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J. P. Lynch

Agriculture and Agri-Food Canada

Menas Kafatos

Chapman University, kafatos@chapman.edu

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FORBIDDEN LINES OF np^q IONS. II. LINE INTENSITIES

JOHN P. LYNCH

NASA Goddard Space Flight Center, Flight Dynamics Division, Code 553.1, Greenbelt, MD 20771

AND

MENAS KAFATOS¹

Institute for Computational Sciences and Informatics and Physics Department, George Mason University

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ABSTRACT

Ground state forbidden transitions of np^q ions of C, N, O, Ne, Mg, Si, S, and Fe can provide important information on the state of cosmic ionized gases. Wavelengths of these lines are in the far- and near-UV, visible, and near- and far-IR regions of the spectrum. The line intensity ratios of particular transitions in $q = 2, 4$ ions can provide information on the temperature of the gas and in $q = 3$ ions information on the density of the gas. In the present work we have tabulated the line intensities of 95 transitions of these ions, which include those used to calculate the line ratios as well as other strong lines of the ions in the ground state terms in the same temperature and density ranges treated previously. These data can be used for calculations of the absolute line intensities if the ionic abundances are known. We have also graphed 25 of the most interesting cases. These calculations are important for studies of the solar transition region, ionized nebulae, circumstellar nebulae such as found in symbiotic stars, supernova remnants, interstellar bubbles produced by stellar winds, and emission regions in active galactic nuclei.

Subject heading: atomic processes

1. INTRODUCTION

Forbidden transitions in the ground state of np^q ions can make a significant contribution to the cooling of the hot ($10^4 \lesssim T \lesssim 10^6$ K) component of the interstellar medium. The strengths of these lines have been computed theoretically and applied to observations of gaseous nebulae (see Kafatos & Lynch 1980, and references therein). Many of the lines examined in the literature are in the visible or near-ultraviolet (UV) region of the spectrum. However, forbidden lines in the far-UV as well as the near- and far-infrared (IR) regions of the spectrum have been studied for interstellar gas regions (e.g., Delmer, Gould, & Ramsay 1967; Jordan 1971; Flower & Nussbaumer 1975), galaxies and the extreme ultraviolet (EUV) solar spectrum. Ratios of forbidden lines for particular transitions of an ion can provide a means of determining the temperature of the gas (Menzel, Aller, & Hebb 1941) or the density (Seaton 1954) of the gas.

A complete set of calculations for these forbidden lines was performed by Kafatos & Lynch (1980, hereafter Paper I). In that work, detailed calculations of the relative populations of the levels of the ground state as a function of temperature and density were presented for the ions of C, N, O, Ne, Mg, Si, S, and Fe with electron configurations np^q , where $n = 2, 3$ and $q = 1, 2, 3, 4, 5$. Calculations of the line ratios were also performed and shown graphically. We solved the detailed balance equations in the ground state terms of 37 ions of C, N, O, Ne, Mg, Si, S, and Fe; tabulated the atomic data for 235 transitions of these ions and the relative populations of the various levels

for temperatures where the ions are abundant and densities in the range $1-10^{10}$ cm^{-3} ; and graphed 22 line ratios. Although these are not the only elements with np^q ions, they are the most cosmically abundant heavy elements and their lines are expected in general to be stronger than less abundant elements. We also limited the study to ions which are expected to be important in the approximate temperature range $5 \times 10^3-2 \times 10^6$ K. These temperatures span the range in which the relevant ions are abundant (more than a few percent).

In this work, we present detailed calculations of the line intensities of 95 forbidden line transitions, which include those used for line ratio calculations treated previously as well as other strong lines of these ions in the ground state terms. We have provided results for temperatures where the ions are abundant (above 5% relative ionic abundance) in the same temperature range treated previously. Radiative cooling of the hot plasma is high in this range, and it achieves its maximum value at $T \approx 10^5$ K (Cox & Tucker 1969; Kafatos 1973). The solar transition region and the interstellar gas under widely different conditions lie in this range: H II regions and planetary nebulae at the low end of the temperature range; cooling supernova shocks in the isothermal phase (Spitzer 1978); interstellar bubbles at the high end of the temperature range (Castor, McCray, & Weaver 1975); and AGN emission-line regions (see Osterbrock & Mathews 1986). We calculated line intensities using densities in the range $1-10^{10}$ cm^{-3} . Moreover, the results depend on the values of the electron density, temperature, ionic abundance, and chemical abundance.

With the information in this and the previous work, the researcher can calculate the absolute line intensity of any transition in the ground state terms for the ions treated if the relative ionic abundance is known. We also present 25 graphs of

¹ Postal address: Institute for Computational Sciences and Informatics and Physics Department, George Mason University, Fairfax, VA 22030.

the line intensities as a function of temperature and density for the most interesting cases. The results are easily accessible to the reader for quick estimates of line emissivities as long as the reddening is known.

2. DATA AND EQUATIONS

The line intensity can be found from the following equation (see Paper I),

$$I_{ji}/n^2N_{A,Z} = A_{ji}N_jN_Ahv_{ji} \frac{1}{n(1+N_{\text{He}})} L/4\pi \text{ ergs cm}^{-2} \text{ s}^{-1} \text{ sr}^{-1} \quad (1)$$

where A_{ji} is the radiative transition probability from the upper level j to the lower level i , N_j is the relative population of level j , $N_A I$, c_Z is the relative ionic abundance of ion with charge Z of element with atomic number A , N_A is the chemical abundance with respect to hydrogen, v_{ji} is the frequency of the transition, N_{He} is the relative chemical abundance of helium, n is the total number density of hydrogen and helium nuclei (where $n = n_{\text{H}} + n_{\text{He}} \text{ cm}^{-3}$), and L is the path length through the line emitting region. We use the convention that capital letters N refer to relative abundances while lower case letters n refer to number densities.

It is obvious from equation (1) that the line intensity can be determined once the relative populations of the levels have been computed and if the ionic abundance is known. The latter depends on the specific region under consideration (for example, purely collisional ionization would produce a different abundance from radiative ionization, etc.). The relative population of the level N_j is a function of temperature and density only.

It is evident from equation (1) that the relative populations N_j are needed to calculate the term on the left side of the equality. In Paper I, we computed the relative populations N_j , $j = 1, 2, 3, 4, 5$ for the $n = 2, 3$ and $q = 2, 3, 4$ np^q ions, and the relative populations N_j , $j = 1, 2$ for the $n = 2, 3$ and $q = 1, 5$ np^q ions, where it was assumed that cascades from higher levels do not populate the ground state levels. For the exact sequence of the lowest level and excited levels see Paper I.

The atomic data needed to compute N_j are the energy differences between levels for the relevant transitions, the radiative transition probabilities, and collision strengths. The previous work also provides a complete discussion of the atomic data used and the sources of this data as well as the formulae for the calculations of the relative populations in a five level np^q ground state term. The N_j values are computed from the balance equations which give the relative number of ions in each level j determined by balancing collisional excitation from levels i to j ($i < j$) and from j to k ($k > j$), collisional de-excitation from levels k to j and from j to i , and radiative transitions from levels k to j and from j to i . Here we have, however, used different and improved values for the wavelengths for some of the transitions provided in the tables compared to those values given in the previous work if a source with more extensive computations was available. These differences in wavelengths did not significantly affect the results compared to the previous calculations found in Paper I. For transitions of the ions N I through S IX, Wiese, Smith, & Glennon (1966a, hereafter

WSG 1966a, and 1966b, hereafter WSG 1966b) were used as sources for wavelength data. For transitions of the ions S X and S XI, Edlén (1972) was used. For transitions of the ions Fe XI through Fe XIII, Smith & Wiese (1973) was used. For transitions of the ions C II through S XII, WSG (1966b) was used. Finally, for transitions of the ions Fe X and Fe XIV, the work of Czyzak, Aller, & Euwema (1974) was used.

3. RESULTS AND CONCLUSIONS

Using the data discussed in the previous section, we now present the results of our computations. Detailed results of the line intensity calculations are shown in Tables 1A–37 (see Appendix B): N I, Table 1 (letter designation, e.g., 1A, 1B, etc., indicates individual transitions for that ion); N II, 2; O I, 3; O II, 4; O III, 5; Ne III, 6; Ne IV, 7; Ne V, 8; Mg V, 9; Mg VI, 10; Mg VII, 11; Si VII, 12; Si VIII, 13; Si IX, 14; S II, 15; S III, 16; S IX, 17; S X, 18; S XI, 19; Fe XI, 20; Fe XII, 21; Fe XIII, 22; C II, 23; N III, 24; O IV, 25; Ne II, 26; Ne VI, 27; Mg IV, 28; Mg VIII, 29; Si II, 30; Si VI, 31; Si X, 32; S IV, 33; S VIII, 34; S XII, 35; Fe X, 36; and Fe XIV, 37. These line intensities were used previously to calculate the line ratios presented in Paper I. In each of the above tables we have provided the data in terms of the negative logarithm of the term $I_{ji}/n^2N_{A,Z}$ for various values of the logarithm of temperature T and the logarithm of density n .

We present the results as a function of the total density n rather than n_e because the electron number density could vary in a time-dependent situation as the gas recombined and could not be used as a general parameter. Below $T \approx 10^4$ K the results are, therefore, strictly correct for a gas that is cooling radiatively (see Kafatos 1973; Shapiro & Moore 1976), although the results should also apply with satisfactory agreement to cases where there is no time variation of the electron density (like H II regions). Also, our results apply generally for $T \gtrsim 10^4$ K independently of the ionizing process. Since specific ions persist over a larger temperature range in the time-dependent case compared to the steady-state ionization case (in which recombinations balance collisional ionizations), the temperature ranges given in Tables 1A–37 should be adequate for most purposes.

Forbidden line intensity ratios of the same ion can provide accurate determinations of densities and temperatures. For ions with ground state configuration $q = 3$, the line intensity ratio

$$I(^2D_{5/2} - ^4S_{3/2})/I(^2D_{3/2} - ^4S_{3/2})$$

shows strong density dependence for the following reason: if an ion has two energy levels close to each other, then the ratio of the excitation rates is simply a ratio of the collision strengths. If the radiative transition probabilities or the collisional de-excitation rates are different, then the ratio of the relative populations of these two levels will depend on the density, and thus the ratio of the line intensities depends on the density. (See Osterbrock 1974.) Both $^2D - ^4S$ lines are provided in the tables.

For ions with ground state configuration $q = 2, 4$, the line intensity ratio

$$\left\{ \sum_{J=0}^2 I(^1D_2 - ^3P_J) \right\} / I(^1S_0 - ^1D_2)$$

shows temperature dependence for the following reason: the energy difference between the 1S_0 and 1D_2 levels is large enough so that the relative populations will depend on temperature, as will the ratio of the line intensities arising from these two levels.

In the present work, two line intensities for the $^1D - ^3P$ transitions are shown in addition to the line intensity for the $^1S - ^1D$ transition. The $^1D_2 - ^3P_0$ transition is neglected because of the relatively weaker transition probability. For ions with ground state configuration $q = 1, 5$, the single transition line intensity is given. An extra table for the strongest line other than the transitions mentioned above in the range 912–3200 Å for each ion with configuration $n = 2, 3$ and $q = 2, 3, 4$ is also given, if available. If two strong lines of the same ion are within a few angstroms we included both in separate tables. Where the previous work provided information for the temperature range where the ion is most abundant (above 5% relative ionic abundance), in the current work we have provided the same temperature limits, and, if the temperature range is near 10^4 K and was not provided before, we have extended the temperature range to include this data point in the tables (e.g., for ions up to and including C II, N III, O IV, Ne VI, Mg V, Si II, and S IV).

In Figures 1–25 we show some of the tabulated data in graphical form: N II ($\lambda 6583.6$), Figure 1; O I ($\lambda 6300.23$), 2; O II ($\lambda 3728.91$), 3; O II ($\lambda 3726.16$), 4; O III ($\lambda 5006.84$), 5; Ne III ($\lambda 3868.74$), 6; S II ($\lambda 6730.78$), 7; S II ($\lambda 6716.42$), 8; S III ($\lambda 9532.1$), 9; O II ($\lambda 2470.4 + \lambda 2470.3$), 10; O III ($\lambda 2321.1$), 11; Ne III ($\lambda 3342.9$), 12; Ne III ($\lambda 1814.8$), 13; Ne IV ($\lambda 1608.8 + \lambda 1609.0$), 14; Ne V ($\lambda 2972.0$), 15; Ne V ($\lambda 1575.2$), 16; Mg V ($\lambda 2750.4$), 17; Mg V ($\lambda 2416.8$), 18; Mg V ($\lambda 1317.0$), 19; C II ($\lambda 1.56 \times 10^6$), 20; N III ($\lambda 5.729 \times 10^5$), 21; O IV ($\lambda 2.587 \times 10^5$), 22; Ne II ($\lambda 1.278 \times 10^5$), 23; Ne VI ($\lambda 76320.0$), 24; Si II ($\lambda 3.4795 \times 10^5$), 25.

The line intensities presented in Figures 1–25 were chosen from the data for graphical representation because they showed either a strong temperature or density dependence. We graphed the logarithm of the term $I_{ji}/n^2N_{A,Z}$ versus either logarithm of density or logarithm of temperature, the criteria being whether this term showed a greater variation with density or temperature. If this term was graphed versus the logarithm of density, graphs for several temperatures are given on the same graph corresponding to all points available in the accompanying table. Likewise, if this term was graphed versus the logarithm of temperature, graphs for several densities are given on the same graph corresponding to all points available in the table. The range of the logarithm of density is from 0 ($n = 1 \text{ cm}^{-3}$) to 10 ($n = 10^{10} \text{ cm}^{-3}$). The range of the logarithm of temperature corresponds to the temperature range where the ionic abundance is greater than 5% and, in some cases, extends through 10^4 K as discussed earlier. If two lines of the same ion are within an angstrom, we graphed the logarithm of the term $(\sum I)/n^2N_{A,Z}$ versus either logarithm of density or logarithm of temperature for all densities and temperatures available in the corresponding tables.

The tables of data and figures presented here may be used to calculate the absolute line intensities if the relative ionic abundance $N_{A,Z}$ is known as well as the desired path length L . For both tables and figures, the units of the line intensity I are $\log \text{ ergs cm}^{-2} \text{ s}^{-1} \text{ sr}^{-1}$. We have normalized the results for $L = 3.085 \times 10^{18} \text{ cm}$ (1 pc). For different path lengths these results should be multiplied by L_{pc} , the path length in pc. If the line flux at the Earth is desired, the above results should be multiplied by the solid angle Ω . Furthermore, extrapolation to different densities or temperatures outside the given range can be carried out if desired, using the tabulated values. A specific sample calculation is presented in Appendix A. Our computa-

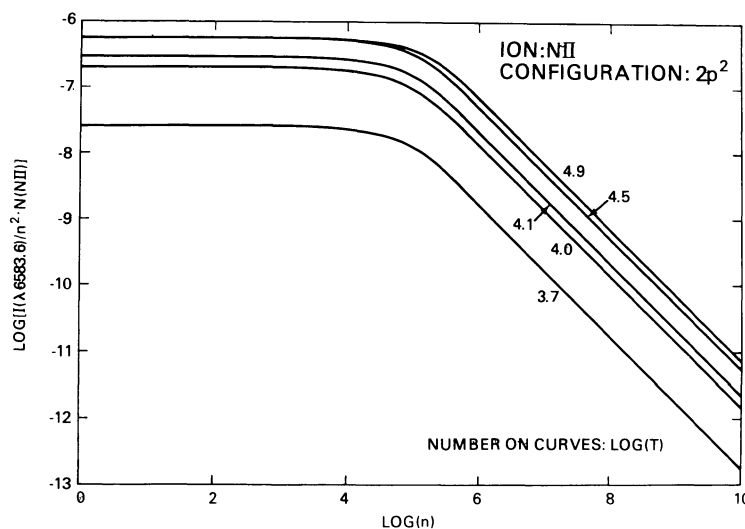


FIG. 1

FIGS. 1–25.—Graphs of the term $I_{ji}/n^2N_{A,Z}$ vs. temperature and density (see text) are provided here for some interesting cases which show strong temperature or density dependence. The figures are not in the same relative order as the tables, but are grouped into three sections: strong density dependence (Figs. 1–9); strong temperature dependence (Figs. 10–19); and ions with $q = 1, 5$, which show strong density dependence (Figs. 20–25). The results can be scaled to path lengths L_{pc} by multiplying by L_{pc} and can be converted to line fluxes at the Earth ($\text{ergs cm}^{-2} \text{ s}^{-1}$) by multiplying by the solid angle of the ionized region Ω (see text).

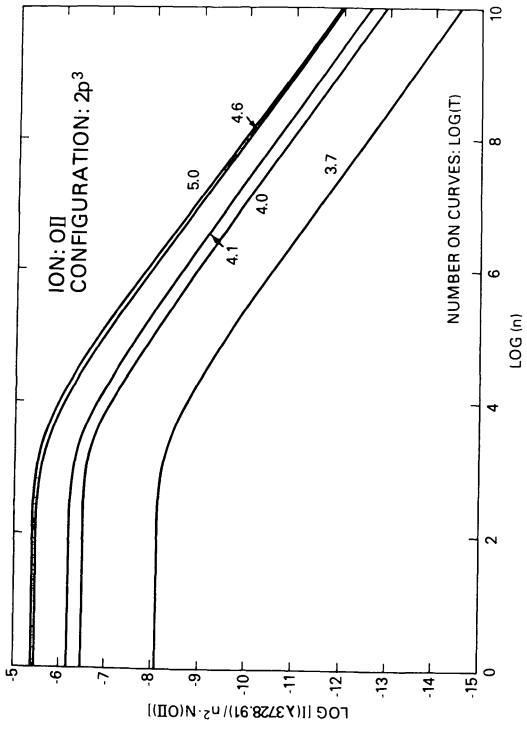


FIG. 3

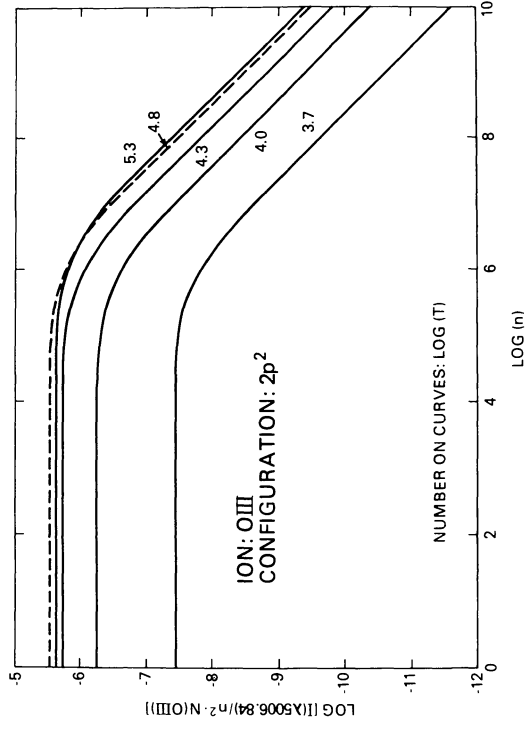


FIG. 5

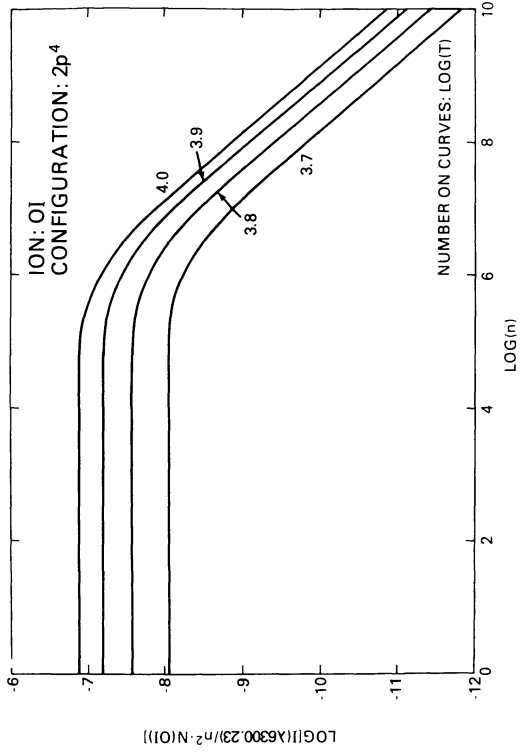


FIG. 2

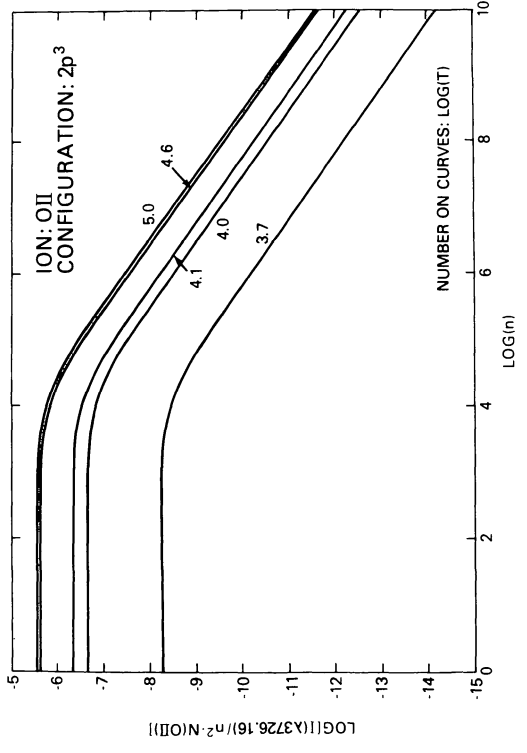


FIG. 4

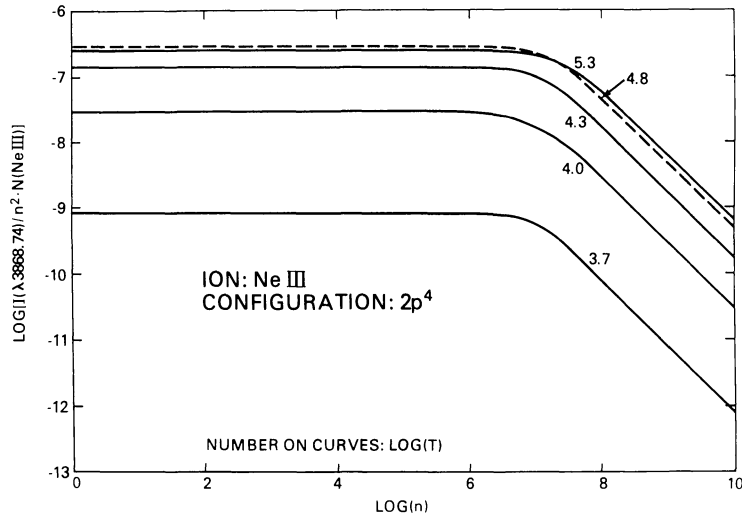


FIG. 6

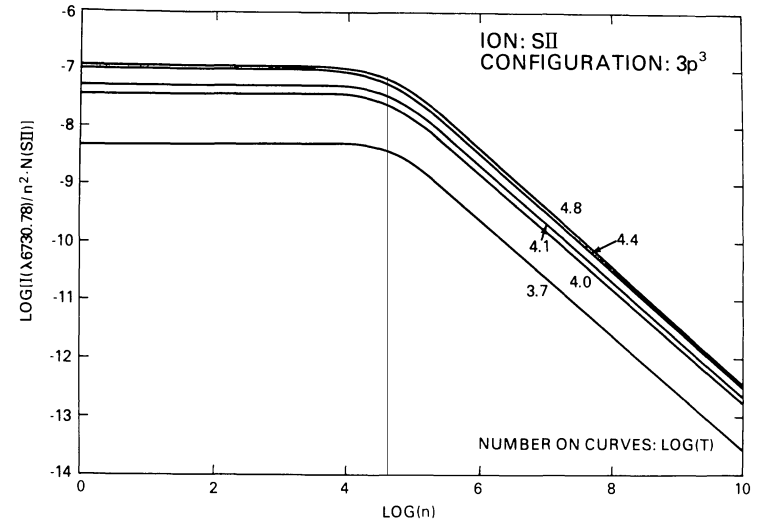


FIG. 7

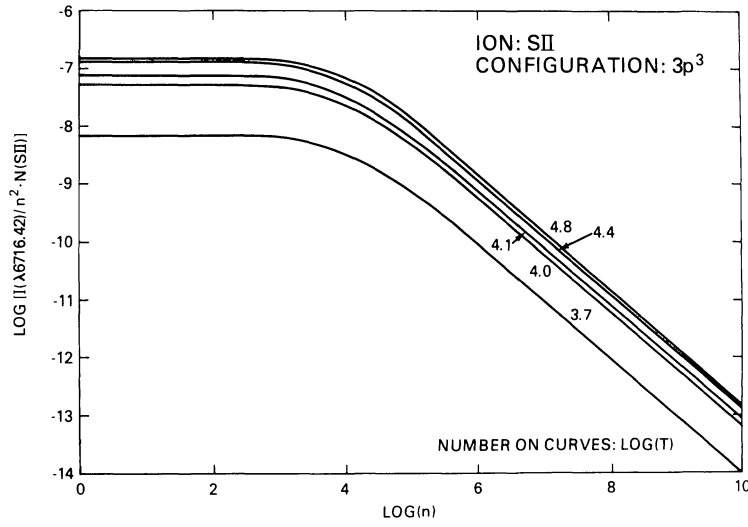


FIG. 8

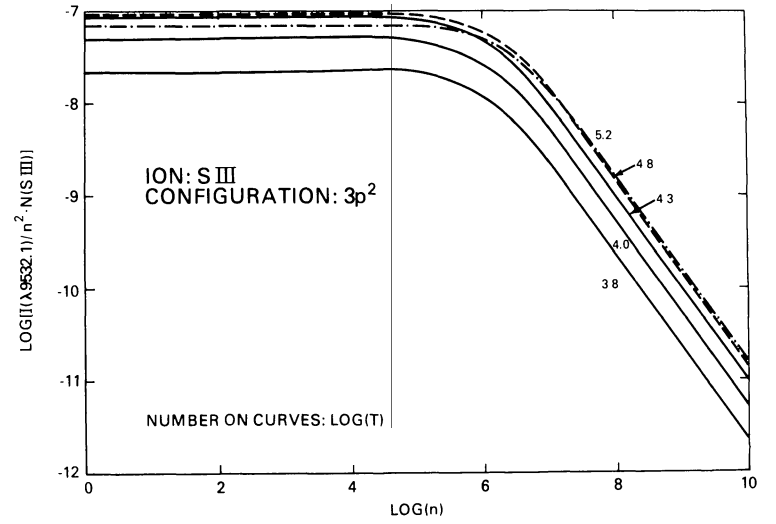


FIG. 9

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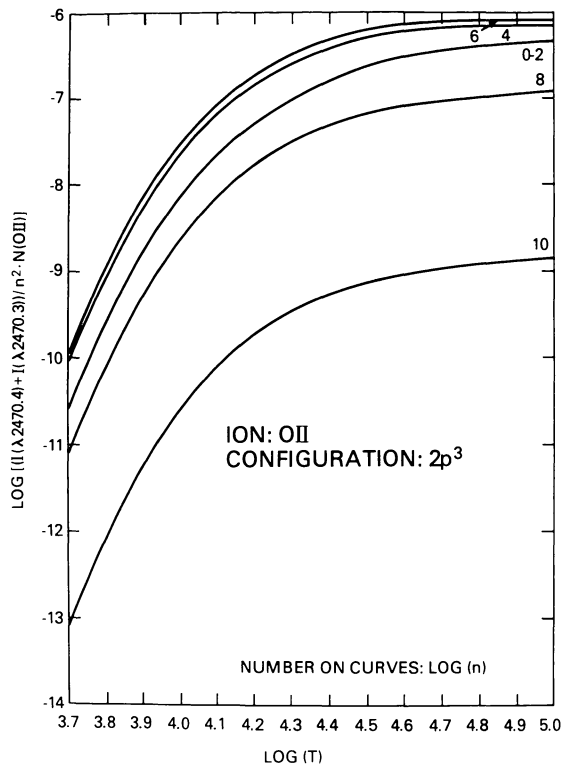


FIG. 10

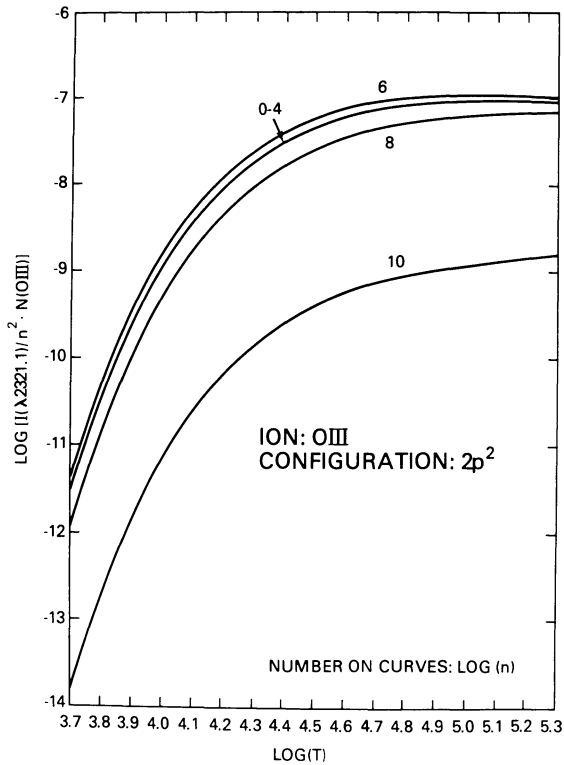


FIG. 11

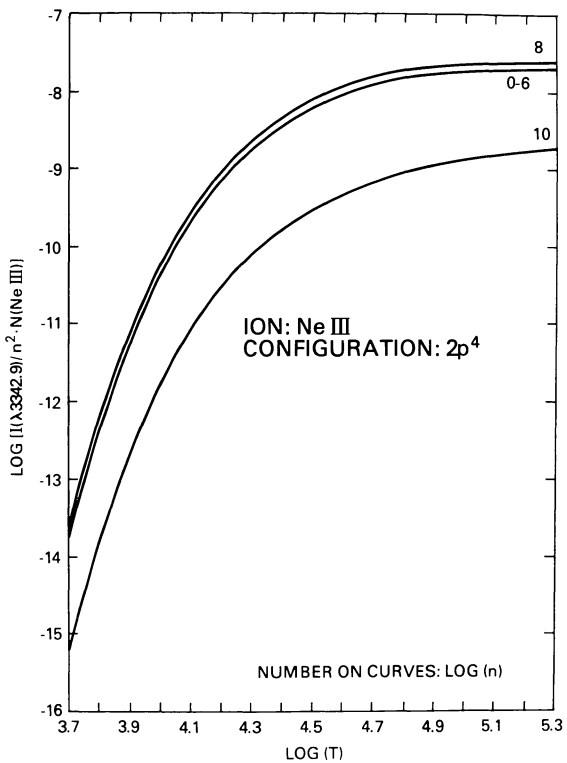


FIG. 12

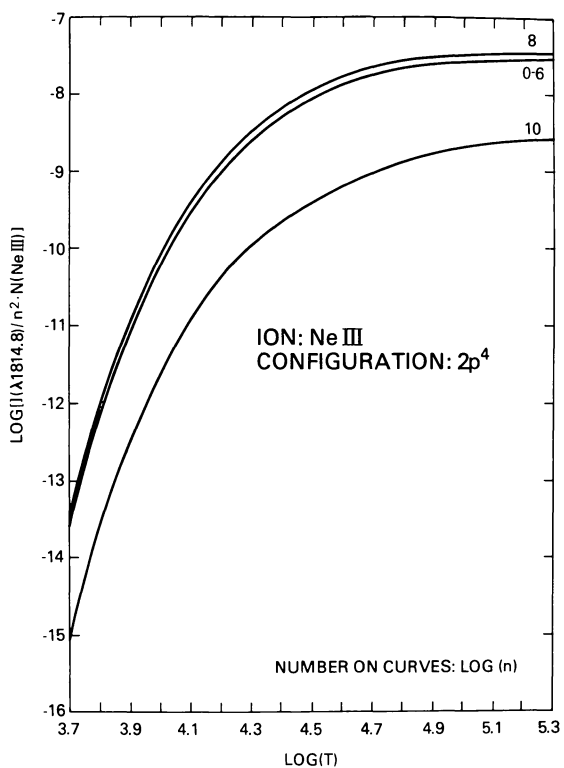


FIG. 13

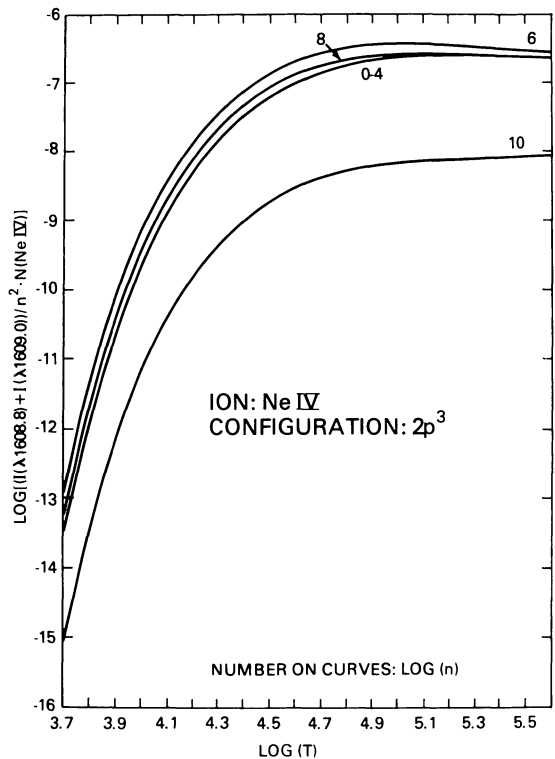


FIG. 14

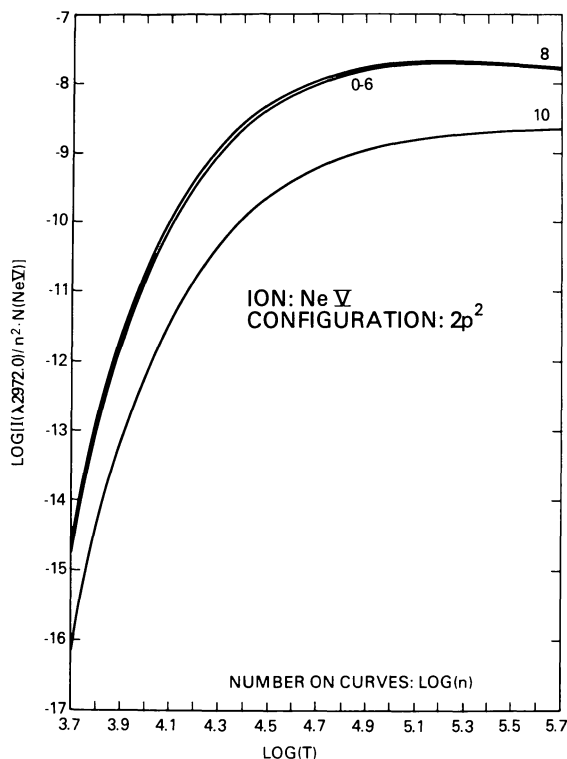


FIG. 15

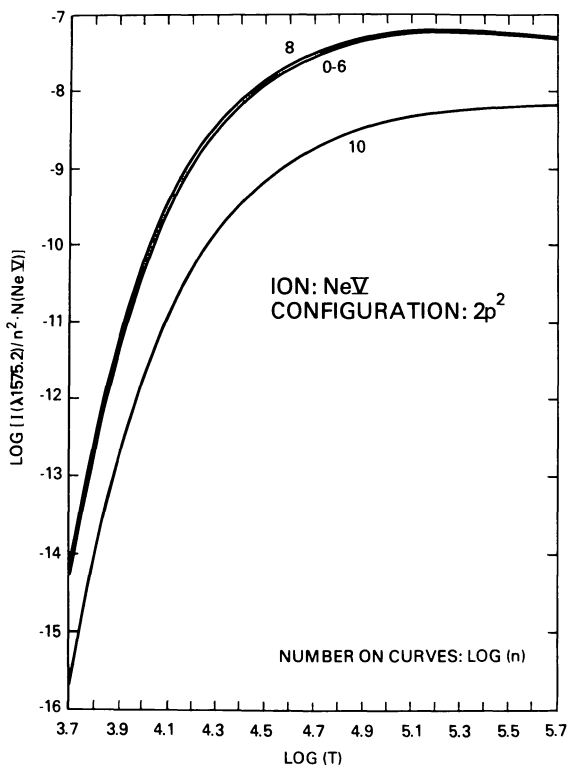


FIG. 16

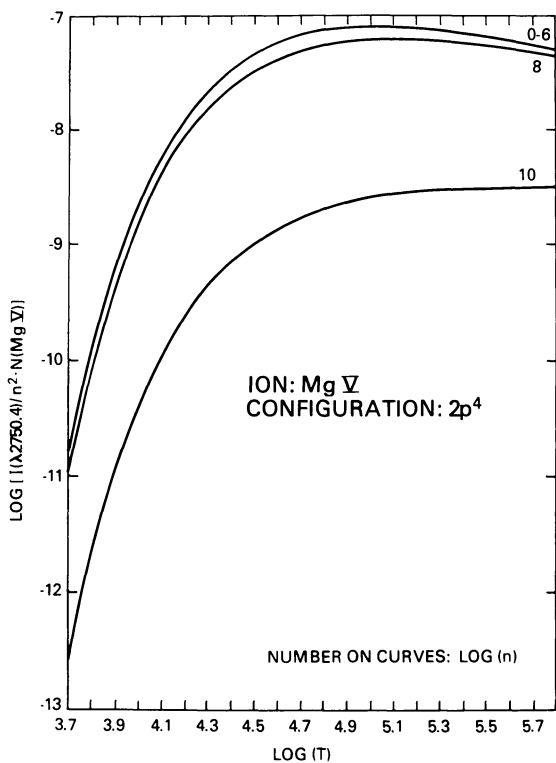


FIG. 17

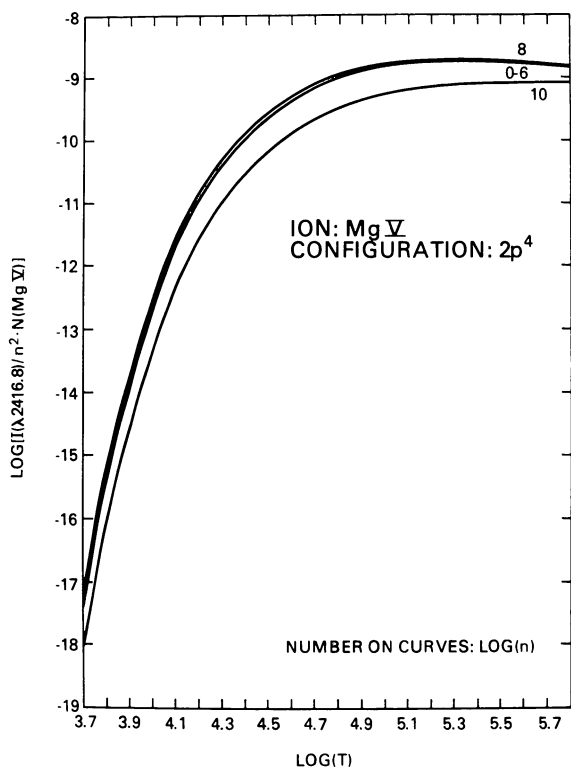


FIG. 18

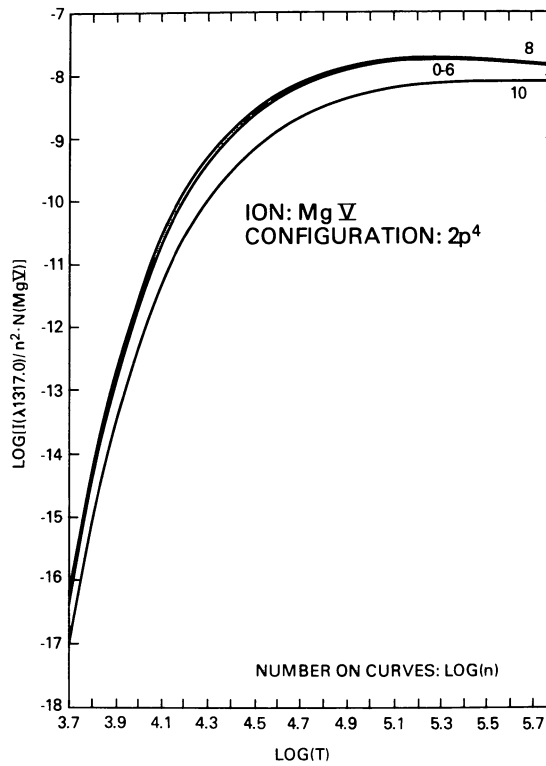


FIG. 19

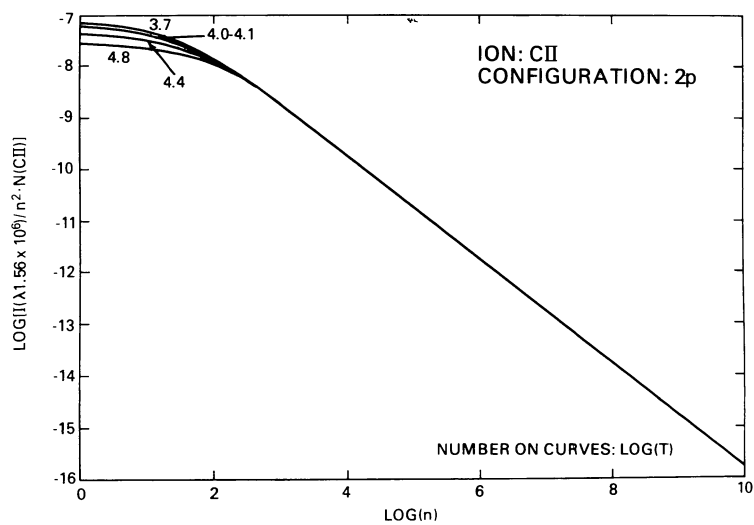


FIG. 20

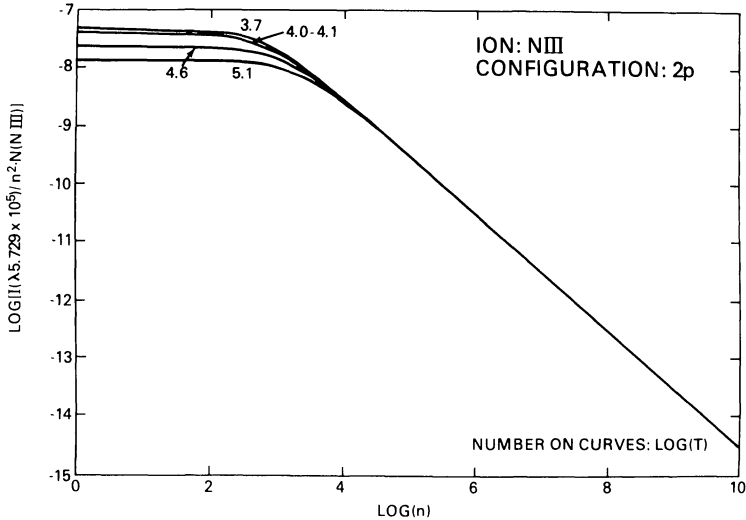


FIG. 21

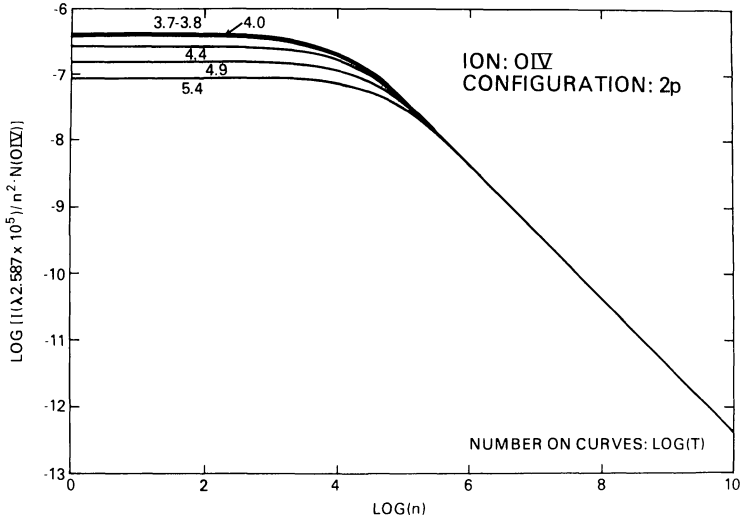


FIG. 22

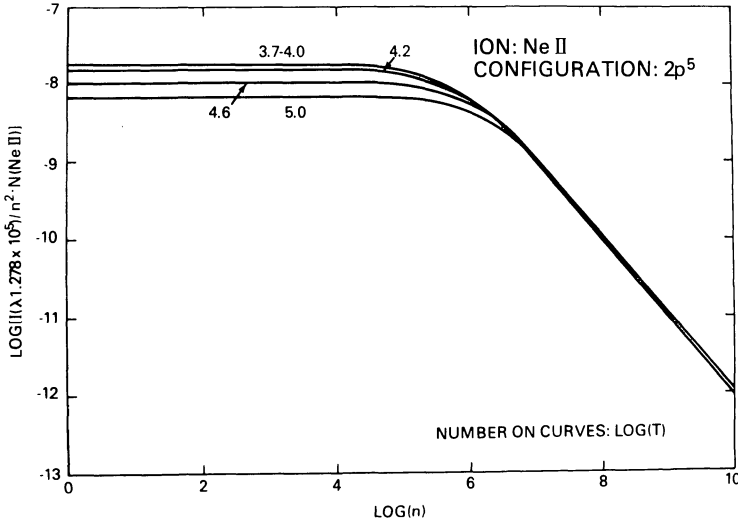


FIG. 23

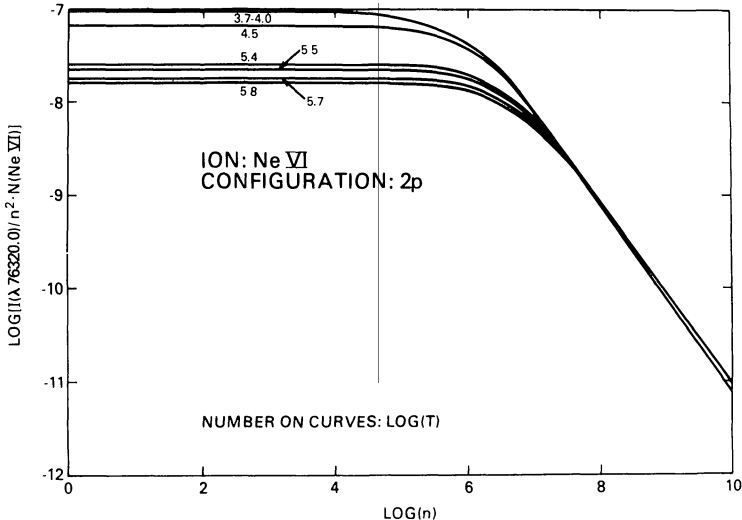


FIG. 24

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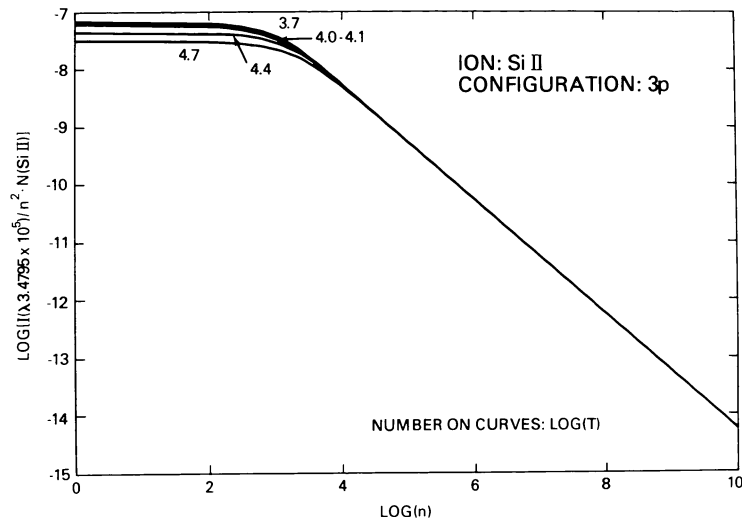


FIG. 25

tions can be used for diagnostic purposes to determine the temperatures and densities of hot cosmic plasmas in the temperature range $5 \times 10^3 - 2 \times 10^6$ K. Even though radiative cooling is very strong in this range, little information on the forbidden line emission from cosmic gases for temperatures above 10^5 K exists, although the O VI observations indicate that a sizable portion of the interstellar medium is in this hot state.

It is hoped that the results presented here will be useful to researchers in the UV, visible, and IR fields. If different calculations are desired, they can be easily obtained from the data provided here and in the previous work (Paper I).

APPENDIX A SAMPLE CALCULATION FOR FORBIDDEN LINE INTENSITIES

Example: O III ($\lambda 5006.84$), Configuration $2p^2$, Transition $^1D_2 - ^3P_2$.

$$\text{Intensity } I_{ji} = A_{ji} N_j N_{A,Z} N_A h \nu_{ji} \frac{n}{1 + N_{\text{He}}} \frac{L}{4\pi} \text{ ergs cm}^{-2} \text{ s}^{-1} \text{ sr}^{-1},$$

where A_{ji} is the radiative transition probability from upper level j to lower level i , N_j is the relative population of level j , $N_{A,Z}$ is the relative ionic abundance of ion with charge Z of element with atomic number A , N_A is the relative chemical abundance (with respect to hydrogen), ν_{ji} is the frequency of transition ($= c/\lambda_{ji}$ where λ_{ji} is the wavelength of transition), n is the total number density of hydrogen and helium nuclei (in cm^{-3}), N_{He} is the relative chemical abundance of helium, and L is the path length through the line emitting region. The relative population of the level (N_j) is a function of temperature and density only.

For the transition $^1D_2 - ^3P_2$, $j = 4$ and $i = 3$. Then, for temperature $T = 10^{4.3}$ K and density $n = 10^6 \text{ cm}^{-3}$, we have

$$A_{43} = 0.021 \text{ s}^{-1},$$

$$N_4 = 6.538349375 \times 10^{-2},$$

$$N_{A,Z}(\text{O}^{++}) = 3.718 \times 10^{-1},$$

$$N_A(\text{O}) = 6.76 \times 10^{-4},$$

$$h = 6.626196 \times 10^{-27} \text{ ergs s},$$

$$\nu_{43} = \frac{c}{\lambda_{43}} : c = 2.99792458 \times 10^{10} \text{ cm s}^{-1},$$

$$\lambda_{43} = 5006.84 \times 10^{-8} \text{ cm},$$

$$n = 10^6 \text{ cm}^{-3},$$

$$N_{\text{He}} = 0.0695 ,$$

$$L = 1 \text{ pc} = 3.085678 \times 10^{18} \text{ cm} ,$$

and

$$I_{43} = (0.021 \text{ s}^{-1})(6.538349375 \times 10^{-2})(3.718 \times 10^{-1})(6.76 \times 10^{-4})(6.626196 \times 10^{-27} \text{ ergs s}) \\ \times \frac{(2.99792458 \times 10^{10} \text{ cm s}^{-1})}{5006.84 \times 10^{-8} \text{ cm}} \times \left(\frac{10^6 \text{ cm}^{-3}}{1 + 0.0695} \right) \left(\frac{3.085678 \times 10^{18} \text{ cm}}{4\pi \text{ sr}} \right) = 3.1435814 \times 10^5 \text{ ergs cm}^{-2} \text{ s}^{-1} \text{ sr}^{-1} .$$

Then,

$$\frac{I_{ji}}{n^2 N_{A,Z}} = \frac{3.1435814 \times 10^5 \text{ ergs cm}^{-2} \text{ s}^{-1} \text{ sr}^{-1}}{(10^6 \text{ cm}^{-3})^2 (3.718 \times 10^{-1})} = 8.4550333 \times 10^{-7} \text{ ergs cm}^4 \text{ s}^{-1} \text{ sr}^{-1}$$

and

$$-\log \left\{ \frac{I_{ji}}{n^2 N_{A,Z}} \right\} = 6.0728846 .$$

APPENDIX B

The terms $I_{ji}/n^2 N_{A,Z}$ are given for different temperatures and densities. The tables are ordered from N I through Fe XIII (the $q = 2, 3, 4$ ions), Tables 1–22; and from C II through Fe XIV (the $q = 1, 5$ ions), Tables 23–37. The letter designations on the tables refer to individual transitions for that ion.

The temperature range was chosen so that the relative ionic abundances in the time-dependent cooling case (see text) were above $\sim 5\%$. These temperature ranges should be adequate for most purposes. Extrapolations to temperatures outside the given range can be carried out if desired. The results are presented as a function of the density n rather than n_e , the density being the parameter which does not change even if the gas recombines. Below $T \approx 10^4$ K, the results are strictly correct for a gas that is cooling radiatively, although the results should roughly be applicable to cases where there is no time variation of n_e (like H II regions). The units of I_{ji} are $\text{ergs cm}^{-2} \text{ s}^{-1} \text{ sr}^{-1}$ and normalized to $L = 3.085 \times 10^{18} \text{ cm}$ (1 pc).

TABLE 1A

ION N I TRANSITION $^2D_{3/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 5200.7					
	–log (INTENSITY/ n^2N (N I))					
	log (n)					
log (T)	0	2	4	6	8	10
4.1	7.1682	7.1969	8.0491	9.9908	12.0447	14.0498
4.0	7.4615	7.4853	8.2716	10.1976	12.2370	14.2412
3.9	7.8328	7.8525	8.5756	10.4855	12.5115	14.5149
3.8	8.2962	8.3125	8.9736	10.8664	12.8814	14.8839
3.7	8.8721	8.8855	9.4827	11.3557	13.3623	15.3640

NOTE.—The density $n = n_{\text{H}} + n_{\text{He}}$ (cm^{-3}). Intensity in units of $\text{ergs cm}^{-2} \text{ s}^{-1} \text{ sr}^{-1}$ (1 pc path length).

TABLE 1B

ION N I TRANSITION $^2D_{3/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 5198.5					
	–log (INTENSITY/ n^2N (N I))					
	log (n)					
log (T)	0	2	4	6	8	10
4.1	7.3415	7.3523	7.9356	9.8247	11.8589	13.8609
4.0	7.6356	7.6441	8.1630	10.0269	12.0509	14.0525
3.9	8.0078	8.0148	8.4743	10.3098	12.3250	14.3262
3.8	8.4722	8.4780	8.8829	10.6864	12.6946	14.6955
3.7	9.0490	9.0539	9.4062	11.1723	13.1753	15.1758

TABLE 2A

ION N II TRANSITION $^1D_2-^3P_1$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 6548.1					
	–log (INTENSITY/ n^2N (N II))					
	log (n)					
log (T)	0	2	4	6	8	10
4.9	6.7127	6.7128	6.7430	7.6363	9.6080	11.6198
4.5	6.7093	6.7088	6.7502	7.7620	9.7397	11.7448
4.1	6.9969	6.9949	7.0472	8.1506	10.1248	12.1256
4.0	7.1571	7.1546	7.2091	8.3300	10.3035	12.3038
3.7	8.0533	8.0474	8.1041	9.2512	11.2240	13.2237

TABLE 2B

ION N II TRANSITION $^1D_2-^3P_2$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 6583.6					
	–log (INTENSITY/ n^2N (N II))					
	log (n)					
log (T)	0	2	4	6	8	10
4.9	6.2507	6.2509	6.2812	7.1742	9.1460	11.1580
4.5	6.2473	6.2468	6.2884	7.3000	9.2777	11.2827
4.1	6.5351	6.5331	6.5854	7.6886	9.6627	11.6636
4.0	6.6952	6.6927	6.7471	7.8680	9.8415	11.8418
3.7	7.5914	7.5853	7.6423	8.7894	10.7622	12.7618

TABLE 2C

ION N II TRANSITION $^1S_0-^1D_2$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 5754.8					
	-log (INTENSITY/ n^2N (N II))					
	log (n)					
log (T)	0	2	4	6	8	10
4.9	7.2092	7.2088	7.1939	7.0594	7.5404	9.3807
4.5	7.4004	7.3991	7.3724	7.2071	7.8217	9.7112
4.1	8.1920	8.1889	8.1430	7.9398	8.6871	10.6097
4.0	8.5700	8.5663	8.5152	8.3050	9.0800	11.0080
3.7	10.5393	10.5319	10.4709	10.2498	11.0685	13.0044

TABLE 2D

ION N II TRANSITION $^1S_0-^3P_1$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 3063.0					
	-log (INTENSITY/ n^2N (N II))					
	log (n)					
log (T)	0	2	4	6	8	10
4.9	8.4373	8.4368	8.4221	8.2874	8.7685	10.6088
4.5	8.6283	8.6271	8.6005	8.4352	9.0497	10.9392
4.1	9.4201	9.4169	9.3711	9.1679	9.9151	11.8376
4.0	9.7981	9.7942	9.7433	9.5330	10.3081	12.2360
3.7	11.7671	11.7599	11.6989	11.4778	12.2966	14.2324

TABLE 3A

ION O I TRANSITION $^1D_2-^3P_2$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 6300.23					
	-log (INTENSITY/ n^2N (O I))					
	log (n)					
log (T)	0	2	4	6	8	10
4.0	6.8888	6.8889	6.8920	7.1741	8.8671	10.8657
3.9	7.1930	7.1930	7.1954	7.4509	9.1137	11.1101
3.8	7.5765	7.5765	7.5782	7.8039	9.4291	11.4238
3.7	8.0570	8.0570	8.0580	8.2515	9.8292	11.8223

TABLE 3B

ION O I TRANSITION $^1D_2-^3P_1$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 6363.88					
	-log (INTENSITY/ n^2N (O I))					
	log (n)					
log (T)	0	2	4	6	8	10
4.0	7.3860	7.3860	7.3892	7.6712	9.3643	11.3629
3.9	7.6900	7.6900	7.6925	7.9479	9.6107	11.6072
3.8	8.0735	8.0736	8.0753	8.3010	9.9261	11.9209
3.7	8.5541	8.5541	8.5551	8.7484	10.3263	12.3193

TABLE 3C

ION O I TRANSITION $^1S_0-^1D_2$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 5577.35					
	-log (INTENSITY/ n^2N (O I))					
	log (n)					
log (T)	0	2	4	6	8	10
4.0	8.6361	8.6360	8.6327	8.5232	8.6338	10.2150
3.9	9.2450	9.2450	9.2418	9.1363	9.2145	10.7505
3.8	10.0146	10.0143	10.0112	9.9145	9.9581	11.4301
3.7	10.9836	10.9834	10.9805	10.8973	10.9065	12.2889

TABLE 3D

ION O I TRANSITION $^1S_0-^3P_1$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 2972.3					
	-log (INTENSITY/ n^2N (O I))					
	log (n)					
log (T)	0	2	4	6	8	10
4.0	9.6638	9.6637	9.6604	9.5509	9.6615	11.2427
3.9	10.2727	10.2727	10.2694	10.1640	10.2423	11.7783
3.8	11.0422	11.0422	11.0390	10.9423	10.9858	12.4578
3.7	12.0112	12.0112	12.0082	11.9250	11.9342	13.3166

TABLE 4A

ION O II TRANSITION $^2D_{5/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 3728.91					
	-log (INTENSITY/ n^2N (O II))					
	log (n)					
log (T)	0	2	4	6	8	10
5.0	5.3851	5.3983	5.9842	7.8419	9.9252	11.9415
4.6	5.4569	5.4733	6.0984	7.9506	9.9999	12.0066
4.1	6.1683	6.1872	6.7969	8.6092	10.6078	12.6078
4.0	6.4782	6.4977	7.1108	8.9221	10.9187	12.9185
3.7	8.0944	8.1153	8.7421	10.5588	12.5559	14.5559

TABLE 4B

ION O II TRANSITION $^2D_{3/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 3726.16					
	-log (INTENSITY/ n^2N (O II))					
	log (n)					
log (T)	0	2	4	6	8	10
5.0	5.5474	5.5485	5.7739	7.4541	9.5492	11.5682
4.6	5.6224	5.6211	5.8482	7.5664	9.6254	11.6334
4.1	6.3412	6.3338	6.5179	8.2333	10.2351	12.2355
4.0	6.6526	6.6445	6.8289	8.5479	10.5463	12.5463
3.7	8.2724	8.2632	8.4579	10.1884	12.1849	14.1849

TABLE 4C

ION O II		CONFIGURATION $2p^3$				
TRANSITION $^2P_{3/2}-^4S_{3/2}$		WAVELENGTH (Å) 2470.4				
-log (INTENSITY/ n^2N (O II))						
log (n)						
log (T)	0	2	4	6	8	10
5.0	6.4360	6.4285	6.2474	6.1895	6.9958	8.9279
4.6	6.6191	6.6043	6.3177	6.2417	7.1698	9.1211
4.1	7.7589	7.7302	7.2675	7.1537	8.2190	10.1856
4.0	8.2354	8.2044	7.7209	7.6080	8.7003	10.6692
3.7	10.6869	10.6522	10.1466	10.0425	11.1802	13.1528

TABLE 5C

ION O III		CONFIGURATION $2p^2$				
TRANSITION $^1S_0-^1D_2$		WAVELENGTH (Å) 4363.21				
-log (INTENSITY/ n^2N (O III))						
log (n)						
log (T)	0	2	4	6	8	10
5.3	6.4637	6.4634	6.4598	6.4178	6.5914	8.2349
4.8	6.5066	6.5060	6.5005	6.4265	6.7133	8.4728
4.3	7.1833	7.1822	7.1713	7.0395	7.4564	9.2985
4.0	8.4001	8.3980	8.3804	8.2154	8.7158	10.5908
3.7	11.0200	11.0162	10.9881	10.8094	11.3533	13.2414

TABLE 4D

ION O II		CONFIGURATION $2p^3$				
TRANSITION $^2P_{1/2}-^4S_{3/2}$		WAVELENGTH (Å) 2470.3				
-log (INTENSITY/ n^2N (O II))						
log (n)						
log (T)	0	2	4	6	8	10
5.0	7.0309	7.0247	6.8543	6.7917	7.6860	9.6304
4.6	7.2140	7.2014	6.9228	6.8480	7.8643	9.8237
4.1	8.3538	8.3283	7.8711	7.7676	8.9168	10.8881
4.0	8.8304	8.8028	8.3244	8.2233	9.3984	11.3717
3.7	11.2817	11.2509	10.7499	10.6605	11.8789	13.8554

TABLE 5D

ION O III		CONFIGURATION $2p^2$				
TRANSITION $^1S_0-^3P_1$		WAVELENGTH (Å) 2321.1				
-log (INTENSITY/ n^2N (O III))						
log (n)						
log (T)	0	2	4	6	8	10
5.3	7.0319	7.0316	7.0280	6.9860	7.1596	8.8031
4.8	7.0747	7.0743	7.0687	6.9948	7.2815	9.0411
4.3	7.7516	7.7504	7.7395	7.6078	8.0248	9.8668
4.0	8.9685	8.9663	8.9489	8.8737	9.2840	11.1590
3.7	11.5882	11.5844	11.5563	11.3778	11.9215	13.8097

TABLE 5A

ION O III		CONFIGURATION $2p^2$				
TRANSITION $^1D_2-^3P_1$		WAVELENGTH (Å) 4958.91				
-log (INTENSITY/ n^2N (O III))						
log (n)						
log (T)	0	2	4	6	8	10
5.3	6.0873	6.0873	6.0892	6.2746	7.8474	9.8665
4.8	5.9879	5.9878	5.9899	6.2557	7.9437	9.9527
4.3	6.1968	6.1963	6.1967	6.5397	8.2922	10.2918
4.0	6.7101	6.7089	6.7052	7.0939	8.8753	10.8729
3.7	7.9119	7.9093	7.8963	8.3098	10.1064	12.1038

TABLE 6A

ION Ne III		CONFIGURATION $2p^4$				
TRANSITION $^1D_2-^3P_2$		WAVELENGTH (Å) 3868.74				
-log (INTENSITY/ n^2N (Ne III))						
log (n)						
log (T)	0	2	4	6	8	10
5.3	6.6043	6.6043	6.6043	6.6192	7.2711	9.1854
4.8	6.5391	6.5391	6.5393	6.5611	7.3610	9.2996
4.3	6.8583	6.8583	6.8581	6.8842	7.8035	9.7536
4.0	7.5396	7.5396	7.5388	7.5646	8.5567	10.5150
3.7	9.0849	9.0849	9.0824	9.0986	10.1297	12.0922

TABLE 5B

ION O III		CONFIGURATION $2p^2$				
TRANSITION $^1D_2-^3P_2$		WAVELENGTH (Å) 5006.84				
-log (INTENSITY/ n^2N (O III))						
log (n)						
log (T)	0	2	4	6	8	10
5.3	5.6205	5.6205	5.6225	5.8077	7.3805	9.3999
4.8	5.5210	5.5210	5.5232	5.7889	7.4770	9.4859
4.3	5.7301	5.7296	5.7298	6.0731	7.8255	9.8250
4.0	6.2435	6.2420	6.2384	6.6272	8.4085	10.4060
3.7	7.4453	7.4424	7.4296	7.8430	9.6397	11.6370

TABLE 6B

ION Ne III		CONFIGURATION $2p^4$				
TRANSITION $^1D_2-^3P_1$		WAVELENGTH (Å) 3967.51				
-log (INTENSITY/ n^2N (Ne III))						
log (n)						
log (T)	0	2	4	6	8	10
5.3	7.1296	7.1296	7.1297	7.1445	7.7965	9.7108
4.8	7.0644	7.0644	7.0645	7.0863	7.8863	9.8250
4.3	7.3838	7.3838	7.3834	7.4095	8.3288	10.2790
4.0	8.0651	8.0651	8.0640	8.0899	9.0820	11.0404
3.7	9.6104	9.6103	9.6078	9.6241	10.6549	12.6176

TABLE 6C

ION Ne III		CONFIGURATION $2p^4$				
TRANSITION $^1S_0-^1D_2$		WAVELENGTH (Å) 3342.9				
-log (INTENSITY/ n^2N (Ne III))						
log (n)						
log (T)	0	2	4	6	8	10
5.3	7.6848	7.6848	7.6845	7.6773	7.6083	8.7258
4.8	7.8125	7.8125	7.8122	7.7965	7.7215	9.0299
4.3	8.7570	8.7570	8.7561	8.7205	8.6374	10.1140
4.0	10.3639	10.3639	10.3621	10.3083	10.2437	11.8020
3.7	13.7621	13.7619	13.7584	13.6857	13.6379	15.2317

TABLE 7C

ION Ne IV		CONFIGURATION $2p^3$				
TRANSITION $^2P_{3/2}-^4S_{3/2}$		WAVELENGTH (Å) 1608.8				
-log (INTENSITY/ n^2N (Ne IV))						
log (n)						
log (T)	0	2	4	6	8	10
5.6	6.8064	6.8062	6.7964	6.7084	6.7791	8.1384
5.1	6.7677	6.7673	6.7447	6.5975	6.7115	8.2238
4.6	7.1880	7.1873	7.1334	6.8437	6.9875	8.6067
4.0	9.8284	9.8270	9.7249	9.2782	9.5267	11.2798
3.8	12.0583	12.0567	11.9464	11.4937	11.7778	13.5542
3.7	13.6413	13.6397	13.5279	13.0749	13.3652	15.1457

TABLE 6D

ION Ne III		CONFIGURATION $2p^4$				
TRANSITION $^1S_0-^3P_1$		WAVELENGTH (Å) 1814.8				
-log (INTENSITY/ n^2N (Ne III))						
log (n)						
log (T)	0	2	4	6	8	10
5.3	7.5240	7.5240	7.5240	7.5167	7.4478	8.5653
4.8	7.6518	7.6518	7.6515	7.6357	7.5611	8.8692
4.3	8.5962	8.5962	8.5953	8.5599	8.4767	9.9534
4.0	10.2032	10.2032	10.2014	10.1478	10.0830	11.6412
3.7	13.6014	13.6013	13.5977	13.5249	13.4773	15.0711

TABLE 7D

ION Ne IV		CONFIGURATION $2p^3$				
TRANSITION $^2P_{1/2}-^4S_{3/2}$		WAVELENGTH (Å) 1609.0				
-log (INTENSITY/ n^2N (Ne IV))						
log (n)						
log (T)	0	2	4	6	8	10
5.6	7.1849	7.1849	7.1791	7.0980	7.2789	8.8338
5.1	7.1463	7.1461	7.1297	6.9850	7.2575	8.9214
4.6	7.5665	7.5660	7.5216	7.2323	7.5780	9.3055
4.0	10.2066	10.2054	10.1177	9.6719	10.1568	11.9791
3.8	12.4361	12.4348	12.3397	11.8883	12.4136	14.2535
3.7	14.0189	14.0175	13.9213	13.4692	14.0019	15.8447

TABLE 7A

ION Ne IV		CONFIGURATION $2p^3$				
TRANSITION $^2D_{5/2}-^4S_{3/2}$		WAVELENGTH (Å) 2441.3				
-log (INTENSITY/ n^2N (Ne IV))						
log (n)						
log (T)	0	2	4	6	8	10
5.6	6.3588	6.3593	6.4086	7.4525	9.4096	11.4461
5.1	6.2546	6.2553	6.3295	7.4972	9.4540	11.4667
4.6	6.4622	6.4633	6.5571	7.7336	9.6490	11.6265
4.0	8.1337	8.1352	8.2546	9.4097	11.3205	13.3140
3.8	9.5918	9.5934	9.7217	10.8949	12.8168	14.8151
3.7	10.6347	10.6363	10.7662	11.9431	13.8671	15.8659

TABLE 8A

ION Ne v		CONFIGURATION $2p^2$				
TRANSITION $^1D_2-^3P_1$		WAVELENGTH (Å) 3345.9				
-log (INTENSITY/ n^2N (Ne v))						
log (n)						
log (T)	0	2	4	6	8	10
5.7	7.1237	7.1237	7.1233	7.1266	7.4479	9.1902
5.5	7.0464	7.0464	7.0464	7.0502	7.4212	9.2022
5.3	6.9832	6.9832	6.9831	6.9875	7.4095	9.2223
5.1	6.9413	6.9413	6.9411	6.9458	7.4185	9.2560
4.4	7.2119	7.2119	7.2100	7.2089	7.8358	9.7251
4.0	8.1774	8.1774	8.1715	8.1539	8.8755	10.7903
3.7	9.9985	9.9983	9.9860	9.9366	10.6958	12.6195

TABLE 7B

ION Ne IV		CONFIGURATION $2p^3$				
TRANSITION $^2D_{3/2}-^4S_{3/2}$		WAVELENGTH (Å) 2438.6				
-log (INTENSITY/ n^2N (Ne IV))						
log (n)						
log (T)	0	2	4	6	8	10
5.6	6.4800	6.4800	6.4785	6.7882	8.5696	10.6431
5.1	6.3831	6.3829	6.3741	6.7732	8.6243	10.6642
4.6	6.6089	6.6085	6.5768	6.9854	8.8340	10.8252
4.0	8.3090	8.3079	8.2416	8.6601	10.5209	12.5150
3.8	9.7715	9.7703	9.6991	10.1452	12.0200	14.0178
3.7	10.8159	10.8147	10.7425	11.1942	13.0714	15.0699

TABLE 8B

ION Ne v		CONFIGURATION $2p^2$				
TRANSITION $^1D_2-^3P_2$		WAVELENGTH (Å) 3425.8				
-log (INTENSITY/ n^2N (Ne v))						
log (n)						
log (T)	0	2	4	6	8	10
5.7	6.6939	6.6939	6.6939	6.6970	7.0184	8.7605
5.5	6.6167	6.6167	6.6167	6.6206	6.9915	8.7725
5.3	6.5536	6.5536	6.5534	6.5579	6.9799	8.7926
5.1	6.5117	6.5117	6.5115	6.5163	6.9889	8.8264
4.4	6.7823	6.7823	6.7804	6.7792	7.4063	9.2953
4.0	7.7478	7.7478	7.7419	7.7243	8.4459	10.3606
3.7	9.5687	9.5687	9.5564	9.5069	10.2662	12.1898

TABLE 8C

ION Ne v TRANSITION $^1S_0-^1D_2$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 2972.0					
	-log (INTENSITY/ n^2N (Ne v))					
	log (n)					
log (T)	0	2	4	6	8	10
5.7	7.7850	7.7850	7.7846	7.7795	7.7659	8.6541
5.5	7.7312	7.7312	7.7308	7.7249	7.7110	8.6810
5.3	7.7049	7.7049	7.7043	7.6974	7.6819	8.7319
5.1	7.7219	7.7219	7.7211	7.7122	7.6935	8.8206
4.4	8.6471	8.6470	8.6442	8.6182	8.5691	9.9441
4.0	10.8668	10.8668	10.8596	10.8074	10.7672	12.2633
3.7	14.7712	14.7710	14.7573	14.6689	14.6400	16.1750

TABLE 8D

ION Ne v TRANSITION $^1S_0-^3P_1$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 1575.2					
	-log (INTENSITY/ n^2N (Ne v))					
	log (n)					
log (T)	0	2	4	6	8	10
5.7	7.3006	7.3006	7.3002	7.2951	7.2816	8.1697
5.5	7.2468	7.2468	7.2463	7.2405	7.2264	8.1965
5.3	7.2206	7.2206	7.2199	7.2130	7.1974	8.2473
5.1	7.2374	7.2374	7.2365	7.2280	7.2091	8.3362
4.4	8.1628	8.1626	8.1597	8.1338	8.0847	9.4598
4.0	10.3824	10.3824	10.3753	10.3230	10.2828	11.7789
3.7	14.2869	14.2867	14.2728	14.1845	14.1556	15.6907

TABLE 9A

ION Mg v TRANSITION $^1D_2-^3P_2$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 2750.4					
	-log (INTENSITY/ n^2N (Mg v))					
	log (n)					
log (T)	0	2	4	6	8	10
5.8	7.3008	7.3008	7.3008	7.3013	7.3592	8.4928
5.3	7.1291	7.1291	7.1291	7.1300	7.2212	8.5271
4.8	7.1265	7.1265	7.1265	7.1271	7.2543	8.6877
4.3	7.6521	7.6521	7.6517	7.6497	7.8089	9.3464
4.0	8.6437	8.6437	8.6435	8.6361	8.8158	10.4185
3.7	10.8134	10.8134	10.8130	10.7971	10.9683	12.6004

TABLE 9B

ION Mg v TRANSITION $^1D_2-^3P_1$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 2892.0					
	-log (INTENSITY/ n^2N (Mg v))					
	log (n)					
log (T)	0	2	4	6	8	10
5.8	7.8669	7.8669	7.8669	7.8675	7.9254	9.0589
5.3	7.6953	7.6953	7.6953	7.6961	7.7873	9.0933
4.8	7.6927	7.6927	7.6927	7.6934	7.8206	9.2539
4.3	8.2182	8.2182	8.2180	8.2159	8.3751	9.9127
4.0	9.2098	9.2098	9.2097	9.2024	9.3820	10.9846
3.7	11.3795	11.3795	11.3792	11.3632	11.5344	13.1667

TABLE 9C

ION Mg v TRANSITION $^1S_0-^1D_2$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 2416.8					
	-log (INTENSITY/ n^2N (Mg v))					
	log (n)					
log (T)	0	2	4	6	8	10
5.8	8.8165	8.8165	8.8165	8.8164	8.8080	9.0771
5.3	8.7316	8.7316	8.7316	8.7312	8.7133	9.1153
4.8	9.0048	9.0048	9.0047	9.0031	8.9588	9.4977
4.3	10.4080	10.4080	10.4080	10.4021	10.3057	11.0006
4.0	12.6839	12.6839	12.6837	12.6716	12.5420	13.3440
3.7	17.4170	17.4170	17.4167	17.3951	17.2306	18.0847

TABLE 9D

ION Mg v TRANSITION $^1S_0-^3P_1$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 1317.0					
	-log (INTENSITY/ n^2N (Mg v))					
	log (n)					
log (T)	0	2	4	6	8	10
5.8	7.8168	7.8168	7.8168	7.8166	7.8083	8.0773
5.3	7.7318	7.7318	7.7318	7.7314	7.7135	8.1156
4.8	8.0049	8.0049	8.0049	8.0034	7.9592	8.4979
4.3	9.4082	9.4082	9.4082	9.4023	9.3059	10.0009
4.0	11.6842	11.6842	11.6839	11.6718	11.5421	12.3442
3.7	16.4172	16.4172	16.4169	16.3953	16.2308	17.0847

TABLE 10A

ION Mg VI TRANSITION $^2D_{3/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 1846.7					
	-log (INTENSITY/ n^2N (Mg VI))					
	log (n)					
log (T)	0	2	4	6	8	10
5.9	7.0885	7.0885	7.0913	7.3026	8.8605	10.8572
5.7	7.0146	7.0146	7.0180	7.2653	8.8668	10.8624
5.5	6.9558	6.9558	6.9599	7.2448	8.8792	10.8700
5.4	6.9347	6.9347	6.9394	7.2428	8.8887	10.8754

TABLE 10B

ION Mg VI TRANSITION $^2D_{3/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 1846.0					
	-log (INTENSITY/ n^2N (Mg VI))					
	log (n)					
log (T)	0	2	4	6	8	10
5.9	7.1939	7.1939	7.1936	7.1808	7.7266	9.6620
5.7	7.1218	7.1218	7.1214	7.1048	7.7158	9.6709
5.5	7.0658	7.0658	7.0653	7.0427	7.7154	9.6823
5.4	7.0468	7.0468	7.0459	7.0195	7.7203	9.6893

TABLE 10C

ION Mg VI TRANSITION ${}^2P_{3/2}-{}^4S_{3/2}$		CONFIGURATION $2p^3$ WAVELENGTH (Å) 1207.3				
-log (INTENSITY/ n^2N (Mg VI))						
log (n)						
log (T)	0	2	4	6	8	10
5.9	7.4322	7.4322	7.4317	7.4024	7.3418	7.7183
5.7	7.3706	7.3706	7.3701	7.3332	7.2668	7.6992
5.5	7.3316	7.3316	7.3306	7.2837	7.2067	7.6959
5.4	7.3244	7.3244	7.3232	7.2696	7.1851	7.7019

TABLE 11C

ION Mg VII TRANSITION ${}^1S_0-{}^1D_2$		CONFIGURATION $2p^2$ WAVELENGTH (Å) 2260.8				
-log (INTENSITY/ n^2N (Mg VII))						
log (n)						
log (T)	0	2	4	6	8	10
6.1	9.1324	9.1324	9.1324	9.1313	9.1207	9.2299
6.0	9.0933	9.0933	9.0933	9.0920	9.0808	9.2062
5.8	9.0242	9.0242	9.0242	9.0225	9.0097	9.1704
5.6	8.9734	8.9734	8.9734	8.9713	8.9561	9.1554

TABLE 10D

ION Mg VI TRANSITION ${}^2P_{1/2}-{}^4S_{3/2}$		CONFIGURATION $2p^3$ WAVELENGTH (Å) 1209.0				
-log (INTENSITY/ n^2N (Mg VI))						
log (n)						
log (T)	0	2	4	6	8	10
5.9	7.7427	7.7427	7.7424	7.7277	7.6737	8.3141
5.7	7.6809	7.6809	7.6809	7.6607	7.6004	8.3104
5.5	7.6420	7.6420	7.6414	7.6128	7.5429	8.3203
5.4	7.6347	7.6347	7.6340	7.5997	7.5230	8.3323

TABLE 11D

ION Mg VII TRANSITION ${}^1S_0-{}^3P_1$		CONFIGURATION $2p^2$ WAVELENGTH (Å) 1183.2				
-log (INTENSITY/ n^2N (Mg VII))						
log (n)						
log (T)	0	2	4	6	8	10
6.1	7.9251	7.9251	7.9251	7.9240	7.9134	8.0226
6.0	7.8861	7.8861	7.8859	7.8847	7.8735	7.9988
5.8	7.8169	7.8169	7.8169	7.8153	7.8025	7.9631
5.6	7.7662	7.7662	7.7662	7.7642	7.7489	7.9481

TABLE 11A

ION Mg VII TRANSITION ${}^1D_2-{}^3P_1$		CONFIGURATION $2p^2$ WAVELENGTH (Å) 2480.5				
-log (INTENSITY/ n^2N (Mg VII))						
log (n)						
log (T)	0	2	4	6	8	10
6.1	7.9272	7.9272	7.9272	7.9274	7.9509	8.7548
6.0	7.8825	7.8825	7.8825	7.8826	7.9086	8.7510
5.8	7.7975	7.7975	7.7975	7.7977	7.8294	8.7474
5.6	7.7215	7.7215	7.7215	7.7219	7.7597	8.7513

TABLE 12A

ION Si VII TRANSITION ${}^1D_2-{}^3P_2$		CONFIGURATION $2p^4$ WAVELENGTH (Å) 2127.0				
-log (INTENSITY/ n^2N (Si VII))						
log (n)						
log (T)	0	2	4	6	8	10
6.1	7.4959	7.4959	7.4959	7.4960	7.5008	7.8290
6.0	7.4516	7.4516	7.4516	7.4517	7.4570	7.8108
5.8	7.3687	7.3687	7.3687	7.3687	7.3752	7.7820
5.6	7.2959	7.2959	7.2959	7.2960	7.3037	7.7655

TABLE 11B

ION Mg VII TRANSITION ${}^1D_2-{}^3P_2$		CONFIGURATION $2p^2$ WAVELENGTH (Å) 2597.3				
-log (INTENSITY/ n^2N (Mg VII))						
log (n)						
log (T)	0	2	4	6	8	10
6.1	7.5292	7.5292	7.5292	7.5295	7.5529	8.3569
6.0	7.4846	7.4846	7.4846	7.4848	7.5108	8.3530
5.8	7.3997	7.3997	7.3997	7.3997	7.4315	8.3495
5.6	7.3238	7.3238	7.3238	7.3238	7.3619	8.3534

TABLE 12B

ION Si VII TRANSITION ${}^1D_2-{}^3P_1$		CONFIGURATION $2p^4$ WAVELENGTH (Å) 2326.5				
-log (INTENSITY/ n^2N (Si VII))						
log (n)						
log (T)	0	2	4	6	8	10
6.1	8.1273	8.1273	8.1273	8.1273	8.1322	8.4605
6.0	8.0830	8.0830	8.0830	8.0830	8.0883	8.4422
5.8	8.0000	8.0000	8.0000	8.0000	8.0065	8.4134
5.6	7.9273	7.9273	7.9273	7.9273	7.9352	8.3969

TABLE 12C

ION Si VII TRANSITION $^1S_0-^1D_2$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 1894.7					
	-log (INTENSITY/ n^2N (Si VII))					
	log (n)					
log (T)	0	2	4	6	8	10
6.1	9.6254	9.6254	9.6254	9.6254	9.6247	9.6250
6.0	9.5878	9.5878	9.5878	9.5878	9.5870	9.5891
5.8	9.5238	9.5238	9.5238	9.5238	9.5226	9.5291
5.6	9.4815	9.4815	9.4815	9.4815	9.4795	9.4902

TABLE 12D

ION Si VII TRANSITION $^1S_0-^3P_1$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 1044.4					
	-log (INTENSITY/ n^2N (Si VII))					
	log (n)					
log (T)	0	2	4	6	8	10
6.1	7.9389	7.9389	7.9389	7.9389	7.9382	7.9385
6.0	7.9013	7.9013	7.9013	7.9013	7.9004	7.9025
5.8	7.8374	7.8374	7.8374	7.8374	7.8361	7.8424
5.6	7.7950	7.7950	7.7950	7.7950	7.7929	7.8037

TABLE 13A

ION Si VIII TRANSITION $^2D_{3/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 1489.4					
	-log (INTENSITY/ n^2N (Si VIII))					
	log (n)					
log (T)	0	2	4	6	8	10
6.2	7.4471	7.4471	7.4470	7.4456	7.4473	8.4540
6.1	7.4052	7.4052	7.4052	7.4035	7.4073	8.4535
6.0	7.3649	7.3649	7.3649	7.3630	7.3689	8.4547
5.8	7.2926	7.2926	7.2926	7.2897	7.2999	8.4601

TABLE 13B

ION Si VIII TRANSITION $^2D_{5/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 1483.2					
	-log (INTENSITY/ n^2N (Si VIII))					
	log (n)					
log (T)	0	2	4	6	8	10
6.2	7.3462	7.3462	7.3463	7.3612	7.9970	9.8528
6.1	7.3040	7.3040	7.3040	7.3205	7.9906	9.8546
6.0	7.2628	7.2628	7.2630	7.2814	7.9861	9.8569
5.8	7.1888	7.1888	7.1890	7.2113	7.9839	9.8638

TABLE 13C

ION Si VIII TRANSITION $^2P_{3/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 962.46					
	-log (INTENSITY/ n^2N (Si VIII))					
	log (n)					
log (T)	0	2	4	6	8	10
6.2	7.6749	7.6749	7.6749	7.6720	7.6091	7.6052
6.1	7.6362	7.6362	7.6361	7.6328	7.5668	7.5672
6.0	7.5994	7.5994	7.5994	7.5958	7.5258	7.5310
5.8	7.5381	7.5381	7.5381	7.5329	7.4538	7.4671

TABLE 14A

ION Si IX TRANSITION $^1D_2-^3P_1$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 1985.3					
	-log (INTENSITY/ n^2N (Si IX))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	8.1210	8.1210	8.1210	8.1210	8.1218	8.2913
6.2	8.0749	8.0749	8.0749	8.0749	8.0759	8.2616
6.1	8.0310	8.0310	8.0310	8.0310	8.0319	8.2346
5.9	7.9462	7.9462	7.9462	7.9462	7.9471	8.1868

TABLE 14B

ION Si IX TRANSITION $^1D_2-^3P_2$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 2149.9					
	-log (INTENSITY/ n^2N (Si IX))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	7.7844	7.7844	7.7844	7.7844	7.7852	7.9548
6.2	7.7383	7.7383	7.7383	7.7383	7.7392	7.9249
6.1	7.6944	7.6944	7.6944	7.6944	7.6953	7.8979
5.9	7.6097	7.6097	7.6097	7.6097	7.6106	7.8501

TABLE 14C

ION Si IX TRANSITION $^1S_0-^1D_2$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 1824.2					
	-log (INTENSITY/ n^2N (Si IX))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	9.9695	9.9695	9.9695	9.9695	9.9695	9.9552
6.2	9.9281	9.9281	9.9281	9.9281	9.9279	9.9124
6.1	9.8897	9.8897	9.8897	9.8897	9.8893	9.8727
5.9	9.8207	9.8207	9.8207	9.8207	9.8199	9.8009

TABLE 14D

ION Si IX TRANSITION $^1S_0-^3P_1$		CONFIGURATION $2p^2$ WAVELENGTH (Å) 950.66				
-log (INTENSITY/ n^2N (Si IX))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.0999	8.0999	8.0999	8.0999	8.0999	8.0854
6.2	8.0583	8.0583	8.0583	8.0583	8.0581	8.0426
6.1	8.0199	8.0199	8.0199	8.0199	8.0195	8.0030
5.9	7.9510	7.9510	7.9510	7.9509	7.9501	7.9312

TABLE 15A

ION S II TRANSITION $^2D_{3/2}-^4S_{3/2}$		CONFIGURATION $3p^3$ WAVELENGTH (Å) 6730.78				
-log (INTENSITY/ n^2N (S II))						
log (n)						
log (T)	0	2	4	6	8	10
4.8	6.9553	6.9553	7.0154	8.3863	10.4211	12.4250
4.4	7.0108	7.0097	7.0618	8.4802	10.4714	12.4712
4.1	7.2777	7.2754	7.2948	8.6846	10.6409	12.6390
4.0	7.4419	7.4391	7.4443	8.8130	10.7652	12.7630
3.7	8.3353	8.3319	8.3006	9.5965	11.5645	13.5636

TABLE 15B

ION S II TRANSITION $^2D_{5/2}-^4S_{3/2}$		CONFIGURATION $3p^3$ WAVELENGTH (Å) 6716.42				
-log (INTENSITY/ n^2N (S II))						
log (n)						
log (T)	0	2	4	6	8	10
4.8	6.8269	6.8322	7.1653	8.8475	10.8339	12.8330
4.4	6.8715	6.8780	7.2498	8.9305	10.8849	12.8821
4.1	7.1253	7.1319	7.4945	9.1242	11.0588	13.0556
4.0	7.2847	7.2913	7.6441	9.2497	11.1859	13.1829
3.7	8.1677	8.1736	8.4930	10.0340	12.0009	13.9997

TABLE 16A

ION S III TRANSITION $^1D_2-^3P_1$		CONFIGURATION $3p^2$ WAVELENGTH (Å) 9069.4				
-log (INTENSITY/ n^2N (S III))						
log (n)						
log (T)	0	2	4	6	8	10
5.2	7.5430	7.5430	7.5440	7.6922	9.1970	11.2039
4.8	7.4218	7.4218	7.4220	7.6253	9.2379	11.2411
4.3	7.4435	7.4433	7.4381	7.7078	9.4025	11.4006
4.0	7.6849	7.6843	7.6696	7.9644	9.6834	11.6799
3.8	8.0551	8.0540	8.0286	8.3238	10.0478	12.0441

TABLE 16B

ION S III TRANSITION $^1D_2-^3P_2$		CONFIGURATION $3p^2$ WAVELENGTH (Å) 9532.1				
-log (INTENSITY/ n^2N (S III))						
log (n)						
log (T)	0	2	4	6	8	10
5.2	7.1564	7.1564	7.1573	7.3056	8.8104	10.8174
4.8	7.0352	7.0352	7.0353	7.2388	8.8513	10.8545
4.3	7.0568	7.0568	7.0516	7.3211	9.0159	11.0141
4.0	7.2982	7.2976	7.2831	7.5777	9.2967	11.2933
3.8	7.6684	7.6673	7.6420	7.9371	9.6612	11.6575

TABLE 16C

ION S III TRANSITION $^1S_0-^1D_2$		CONFIGURATION $3p^2$ WAVELENGTH (Å) 6312.1				
-log (INTENSITY/ n^2N (S III))						
log (n)						
log (T)	0	2	4	6	8	10
5.2	7.7606	7.7606	7.7589	7.7037	8.0076	9.8037
4.8	7.7232	7.7232	7.7192	7.6406	8.0758	9.9339
4.3	8.0591	8.0587	8.0466	7.9187	8.5200	10.4302
4.0	8.7782	8.7774	8.7542	8.5853	9.2720	11.2014
3.8	9.7214	9.7203	9.6849	9.4899	10.2076	12.1434

TABLE 17A

ION S IX TRANSITION $^1D_2-^3P_2$		CONFIGURATION $2p^4$ WAVELENGTH (Å) 1724.1				
-log (INTENSITY/ n^2N (S IX))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	7.9298	7.9298	7.9298	7.9298	7.9303	7.9850
6.2	7.8842	7.8842	7.8842	7.8842	7.8849	7.9453
6.0	7.7981	7.7981	7.7981	7.7981	7.7989	7.8723
5.9	7.7575	7.7575	7.7575	7.7575	7.7585	7.8390

TABLE 17B

ION S IX TRANSITION $^1D_2-^3P_1$		CONFIGURATION $2p^4$ WAVELENGTH (Å) 1998.8				
-log (INTENSITY/ n^2N (S IX))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.6544	8.6544	8.6544	8.6544	8.6550	8.7097
6.2	8.6088	8.6088	8.6088	8.6088	8.6095	8.6700
6.0	8.5227	8.5227	8.5227	8.5227	8.5235	8.5969
5.9	8.4822	8.4822	8.4822	8.4822	8.4830	8.5635

TABLE 17C

ION S IX TRANSITION $^1S_0-^1D_2$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 1555.2					
	-log (INTENSITY/ n^2N (S IX))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	10.6443	10.6443	10.6443	10.6443	10.6444	10.6418
6.2	10.6040	10.6040	10.6040	10.6040	10.6041	10.6007
6.0	10.5325	10.5325	10.5325	10.5325	10.5326	10.5273
5.9	10.5024	10.5024	10.5024	10.5024	10.5024	10.4957

TABLE 17D

ION S IX TRANSITION $^1D_2-^3P_0$	CONFIGURATION $2p^4$ WAVELENGTH (Å) 2110.4					
	-log (INTENSITY/ n^2N (S IX))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	12.9493	12.9493	12.9493	12.9493	12.9499	13.0046
6.2	12.9037	12.9037	12.9037	12.9037	12.9045	12.9649
6.0	12.8176	12.8176	12.8176	12.8176	12.8184	12.8919
5.9	12.7772	12.7772	12.7772	12.7772	12.7780	12.8586

TABLE 18A

ION S X TRANSITION $^2D_{3/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 1213.6					
	-log (INTENSITY/ n^2N (S X))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	7.8744	7.8744	7.8744	7.8743	7.8702	8.0625
6.2	7.8317	7.8317	7.8317	7.8316	7.8267	8.0374
6.1	7.7915	7.7915	7.7915	7.7913	7.7856	8.0149
6.0	7.7530	7.7530	7.7530	7.7529	7.7460	7.9947

TABLE 18B

ION S X TRANSITION $^2D_{3/2}-^4S_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 1196.9					
	-log (INTENSITY/ n^2N (S X))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	7.8032	7.8032	7.8032	7.8043	7.9012	9.2062
6.2	7.7600	7.7600	7.7600	7.7613	7.8679	9.2065
6.1	7.7192	7.7192	7.7192	7.7205	7.8376	9.2075
6.0	7.6801	7.6801	7.6802	7.6816	7.8098	9.2098

TABLE 18C

ION S X TRANSITION $^2P_{3/2}-^2D_{3/2}$	CONFIGURATION $2p^3$ WAVELENGTH (Å) 2156.5					
	-log (INTENSITY/ n^2N (S X))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	9.0648	9.0648	9.0648	9.0646	9.0457	8.9682
6.2	9.0250	9.0250	9.0250	9.0248	9.0037	8.9249
6.1	8.9885	8.9885	8.9885	8.9882	8.9646	8.8841
6.0	8.9550	8.9550	8.9550	8.9547	8.9283	8.8451

TABLE 19A

ION S XI TRANSITION $^1D_2-^3P_1$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 1614.8					
	-log (INTENSITY/ n^2N (S XI))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	8.4568	8.4568	8.4568	8.4568	8.4572	8.4861
6.2	8.4120	8.4120	8.4120	8.4120	8.4123	8.4441
6.1	8.3695	8.3695	8.3695	8.3695	8.3697	8.4045
6.0	8.3279	8.3279	8.3279	8.3279	8.3282	8.3663

TABLE 19B

ION S XI TRANSITION $^1D_2-^3P_2$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 1826.2					
	-log (INTENSITY/ n^2N (S XI))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	8.1948	8.1948	8.1948	8.1948	8.1951	8.2239
6.2	8.1498	8.1498	8.1498	8.1498	8.1501	8.1819
6.1	8.1073	8.1073	8.1073	8.1073	8.1075	8.1422
6.0	8.0659	8.0659	8.0659	8.0659	8.0659	8.1040

TABLE 19C

ION S XI TRANSITION $^1S_0-^1D_2$	CONFIGURATION $2p^2$ WAVELENGTH (Å) 1519.2					
	-log (INTENSITY/ n^2N (S XI))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	10.9400	10.9400	10.9400	10.9400	10.9398	10.9320
6.2	10.9003	10.9003	10.9003	10.9003	10.9003	10.8910
6.1	10.8644	10.8644	10.8644	10.8644	10.8641	10.8535
6.0	10.8313	10.8313	10.8313	10.8313	10.8311	10.8185

TABLE 19D

ION S XI		CONFIGURATION $2p^2$				
TRANSITION $^1D_2-^3P_0$		WAVELENGTH (Å) 1489.1				
-log (INTENSITY/ n^2N (S XI))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	12.5679	12.5679	12.5679	12.5679	12.5681	12.5970
6.2	12.5230	12.5230	12.5230	12.5230	12.5233	12.5551
6.1	12.4804	12.4804	12.4804	12.4804	12.4806	12.5155
6.0	12.4389	12.4389	12.4389	12.4389	12.4391	12.4772

TABLE 20D

ION Fe XI		CONFIGURATION $3p^4$				
TRANSITION $^1S_0-^3P_1$		WAVELENGTH (Å) 1467.0				
-log (INTENSITY/ n^2N (Fe XI))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.8143	8.8143	8.8143	8.8142	8.8128	8.7020
6.2	8.7707	8.7707	8.7707	8.7707	8.7689	8.6476
6.1	8.7294	8.7294	8.7294	8.7294	8.7275	8.5951
6.0	8.6896	8.6896	8.6896	8.6894	8.6873	8.5428

TABLE 20A

ION Fe XI		CONFIGURATION $3p^4$				
TRANSITION $^1D_2-^3P_2$		WAVELENGTH (Å) 2649.0				
-log (INTENSITY/ n^2N (Fe XI))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.1697	8.1697	8.1697	8.1697	8.1697	8.2048
6.2	8.1224	8.1224	8.1224	8.1224	8.1228	8.1614
6.1	8.0769	8.0769	8.0769	8.0769	8.0773	8.1198
6.0	8.0317	8.0317	8.0317	8.0317	8.0317	8.0788

TABLE 21A

ION Fe XII		CONFIGURATION $3p^3$				
TRANSITION $^2D_{3/2}-^4S_{3/2}$		WAVELENGTH (Å) 2406.0				
-log (INTENSITY/ n^2N (Fe XII))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.0860	8.0860	8.0860	8.0860	8.0872	8.1735
6.2	8.0396	8.0396	8.0396	8.0396	8.0411	8.1354
6.1	7.9951	7.9951	7.9951	7.9952	7.9967	8.0993
6.0	7.9511	7.9511	7.9511	7.9511	7.9529	8.0643

TABLE 20B

ION Fe XI		CONFIGURATION $3p^4$				
TRANSITION $^1D_2-^3P_1$		WAVELENGTH (Å) 3986.8				
-log (INTENSITY/ n^2N (Fe XI))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	9.3377	9.3377	9.3377	9.3377	9.3379	9.3729
6.2	9.2906	9.2906	9.2906	9.2906	9.2908	9.3294
6.1	9.2452	9.2452	9.2452	9.2452	9.2454	9.2880
6.0	9.1997	9.1997	9.1997	9.1997	9.1999	9.2469

TABLE 21B

ION Fe XII		CONFIGURATION $3p^3$				
TRANSITION $^2D_{3/2}-^4S_{3/2}$		WAVELENGTH (Å) 2170.0				
-log (INTENSITY/ n^2N (Fe XII))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.2134	8.2134	8.2134	8.2137	8.2312	8.9161
6.2	8.1671	8.1671	8.1671	8.1671	8.1870	8.9068
6.1	8.1224	8.1224	8.1224	8.1226	8.1445	8.8984
6.0	8.0784	8.0784	8.0784	8.0784	8.1029	8.8913

TABLE 20C

ION Fe XI		CONFIGURATION $3p^4$				
TRANSITION $^1S_0-^1D_2$		WAVELENGTH (Å) 2341.8				
-log (INTENSITY/ n^2N (Fe XI))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	11.0079	11.0079	11.0079	11.0079	11.0065	10.8957
6.2	10.9643	10.9643	10.9643	10.9643	10.9626	10.8413
6.1	10.9232	10.9232	10.9232	10.9230	10.9212	10.7887
6.0	10.8832	10.8832	10.8832	10.8832	10.8810	10.7366

TABLE 21C

ION Fe XII		CONFIGURATION $3p^3$				
TRANSITION $^2P_{3/2}-^4S_{3/2}$		WAVELENGTH (Å) 1242.2				
-log (INTENSITY/ n^2N (Fe XII))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.5903	8.5903	8.5903	8.5900	8.5595	8.1693
6.2	8.5466	8.5466	8.5466	8.5462	8.5122	8.1158
6.1	8.5054	8.5054	8.5054	8.5049	8.4671	8.0649
6.0	8.4654	8.4654	8.4654	8.4649	8.4231	8.0152

TABLE 22A

ION Fe XIII TRANSITION $^1D_2-^3P_1$	CONFIGURATION $3p^2$ WAVELENGTH (Å) 2580.0					
	-log (INTENSITY/ n^2N (Fe XIII))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	8.5959	8.5959	8.5959	8.5959	8.5960	8.6136
6.2	8.5494	8.5494	8.5494	8.5494	8.5495	8.5688
6.1	8.5051	8.5051	8.5051	8.5051	8.5053	8.5259
6.0	8.4609	8.4609	8.4609	8.4609	8.4611	8.4832

TABLE 22B

ION Fe XIII TRANSITION $^1D_2-^3P_2$	CONFIGURATION $3p^2$ WAVELENGTH (Å) 3388.5					
	-log (INTENSITY/ n^2N (Fe XIII))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	8.6288	8.6288	8.6288	8.6288	8.6290	8.6466
6.2	8.5824	8.5824	8.5824	8.5824	8.5825	8.6017
6.1	8.5380	8.5380	8.5380	8.5380	8.5382	8.5588
6.0	8.4938	8.4938	8.4938	8.4938	8.4941	8.5160

TABLE 22C

ION Fe XIII TRANSITION $^1S_0-^1D_2$	CONFIGURATION $3p^2$ WAVELENGTH (Å) 2288.9					
	-log (INTENSITY/ n^2N (Fe XIII))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	11.2373	11.2373	11.2373	11.2373	11.2362	11.1539
6.2	11.1937	11.1937	11.1937	11.1937	11.1925	11.1017
6.1	11.1528	11.1528	11.1528	11.1528	11.1514	11.0518
6.0	11.1129	11.1129	11.1129	11.1129	11.1114	11.0018

TABLE 22D

ION Fe XIII TRANSITION $^1S_0-^3P_1$	CONFIGURATION $3p^2$ WAVELENGTH (Å) 1213.0					
	-log (INTENSITY/ n^2N (Fe XIII))					
	log (n)					
log (T)	0	2	4	6	8	10
6.3	8.8646	8.8646	8.8646	8.8646	8.8636	8.7812
6.2	8.8210	8.8210	8.8210	8.8210	8.8198	8.7290
6.1	8.7801	8.7801	8.7801	8.7800	8.7787	8.6791
6.0	8.7402	8.7402	8.7402	8.7402	8.7388	8.6293

TABLE 23

ION C II TRANSITION $^2P_{3/2}-^2P_{1/2}$	CONFIGURATION $2p$ WAVELENGTH (Å) 1.56×10^6					
	-log (INTENSITY/ n^2N (C II))					
	log (n)					
log (T)	0	2	4	6	8	10
4.8	7.5566	7.9689	9.7636	11.7609	13.7609	15.7609
4.4	7.3652	7.9048	9.7630	11.7613	13.7613	15.7613
4.1	7.2357	7.8716	9.7630	11.7618	13.7618	15.7618
4.0	7.2014	7.8641	9.7632	11.7621	13.7621	15.7621
3.7	7.1511	7.8547	9.7646	11.7634	13.7634	15.7634

TABLE 24

ION N III TRANSITION $^2P_{3/2}-^2P_{1/2}$	CONFIGURATION $2p$ WAVELENGTH (Å) 5.729×10^5					
	-log (INTENSITY/ n^2N (N III))					
	log (n)					
log (T)	0	2	4	6	8	10
5.1	7.8783	7.8970	8.6123	10.5249	12.5239	14.5238
4.6	7.6331	7.6654	8.5770	10.5251	12.5246	14.5246
4.1	7.4065	7.4596	8.5582	10.5268	12.5265	14.5265
4.0	7.3724	7.4299	8.5566	10.5276	12.5273	14.5273
3.7	7.3270	7.3909	8.5572	10.5313	12.5310	14.5310

TABLE 25

ION O IV TRANSITION $^2P_{3/2}-^2P_{1/2}$	CONFIGURATION $2p$ WAVELENGTH (Å) 2.587×10^5					
	-log (INTENSITY/ n^2N (O IV))					
	log (n)					
log (T)	0	2	4	6	8	10
5.4	7.0553	7.0561	7.1393	8.4045	10.3849	12.3847
4.9	6.8082	6.8098	6.9473	8.3968	10.3856	12.3855
4.4	6.5692	6.5720	6.7887	8.3943	10.3877	12.3877
4.0	6.4123	6.4165	6.7036	8.3972	10.3927	12.3927
3.8	6.3785	6.3830	6.6891	8.4017	10.3976	12.3976
3.7	6.3800	6.3845	6.6917	8.4052	10.4011	12.4011

TABLE 26

ION Ne II TRANSITION $^2P_{1/2}-^2P_{3/2}$	CONFIGURATION $2p^5$ WAVELENGTH (Å) 1.278×10^5					
	-log (INTENSITY/ n^2N (Ne II))					
	log (n)					
log (T)	0	2	4	6	8	10
5.0	8.1713	8.1714	8.1740	8.3794	9.9669	11.9600
4.6	7.9813	7.9813	7.9856	8.2740	9.9692	11.9649
4.2	7.8093	7.8094	7.8156	8.2024	9.9804	11.9774
4.0	7.7487	7.7488	7.7562	8.1868	9.9922	11.9898
3.7	7.7409	7.7409	7.7491	8.2059	10.0260	12.0237

TABLE 27

ION Ne VI TRANSITION $^2P_{3/2}-^2P_{1/2}$		CONFIGURATION $2p$ WAVELENGTH (Å) 76320.0				
-log (INTENSITY/ n^2N (Ne VI))						
log (n)						
log (T)	0	2	4	6	8	10
5.8	7.7926	7.7926	7.7934	7.8665	9.0835	11.0606
5.7	7.7432	7.7432	7.7441	7.8251	9.0811	11.0609
5.5	7.6440	7.6440	7.6451	7.7448	9.0775	11.0613
5.4	7.5948	7.5948	7.5960	7.7063	9.0758	11.0614
4.5	7.1708	7.1708	7.1742	7.4239	9.0744	11.0691
4.0	7.0069	7.0069	7.0121	7.3510	9.0927	11.0891
3.7	7.0316	7.0318	7.0370	7.3799	9.1248	11.1215

TABLE 28

ION Mg IV TRANSITION $^2P_{1/2}-^2P_{3/2}$		CONFIGURATION $2p^5$ WAVELENGTH (Å) 44911.0				
-log (INTENSITY/ n^2N (Mg IV))						
log (n)						
log (T)	0	2	4	6	8	10
5.6	8.4355	8.4355	8.4358	8.4426	8.8556	10.6506
5.0	8.1461	8.1461	8.1462	8.1599	8.7722	10.6563
4.4	7.8924	7.8924	7.8926	7.9184	8.7485	10.6838
4.0	7.8044	7.8044	7.8048	7.8405	8.7902	10.7432
3.8	7.8378	7.8378	7.8382	7.8762	8.8484	10.8043

TABLE 29

ION Mg VIII TRANSITION $^2P_{3/2}-^2P_{1/2}$		CONFIGURATION $2p$ WAVELENGTH (Å) 30258.0				
-log (INTENSITY/ n^2N (Mg VIII))						
log (n)						
log (T)	0	2	4	6	8	10
6.2	8.4365	8.4365	8.4365	8.4377	8.5625	9.9768
6.1	8.3875	8.3875	8.3875	8.3891	8.5265	9.9757
5.9	8.2883	8.2883	8.2883	8.2904	8.4568	9.9737
5.8	8.2386	8.2386	8.2387	8.2410	8.4240	9.9729

TABLE 30

ION Si II TRANSITION $^2P_{3/2}-^2P_{1/2}$		CONFIGURATION $3p$ WAVELENGTH (Å) 3.4795×10^5				
-log (INTENSITY/ n^2N (Si II))						
log (n)						
log (T)	0	2	4	6	8	10
4.7	7.5026	7.5257	8.3136	10.2415	12.2407	14.2407
4.4	7.3593	7.3908	8.2954	10.2425	12.2419	14.2419
4.1	7.2316	7.2738	8.2846	10.2448	12.2444	14.2444
4.0	7.1989	7.2444	8.2829	10.2459	12.2456	14.2456
3.7	7.1605	7.2105	8.2856	10.2521	12.2518	14.2518

TABLE 31

ION Si VI TRANSITION $^2P_{1/2}-^2P_{3/2}$		CONFIGURATION $2p^5$ WAVELENGTH (Å) 19603.0				
-log (INTENSITY/ n^2N (Si VI))						
log (n)						
log (T)	0	2	4	6	8	10
6.0	8.3953	8.3953	8.3953	8.3957	8.4246	9.2972
5.6	8.2003	8.2003	8.2003	8.2007	8.2457	9.2801
5.2	8.0121	8.0121	8.0121	8.0128	8.0814	9.2747
4.8	7.8439	7.8439	7.8439	7.8451	7.9469	9.2871

TABLE 32

ION Si X TRANSITION $^2P_{3/2}-^2P_{1/2}$		CONFIGURATION $2p$ WAVELENGTH (Å) 14302.0				
-log (INTENSITY/ n^2N (Si X))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.2596	8.2596	8.2596	8.2596	8.2708	8.8264
6.2	8.2099	8.2099	8.2099	8.2099	8.2227	8.8137
6.1	8.1610	8.1610	8.1610	8.1614	8.1756	8.8022
6.0	8.1118	8.1118	8.1118	8.1120	8.1280	8.7917

TABLE 33

ION S IV TRANSITION $^2P_{3/2}-^2P_{1/2}$		CONFIGURATION $3p$ WAVELENGTH (Å) 1.0521×10^5				
-log (INTENSITY/ n^2N (S IV))						
log (n)						
log (T)	0	2	4	6	8	10
5.3	7.9392	7.9395	7.9534	8.5753	10.4625	12.4612
5.2	7.8900	7.8901	7.9058	8.5645	10.4624	12.4613
5.0	7.7924	7.7927	7.8123	8.5463	10.4630	12.4621
4.8	7.6970	7.6973	7.7217	8.5318	10.4641	12.4633
4.2	7.4356	7.4361	7.4806	8.5109	10.4732	12.4728
4.0	7.3788	7.3795	7.4305	8.5136	10.4808	12.4804
3.7	7.3810	7.3816	7.4350	8.5343	10.5031	12.5027

TABLE 34

ION S VIII TRANSITION $^2P_{1/2}-^2P_{3/2}$		CONFIGURATION $2p^5$ WAVELENGTH (Å) 9917.9				
-log (INTENSITY/ n^2N (S VIII))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.6934	8.6934	8.6934	8.6934	8.6954	8.8562
6.1	8.5957	8.5957	8.5957	8.5957	8.5981	8.7919
5.9	8.4983	8.4983	8.4983	8.4983	8.5016	8.7334
5.7	8.4031	8.4031	8.4031	8.4033	8.4071	8.6821

TABLE 35

ION S XII		CONFIGURATION $2p$				
TRANSITION $^2P_{3/2}-^2P_{1/2}$		WAVELENGTH (Å) 7536.0				
-log (INTENSITY/ n^2N (S XII))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.4465	8.4465	8.4465	8.4465	8.4476	8.5511
6.2	8.3974	8.3974	8.3974	8.3974	8.3987	8.5130
6.1	8.3494	8.3494	8.3494	8.3494	8.3509	8.4769
6.0	8.3009	8.3009	8.3009	8.3009	8.3026	8.4414

TABLE 37

ION Fe XIV		CONFIGURATION $3p$				
TRANSITION $^2P_{3/2}-^2P_{1/2}$		WAVELENGTH (Å) 5302.9				
-log (INTENSITY/ n^2N (Fe XIV))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	7.8530	7.8530	7.8530	7.8530	7.8536	7.9162
6.2	7.8043	7.8043	7.8043	7.8043	7.8051	7.8745
6.1	7.7569	7.7569	7.7569	7.7569	7.7578	7.8347
6.0	7.7091	7.7091	7.7091	7.7091	7.7101	7.7953

TABLE 36

ION Fe X		CONFIGURATION $3p^5$				
TRANSITION $^2P_{1/2}-^2P_{3/2}$		WAVELENGTH (Å) 6374.5				
-log (INTENSITY/ n^2N (Fe X))						
log (n)						
log (T)	0	2	4	6	8	10
6.3	8.0667	8.0667	8.0667	8.0667	8.0675	8.1461
6.2	8.0177	8.0177	8.0177	8.0177	8.0188	8.1059
6.0	7.9217	7.9217	7.9217	7.9218	7.9229	8.0298
5.8	7.8274	7.8274	7.8274	7.8274	7.8289	7.9590

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