
3.200	—0.	—0.	0.	0.119	—0.207
3.400	—0.	—0.	0.	0.090	—0.168
3.600	—0.	—0.	0.	0.068	—0.136
3.800	—0.	—0.	0.	0.051	—0.109
4.000	—0.	—0.	0.	0.038	—0.087
4.200	—0.	—0.	0.	0.028	—0.070
4.400	—0.	—0.	0.	0.021	—0.056
4.600	—0.	—0.	0.	0.016	—0.044
4.800	—0.	—0.	0.	0.011	—0.035
5.000	—0.	—0.	0.	0.008	—0.028
5.200	—0.	—0.	0.	0.006	—0.022
5.400	—0.	—0.	0.	0.005	—0.017
5.600	—0.	—0.	0.	0.003	—0.013
5.800	—0.	—0.	0.	0.002	—0.011
6.000	—0.	—0.	0.	0.002	—0.008
6.200	—0.	—0.	0.	0.001	—0.006
6.400	—0.	—0.	0.	0.001	—0.005
6.600	—0.	—0.	0.	0.001	—0.004
6.800	—0.	—0.	0.	0.001	—0.003
7.000	—0.	—0.	0.	0.	—0.002
7.200	—0.	—0.	0.	0.	—0.002
7.400	—0.	—0.	0.	0.	—0.001
7.600	—0.	—0.	0.	0.	—0.001
7.800	—0.	—0.	0.	0.	—0.001
8.000	—0.	—0.	0.	0.	—0.001
8.200	—0.	—0.	0.	0.	—0.001

r	$1s$	$2s$	$2p$	$3s$	$3p$
λ	238.	25.7	20.2	3.42	2.09
$\langle r^{-2}\rangle$	614.	51.4	16.5	5.66	1.64
$\langle r^{-1}\rangle$	17.6	3.56	3.45	0.989	0.861
$\langle r\rangle$	0.086	0.412	0.375	1.38	1.56
$\langle r^{2}\rangle$	0.010	0.201	0.174	2.20	2.86

Ar^{++} ^1S

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.146	0.042	0.	0.014	0.
0.002	0.287	0.082	0.001	0.027	0.
0.004	0.554	0.157	0.003	0.052	0.001
0.006	0.802	0.228	0.006	0.076	0.002
0.008	1.032	0.293	0.011	0.097	0.003
0.010	1.244	0.352	0.017	0.117	0.005
0.015	1.706	0.481	0.036	0.160	0.011
0.020	2.080	0.582	0.061	0.193	0.019
0.025	2.378	0.659	0.091	0.219	0.029
0.030	2.610	0.714	0.126	0.237	0.039
0.035	2.785	0.751	0.164	0.248	0.051
0.040	2.912	0.770	0.206	0.254	0.064
0.050	3.049	0.766	0.295	0.251	0.092
0.060	3.065	0.716	0.390	0.233	0.121
0.070	2.998	0.631	0.489	0.203	0.151
0.080	2.874	0.522	0.588	0.165	0.182
0.090	2.713	0.395	0.686	0.120	0.211
0.100	2.530	0.256	0.781	0.072	0.239
0.120	2.142	—0.036	0.959	—0.029	0.291
0.140	1.766	—0.328	1.115	—0.128	0.334
0.160	1.429	—0.600	1.249	—0.218	0.368
0.180	1.140	—0.842	1.357	—0.296	0.392
0.200	0.899	—1.051	1.442	—0.360	0.407
0.220	0.704	—1.225	1.505	—0.409	0.413
0.240	0.547	—1.364	1.548	—0.444	0.411
0.260	0.423	—1.471	1.572	—0.464	0.401
0.280	0.326	—1.548	1.581	—0.471	0.385
0.300	0.250	—1.599	1.576	—0.466	0.363
0.350	0.128	—1.632	1.516	—0.411	0.286
0.400	0.065	—1.569	1.411	—0.311	0.188
0.450	0.033	—1.448	1.281	—0.183	0.079
0.500	0.017	—1.298	1.141	—0.040	—0.036
0.550	0.009	—1.138	1.001	0.106	—0.150
0.600	0.005	—0.981	0.868	0.249	—0.260
0.650	0.003	—0.834	0.746	0.382	—0.363
0.700	0.002	—0.702	0.635	0.503	—0.457
0.750	0.001	—0.585	0.537	0.609	—0.542
0.800	0.001	—0.484	0.452	0.701	—0.616
0.850	0.	—0.398	0.378	0.777	—0.680
0.900	0.	—0.325	0.315	0.839	—0.734
0.950	0.	—0.265	0.262	0.886	—0.779
1.000	0.	—0.215	0.217	0.921	—0.814
1.100	0.	—0.140	0.148	0.958	—0.861
1.200	—0.	—0.091	0.100	0.959	—0.880
1.300	—0.	—0.058	0.067	0.934	—0.878
1.400	—0.	—0.038	0.045	0.890	—0.859
1.500	—0.	—0.024	0.030	0.834	—0.828
1.600	—0.	—0.016	0.020	0.770	—0.788
1.700	—0.	—0.010	0.014	0.704	—0.743
1.800	—0.	—0.007	0.009	0.638	—0.695
1.900	—0.	—0.004	0.006	0.574	—0.645
2.000	—0.	—0.003	0.004	0.512	—0.595
2.100	—0.	—0.002	0.003	0.455	—0.547
2.200	—0.	—0.001	0.002	0.402	—0.499
2.300	—0.	—0.001	0.001	0.353	—0.455

r	$1s$	$2s$	$2p$	$3s$	$3p$
2.400	—0.	—0.001	0.001	0.309	—0.412
2.500	—0.	—0.001	0.001	0.270	—0.373
2.600	—0.	—0.	0.001	0.235	—0.336
2.700	—0.	—0.	0.	0.204	—0.302
2.800	—0.	—0.	0.	0.176	—0.270
2.900	—0.	—0.	0.	0.152	—0.242
3.000	—0.	—0.	0.	0.131	—0.216
3.200	—0.	—0.	0.	0.097	—0.171
3.400	—0.	—0.	0.	0.071	—0.134
3.600	—0.	—0.	0.	0.051	—0.105
3.800	—0.	—0.	0.	0.037	—0.082
4.000	—0.	—0.	0.	0.027	—0.063
4.200	—0.	—0.	0.	0.019	—0.049
4.400	—0.	—0.	0.	0.014	—0.037
4.600	—0.	—0.	0.	0.010	—0.029
4.800	—0.	—0.	0.	0.007	—0.022
5.000	—0.	—0.	0.	0.005	—0.017
5.200	—0.	—0.	0.	0.003	—0.013
5.400	—0.	—0.	0.	0.002	—0.009
5.600	—0.	—0.	0.	0.002	—0.007
5.800	—0.	—0.	0.	0.001	—0.005
6.000	—0.	—0.	0.	0.001	—0.004
6.200	—0.	—0.	0.	0.001	—0.003
6.400	—0.	—0.	0.	0.	—0.002
6.600	—0.	—0.	0.	0.	—0.002
6.800	—0.	—0.	0.	0.	—0.001
7.000	—0.	—0.	0.	0.	—0.001
7.200	—0.	—0.	0.	0.	—0.001
λ	240.	26.9	21.4	4.40	2.96
$\langle r^{-2}\rangle$	614.	51.5	16.5	6.03	1.78
$\langle r^{-1}\rangle$	17.6	3.56	3.45	1.02	0.900
$\langle r\rangle$	0.086	0.412	0.375	1.34	1.49
$\langle r^2\rangle$	0.010	0.201	0.174	2.06	2.59

Ar^{++} ^3P

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.146	0.042	0.	0.014	0.
0.002	0.287	0.082	0.001	0.027	0.
0.004	0.554	0.157	0.003	0.052	0.001
0.006	0.802	0.228	0.006	0.076	0.002
0.008	1.032	0.293	0.011	0.097	0.003
0.010	1.244	0.352	0.017	0.117	0.005
0.015	1.706	0.481	0.036	0.159	0.011
0.020	2.080	0.582	0.061	0.193	0.019
0.025	2.378	0.659	0.091	0.218	0.029
0.030	2.610	0.714	0.126	0.236	0.040
0.035	2.785	0.751	0.164	0.248	0.052
0.040	2.912	0.770	0.205	0.254	0.065
0.050	3.049	0.766	0.295	0.251	0.093
0.060	3.065	0.716	0.390	0.233	0.122
0.070	2.998	0.631	0.489	0.203	0.153
0.080	2.874	0.522	0.588	0.164	0.183
0.090	2.713	0.395	0.686	0.120	0.213
0.100	2.530	0.256	0.781	0.072	0.241
0.120	2.142	—0.036	0.959	—0 029	0.293
0.140	1.766	—0.328	1.115	—0.127	0.337
0.160	1.429	—0.599	1.248	—0.218	0.371
0.180	1.140	—0.842	1.357	—0.296	0.396
0.200	0.899	—1.051	1.442	—0.360	0.411
0.220	0.704	—1.225	1.505	—0.409	0.417
0.240	0.547	—1.364	1.548	—0.443	0.415
0.260	0.423	—1.471	1.572	—0.463	0.405
0.280	0.326	—1.548	1.581	—0.470	0.389
0.300	0.250	—1.599	1.576	—0.466	0.366
0.350	0.128	—1.632	1.516	—0.411	0.290
0.400	0.065	—1.569	1.411	—0.311	0.191
0.450	0.033	—1.448	1.281	—0.183	0.081
0.500	0.017	—1.298	1.141	—0.040	—0.034
0.550	0.009	—1.138	1.002	0.106	—0.149
0.600	0.005	—0.981	0.869	0.248	—0.259
0.650	0.003	—0.835	0.746	0.381	—0.363
0.700	0.002	—0.702	0.635	0.502	—0.459
0.750	0.001	—0.585	0.537	0.608	—0.544
0.800	0.001	—0.484	0.452	0.699	—0.620
0.850	0.	—0.398	0.378	0.776	—0.685
0.900	0.	—0.326	0.315	0.837	—0.740
0.950	0.	—0.265	0.262	0.885	—0.785
1.000	0.	—0.215	0.217	0.920	—0.821
1.100	0.	—0.140	0.148	0.958	—0.869
1.200	—0.	—0.091	0.100	0.959	—0.888
1.300	—0.	—0.059	0.067	0.934	—0.885
1.400	—0.	—0.038	0.045	0.890	—0.865
1.500	—0.	—0.024	0.030	0.834	—0.833
1.600	—0.	—0.016	0.020	0.771	—0.791
1.700	—0.	—0.010	0.014	0.705	—0.744
1.800	—0.	—0.007	0.009	0.639	—0.694
1.900	—0.	—0.004	0.006	0.575	—0.642
2.000	—0.	—0.003	0.004	0.513	—0.591
2.100	—0.	—0.002	0.003	0.456	—0.540
2.200	—0.	—0.001	0.002	0.403	—0.492
2.300	—0.	—0.001	0.001	0.354	—0.446
2.400	—0.	—0.001	0.001	0.310	—0.403
2.500	—0.	—0.001	0.001	0.271	—0.362
2.600	—0.	—0.	0.	0.236	—0.325
2.700	—0.	—0.	0.	0.205	—0.291
2.800	—0.	—0.	0.	0.177	—0.259
2.900	—0.	—0.	0.	0.153	—0.231
3.000	—0.	—0.	0.	0.132	—0.205
3.200	—0.	—0.	0.	0.097	—0.161
3.400	—0.	—0.	0.	0.071	—0.125
3.600	—0.	—0.	0.	0.052	—0.097
3.800	—0.	—0.	0.	0.037	—0.074
4.000	—0.	—0.	0.	0.027	—0.057
4.200	—0.	—0.	0.	0.019	—0.043
4.400	—0.	—0.	0.	0.014	—0.033
4.600	—0.	—0.	0.	0.010	—0.025
4.800	—0.	—0.	0.	0.007	—0.019
5.000	—0.	—0.	0.	0.005	—0.014
5.200	—0.	—0.	0.	0.003	—0.011
5.400	—0.	—0.	0.	0.002	—0.008
5.600	—0.	—0.	0.	0.002	—0.006
5.800	—0.	—0.	0.	0.001	—0.004
6.000	—0.	—0.	0.	0.001	—0.003
6.200	—0.	—0.	0.	0.001	—0.002
6.400	—0.	—0.	0.	0.	—0.002
6.600	—0.	—0.	0.	0.	—0.001
6.800	—0.	—0.	0.	0.	—0.001
7.000	—0.	—0.	0.	0.	—0.001
7.200	—0.	—0.	0.	0.	—0.001
λ	239.	26.9	21.3	4.38	3.13
$\langle r^{-2}\rangle$	614.	51.5	16.5	6.01	1.81
$\langle r^{-1}\rangle$	17.6	3.56	3.45	1.02	0.908
$\langle r\rangle$	0.086	0.412	0.375	1.34	1.47
$\langle r^2\rangle$	0.010	0.201	0.174	2.07	2.53

Ar^{++} ^1D

r	$1s$	$2s$	$2p$	$3s$	$3p$
0.001	0.146	0.042	0.	0.014	0.
0.002	0.287	0.082	0.001	0.027	0.
0.004	0.554	0.157	0.003	0.052	0.001
0.006	0.802	0.228	0.006	0.076	0.002
0.008	1.032	0.293	0.011	0.097	0.003
0.010	1.244	0.352	0.017	0.117	0.005
0.015	1.706	0.481	0.036	0.160	0.011
0.020	2.080	0.582	0.061	0.193	0.019
0.025	2.378	0.659	0.091	0.218	0.029
0.030	2.610	0.714	0.126	0.236	0.040
0.035	2.785	0.751	0.164	0.248	0.052
0.040	2.912	0.770	0.206	0.254	0.064
0.050	3.049	0.766	0.295	0.251	0.092
0.060	3.065	0.716	0.390	0.233	0.122
0.070	2.998	0.631	0.489	0.203	0.152
0.080	2.874	0.522	0.588	0.164	0.182
0.090	2.713	0.395	0.686	0.120	0.212
0.100	2.530	0.256	0.781	0.072	0.241
0.120	2.142	—0.036	0.959	—0.029	0.292
0.140	1.766	—0.328	1.115	—0.128	0.336
0.160	1.429	—0.599	1.249	—0.218	0.370
0.180	1.140	—0.842	1.357	—0.296	0.394
0.200	0.899	—1.051	1.442	—0.360	0.410
0.220	0.704	—1.225	1.505	—0.409	0.416
0.240	0.547	—1.364	1.548	—0.443	0.413
0.260	0.423	—1.471	1.572	—0.463	0.404
0.280	0.326	—1.548	1.581	—0.470	0.387
0.300	0.250	—1.599	1.576	—0.466	0.365
0.350	0.128	—1.632	1.516	—0.411	0.288
0.400	0.065	—1.569	1.411	—0.311	0.190
0.450	0.033	—1.448	1.281	—0.183	0.080
0.500	0.017	—1.298	1.141	—0.040	—0.035
0.550	0.009	—1.138	1.001	0.106	—0.149
0.600	0.005	—0.981	0.868	0.248	—0.260
0.650	0.003	—0.834	0.746	0.381	—0.363
0.700	0.002	—0.702	0.635	0.502	—0.458
0.750	0.001	—0.585	0.537	0.609	—0.543
0.800	0.001	—0.484	0.452	0.700	—0.618
0.850	0.	—0.398	0.378	0.776	—0.683
0.900	0.	—0.326	0.315	0.838	—0.738
0.950	0.	—0.265	0.262	0.886	—0.783
1.000	0.	—0.215	0.217	0.921	—0.818
1.100	0.	—0.140	0.148	0.958	—0.866
1.200	—0.	—0.091	0.100	0.959	—0.885
1.300	—0.	—0.059	0.067	0.934	—0.882
1.400	—0.	—0.038	0.045	0.890	—0.863
1.500	—0.	—0.024	0.030	0.834	—0.831
1.600	—0.	—0.016	0.020	0.771	—0.790
1.700	—0.	—0.010	0.014	0.705	—0.744
1.800	—0.	—0.007	0.009	0.639	—0.694
1.900	—0.	—0.004	0.006	0.574	—0.644
2.000	—0.	—0.003	0.004	0.513	—0.593
2.100	—0.	—0.002	0.003	0.455	—0.543
2.200	—0.	—0.001	0.002	0.402	—0.495
2.300	—0.	—0.001	0.001	0.354	—0.449
2.400	—0.	—0.001	0.001	0.310	—0.406
2.500	—0.	—0.001	0.001	0.271	—0.366
2.600	—0.	—0.	0.001	0.236	—0.329
2.700	—0.	—0.	0.	0.204	—0.295
2.800	—0.	—0.	0.	0.177	—0.264
2.900	—0.	—0.	0.	0.153	—0.235
3.000	—0.	—0.	0.	0.131	—0.209
3.200	—0.	—0.	0.	0.097	—0.165
3.400	—0.	—0.	0.	0.071	—0.129
3.600	—0.	—0.	0.	0.052	—0.100
3.800	—0.	—0.	0.	0.037	—0.077
4.000	—0.	—0.	0.	0.027	—0.059
4.200	—0.	—0.	0.	0.019	—0.045
4.400	—0.	—0.	0.	0.014	—0.035
4.600	—0.	—0.	0.	0.010	—0.026
4.800	—0.	—0.	0.	0.007	—0.020
5.000	—0.	—0.	0.	0.005	—0.015
5.200	—0.	—0.	0.	0.003	—0.011
5.400	—0.	—0.	0.	0.002	—0.009
5.600	—0.	—0.	0.	0.002	—0.006
5.800	—0.	—0.	0.	0.001	—0.005
6.000	—0.	—0.	0.	0.001	—0.004
6.200	—0.	—0.	0.	0.001	—0.003
6.400	—0.	—0.	0.	0.	—0.002
6.600	—0.	—0.	0.	0.	—0.001
6.800	—0.	—0.	0.	0.	—0.001
7.000	—0.	—0.	0.	0.	—0.001
7.200	—0.	—0.	0.	0.	—0.001
λ	239.	26.9	21.4	4.39	3.07
$\langle r^{-2} \rangle$	614.	51.5	16.5	6.02	1.80
$\langle r^{-1} \rangle$	17.6	3.56	3.45	1.02	0.905
$\langle r \rangle$	0.086	0.412	0.375	1.34	1.48
$\langle r^2 \rangle$	0.010	0.201	0.174	2.06	2.55