AN ULTRAVIOLET MULTIPLET TABLE

The Spectra of Hydrogen, Helium, Lithium, Beryllium, Boron, Carbon, Nitrogen, Oxygen, Fluorine, Neon, Sodium, Magnesium, Aluminum, Silicon, Phosphorus, Sulfur, Chlorine, Argon, Potassium, Calcium, Scandium, Titanium, and Vanadium

Circular 488, Section 1

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

UNITED STATES DEPARTMENT OF COMMERCE, Charles Sawyer, Secretary
NATIONAL BUREAU OF STANDARDS, E. U. Condon, Director

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Circular of the National Bureau of Standards 488, Section 1

Issued April 28, 1950

For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.
Price 55 cents

Foreword

In 1945, when the manuscript of the Revised Edition of "A Multiplet Table of Astrophysical Interest" (see footnote 1) was being prepared, a violet limit of wavelength near 3000 A was imposed because the ozone in our atmosphere absorbs radiation of shorter wavelength. At that time, however, the suggestion was made that an extension of the Table to include multiplets in the far ultraviolet was needed. The astrophysical importance of ultraviolet transitions in the spectra of abundant elements in the interpretation of observed nebular and stellar lines was well known from the work of Bowen and others. A further impetus to such a program was provided with the advent of rockets, since it is now possible to observe the solar spectrum in the region of shorter wavelengths. Recently two films that record the solar spectrum to about 2300 A were recovered from rocket flights, and attempts are being made to extend the observations farther to the violet.

The earlier astrophysical multiplet table has proved to be inadequate to meet present needs, chiefly because of its limited range of wavelength. In order to make more complete data available to those engaged in rocket research, to those working on spectrochemical analysis, and to scientific investigators in other fields, as well as to the astrophysicist, the present ultraviolet extension to it is being prepared.

This work is being done in conjunction with the program on "Atomic Energy Levels." The present Section includes selected spectra of the first 23 elements of the periodic table, H through V, covering the same elements as Volume I of *Atomic Energy Levels* (see footnote 6). Multiplets of 79 spectra are included, but, as before, no attempt has been made to list all known classified lines of each spectrum.

The arrangement of the present Table follows in detail that of the Revised Multiplet Table. Similarly, upon completion of the tabulation of the multiplets, a Finding List will be prepared containing all lines in order of wavelength.

The author of this Table has had the benefit of the expert advice of W. F. Meggers, Chief of the Spectroscopy Section of the Division of Atomic and Radiation Physics, under whose direction the program is being carried on. She has also received cordial collaboration from a number of institutions in making the selection of lines to be included, particularly from the Mt. Wilson and Yerkes Observatories.

WASHINGTON, D. C., April 1950.

E. U. CONDON, *Director.*

Contents

1. Introduction

The ink was scarcely dry on the Revised Multiplet Table [1] published in 1945, when astrophysicists were compelled to extend their spectroscopic horizon to include the ultraviolet solar spectrum, heretofore masked by the ozone in the earth's atmosphere. The present ultraviolet limit of the solar spectrum films taken from a V–2 rocket is near 2300 A,[2] and efforts are being made to extend the observations to regions of shorter waves.

During the work on the R M T, however, requests for ultraviolet multiplets were received. The important rôle of selected ultraviolet lines in producing the nebular lines has been fully discussed by Bowen,[3] as, for example, the line of He II at 303.7 A, those of O III at 303.7 A and 374.4 A, and the pair at 374.4 A due to N III. Swings [4] has commented that "certain forbidden transitions that are not directly observable may play a rôle in astronomy, as, for example, by fluorescence excitation, ionization or dissociation." The astrophysical importance of ultraviolet lines of abundant elements has more recently been stressed by Merrill [5] and others, whose work illustrates that "peculiarities" in a number of stellar spectra can be attributed to selected ultraviolet transitions. The full significance of these "peculiarities" and the mechanisms that cause them have doubtless not yet been completely realized. For these reasons, and, also, in order to make more complete data available to those working on spectrochemical analysis, the present Ultraviolet Supplement to the R M T is being prepared.

2. Scope of the Ultraviolet Multiplet Table

It is not the purpose of the writer to record here all multiplets involving lines of wavelength shorter than about 3000 A, the limit of the R M T. The limitation of the Table to lines of astrophysical interest presents a difficult problem of selection from the vast amount of existing data. From the experience gained in the identification of solar lines in the regions of longer wavelength, she has attempted to include all important lines to be expected in a high-dispersion ultraviolet solar spectrum, in addition to those needed to interpret the existing rocket solar films. She has had, also, the benefit of detailed suggestions from I. S. Bowen, P. W. Merrill, and others at the Mount Wilson Observatory. Bowen has generously furnished a list of the strong lines of spectra of elements abundant in the sun and similar stars. This list was made in connection with his study of fluorescence phenomena in astronomical spectra. It has been a valuable guide in the selection of both the spectra and lines of the lighter elements (H through Ca) to be included in the Table. A preliminary draft of the Table was submitted to the Mount Wilson and Yerkes Observatories for criticism. As a result of comments received some additional lines have been included.

In compiling an Ultraviolet Multiplet Table it is difficult to satisfy the present and future needs of all users. In view of the probable shortcomings of the present Table for those who desire more extensive lists of lines, it is suggested that workers consult the volumes of Atomic Energy Levels.[6] From this work one can obtain further literature references and also determine for a given spectrum both the positions and the probable percentage of lines omitted.

[1] Contributions from the Princeton University Observatory No. 20 (1945). (Here referred to as R M T.)

[2] J. J. Hopfield and H. E. Clearman, Jr., Phys. Rev. **73**, 877 (1948). E. Durand, J. J. Oberly, and R. Tousey, Astroph. J. **109**, 1 (1949).

[3] I. S. Bowen, Astroph. J. **81**, 1 (1935); Rev. Mod. Phys. **8**, No. 2, 55 (1936).

[4] P. Swings, Letter (May 1945).

[5] P. W. Merrill, Mt. Wilson Contr. No. 735; Astroph. J. **106**, 274 (1947).

[6] C. E. Moore, Circ. Nat. Bur. Std. 467, Vol. I (1949); Vol. II in press.

3. Arrangement of the Table

The form of arrangement is identical with that of the R M T. Under each spectrum the first line contains the ionization potential; the grade of analysis; the grade denoting the relative number of classified lines included as compared with the total number classified in the ultraviolet; and the date of completion of the manuscript. The limit is also included for three spectra, H, He I, and He II.

The ionization potential is copied from the R M T except for A IV and Sc I, where improved values are entered. As in the R M T, the limit in cm^{-1} has been multiplied by the factor 0.00012345 to obtain the tabulated ionization potential, which is expressed in electron volts. Birge's revised conversion factor 0.00012395,[7] has been used to calculate the ionization potentials recorded in "Atomic Energy Levels", which introduces a discordance in the two publications. For the reasons stated in some detail on page xvi of the R M T, and in spite of this inconsistency, it has appeared advisable to use the same factor in both multiplet tables.

The analyses of atomic spectra have recently been regraded by W. F. Meggers and the writer in connection with the program on the compilation of atomic energy levels. The revised grades are entered in the Ultraviolet Multiplet Table. As before, the grades range from A to E, grade A indicating that the analysis is essentially complete, and grade E that structure has been recognized, but is limited to a single multiplet or transition.

Similar grades are used in the entry "List A, List B, etc." to denote the relative numbers of classified lines listed here as compared with the total number classified in the ultraviolet, A denoting that all classified lines in the ultraviolet are listed, and D that only a few of the leading ones are tabulated.

The present table includes only a limited number of the spectra of the first 23 elements, H through V, 79 in all. Because the work is still in progress, it has been decided to include with each spectrum the references used, rather than to prepare one large bibliography at the end, as was done in the R M T. These references precede the multiplets of each spectrum. The letters on the left, A, B, C, etc. preceding the reference, indicate the source used for the wavelength quoted in the Table; they are repeated in column 2 under "Ref." For the more complex spectra the letters and corresponding references denoting the source are copied from the R M T, as for example in Ti I. Here, all the references listed previously were not needed and are not repeated. Consequently some letters do not appear, since only those references needed for ultraviolet multiplets are repeated.

The references are followed by letters indicating what was taken from each paper for the present compilation. Three types of letters are introduced for this purpose, "W L", "I", and "T", denoting, respectively, wavelength, intensity, and terms, the last referring to the analysis of the spectrum. If the intensities from a reference are entered in parentheses in the table, parentheses are used around the "I" following the reference. Those papers used only for analysis or intensity follow the ones used for wavelength, and are not preceded by the letters denoting the source as described above. For example, in C II, Edlén's 1934 paper was first choice for wavelength, as denoted by "A" preceding the reference. Every wavelength taken from this paper has "A" entered in column 2 of the Table. Reference "A" was used for intensity and analysis as well as for wavelength, and consequently is followed by the letters "W L", "I", and "T". The last reference was used only for analysis, as denoted by "T" following the reference.

The columns in the Table are identical with those of the R M T, namely, 1, the laboratory wavelength; 2, the reference from which the wavelength was taken; 3, the estimated intensity of the line; 4 and 5, the low- and high-excitation potentials, respectively; 6, the respective J-values of the low and high levels involved in the production of the line; and, finally, 7, the multiplet designation of the line, complete except for the J-values in column 6.

Column 1, wavelength. With few exceptions these are observed laboratory wavelengths, in standard air for lines longer than 2000 A, and in vacuum for those of shorter wavelength. For H and He II the positions of the lines *calculated* from the series have been adopted. J. E. Mack has kindly furnished these data, using term values that take into account the fine structure separation of the $2s\ ^2S_{1/2}$ and $2p\ ^2P^o_{1/2}$ levels as observed by W. E. Lamb, Jr., R. E. Retherford, and M. Skinner.[8] For further details see, Atomic Energy Levels, Volume I.[9] In O I Edlén's calculated positions are used for the lines from Reference B. As in the R M T, predicted positions are entered for lines that are masked. In such cases the wavelength is preceded by the letter "m". The letter "P"is entered in the Reference column to denote that the position is predicted, and the masking element is named in column 3.

Column 2, reference (discussed above).

Column 3, intensity. When two different intensity scales are used, or when the weaker members of a multiplet have intensities taken from a reference different from that used for the leading lines, the intensity is given in parentheses. All intensities are eye estimates except those of H and of He II. For these two spectra theoretical intensities calculated by J. C. Brennan under the direction of J. E. Mack and F. T. Adler are entered.[10] These computations were made especially for inclusion here, through the kindness of J. E. Mack and his associates.

[7] R. T. Birge, Rev. Mod. Phys. 13, No. 4, 237 (1941); Reports on Progress in Physics 8, 131 (1941).

[8] W. E. Lamb, Jr. and R. E. Retherford, Bul. Am. Phys. Soc. 24, No. 1, 59 (1949) (H); M. Skinner and W. E. Lamb, Jr., Bul. Am. Phys. Soc. 24, No. 1, 59 (1949) (He II).

[9] C. E. Moore, Circ. Nat. Bur. Std. No. 467, Vol. I, 1 (1949).

[10] Letter (April 1949).

Columns 4 and 5, excitation potentials. As in the R M T, all excitation potentials have been calculated by multiplying the level values involved in the transition producing a given line, by the factor 0.00012345, where the levels start with the ground state *zero*. If the terms of different multiplicities in a given spectrum are not connected by observed intersystem combinations or by good series, parentheses are entered around all excitation potentials in the multiplets involving the terms in question, to indicate that there is an uncertainty in the recorded values.

Columns 6 and 7, J-values and multiplet designations. The last two columns give the complete multiplet designations of the lines, *J*-values being entered in column 6 for convenience, and the rest of the designation in column 7. The number in parentheses under the designation in column 7 indicates the multiplet number, as in the R M T. These multiplet numbers will appear with each wavelength in the Finding List, which will form the final Section of the Ultraviolet Multiplet Table.

A detailed description of the types of spectroscopic notation used is given in the R M T and also in the Volume I of "Atomic Energy Levels," and will not be repeated here. Only one special type of notation deserves mention. For spectra of the inert gas type (Ne I, Na II, Mg III, A I, K II, Ca III, Sc IV in the present Section) the pair-coupling notation has been substituted for that used by Paschen and others. The Table on page xvii of the R M T and the column giving Paschen's notation in "Atomic Energy Levels" should suffice for cross reference to the earlier kinds of notation used for Ne I-like spectra.

4. Symbols

The symbols adopted here are identical with those used in the R M T (except for the designation of *raie ultime*) as follows:

* preceding the wavelength denotes that the line is a blend. If no symbol follows the wavelength the line is blended with another in the same spectrum. This symbol is also used in the intensity column when the intensity is blended.

§ follows a wavelength (an asterisk always preceding) to denote that a line in the spectrum of the neutral atom of a given element is blended with one in the first spark spectrum of that element.

§§ is a special symbol following the wavelength (an asterisk always preceding) used for blends not covered by the above symbols, and explained in footnotes.

‡ follows the wavelength of the *raie ultime*. This information has been taken from the papers by Meggers giving the strongest lines of spectra of neutral and singly ionized atoms.[11]

† follows the multiplet designation to call attention to the fact that not all lines observed in the multiplet are listed here.

m precedes the wavelength when the line is masked, as described above.

5. Acknowledgments

In compiling these data the writer has profited greatly by useful suggestions from physicists and astrophysicists. At the Mount Wilson Observatory, I. S. Bowen and P. W. Merrill have consulted their colleagues and formulated very helpful comments regarding the scope and content of the Table. The manuscript has also been submitted to the director of the Yerkes Observatory, where O. Struve and his staff have kindly examined it in advance of publication. J. E. Mack and his collaborators have carried out extensive calculations of intensity data on H and He II. Their efforts to furnish the results especially for inclusion here are greatly appreciated. Special thanks are due W. F. Meggers and C. C. Kiess for their very helpful and authoritative suggestions and cordial collaboration.

The Director of the Bureau, E. U. Condon, has generously supported this large program.

Much of the material has been compiled by Mrs. Isabel D. Murray, whose competence and care are largely responsible for the accuracy in the details of this work. Similar care has been exercised by J. L. Mathusa and his staff in the Publications Section in the troublesome task of publishing these data. The writer records here her grateful thanks to all whose hearty cooperation has made this extensive project possible. As the work progresses she will welcome suggestions from the users of this Table.

[11] W. F. Meggers, J. Opt. Soc. Am. **31**, 44 (1941) (first spectra); **31**, 606 (1941) (singly ionized atoms).

HYDROGEN

H

I P 13.54 Anal A List B April 1949

Limit **109678.758**

REFERENCES

A Wavelengths calculated from term values derived by J. E. Mack from the series formula—See *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. I, p. 2 (1949). W L, T

J. G. Brennan, unpublished material (April 1949). (Theoretical intensities calculated under the direction of J. E. Mack and F. T. Adler, for inclusion here. "The unit is micromicrowatts per excited atom")

H **H**

λ I A	Ref	Int	E P Low	E P High	J	Multiplet (No.)	I A	Ref	Int	E P Low	E P High	J	Multiplet (No.)
Vac							Vac						
1215.668‡	A	2047	0.00	10.15	½—1½	$1s\ ^2S-2p\ ^2P^\circ$ (1)	919.351	A	20	0.00	13.43	½—	$1s\ ^2S-11p\ ^2P^\circ$ (10)
1215.674	A	1023	0.00	10.15	½— ½								
1025.722	A	648	0.00	12.04	½—1½	$1s\ ^2S-3p\ ^2P^\circ$ (2)	918.129	A	16	0.00	13.45	½—	$1s\ ^2S-12p\ ^2P^\circ$ (11)
1025.723	A	324	0.00	12.04	½— ½								
972.537	A	278	0.00	12.69	½—1½	$1s\ ^2S-4p\ ^2P^\circ$ (3)	917.181	A	12	0.00	13.46	½—	$1s\ ^2S-13p\ ^2P^\circ$ (12)
		139	0.00	12.69	½— ½								
949.743	A	144	0.00	13.00	½—1½	$1s\ ^2S-5p\ ^2P^\circ$ (4)	916.429	A	10	0.00	13.47	½—	$1s\ ^2S-14p\ ^2P^\circ$ (13)
		72	0.00	13.00	½— ½								
937.804	A	84	0.00	13.16	½—1½	$1s\ ^2S-6p\ ^2P^\circ$ (5)	915.824	A	8	0.00	13.48	½—	$1s\ ^2S-15p\ ^2P^\circ$ (14)
		42	0.00	13.16	½— ½								
930.748	A	53	0.00	13.26	½—1½	$1s\ ^2S-7p\ ^2P^\circ$ (6)	915.329	A	7	0.00	13.49	½—	$1s\ ^2S-16p\ ^2P^\circ$ (15)
		26	0.00	13.26	½— ½								
926.226	A	35	0.00	13.33	½—1½	$1s\ ^2S-8p\ ^2P^\circ$ (7)	914.919	A	6	0.00	13.49	½—	$1s\ ^2S-17p\ ^2P^\circ$ (16)
		18	0.00	13.33	½— ½								
923.150	A	25	0.00	13.37	½—1½	$1s\ ^2S-9p\ ^2P^\circ$ (8)	914.576	A	5	0.00	13.50	½—	$1s\ ^2S-18p\ ^2P^\circ$ (17)
		12	0.00	13.37	½— ½								
920.963	A	27	0.00	13.40	½—	$1s\ ^2S-10p\ ^2P^\circ$ (9)							

HELIUM

He I

I P 24.48 Anal A List C July 1947

Limit 198305 ± 15

REFERENCES

A F. Paschen, Sitz. Berlin Akad. Wiss. **30,** 662 (1929). W L, T

B J. C. Boyce and H. A. Robinson, J. Opt. Soc. Am. **26,** 133 (1936). W L

C F. Paschen und R. Götze, *Seriengesetze der Linienspektren* p. 28 (Julius Springer, Berlin, 1922). W L, (I), T

T. Lyman, Astroph. J. **60,** 1 (1924). I

He I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac 591. 420	A	3	0. 00	20. 87	0—1	$1s^2\ ^1S-2p\ ^3P^\circ$ (1)
584. 331‡	B	10	0. 00	21. 13	0—1	$1s^2\ ^1S-2p\ ^1P^\circ$ (2)
537. 024	B	7	0. 00	22. 99	0—1	$1s^2\ ^1S-3p\ ^1P^\circ$ (3)
522. 208	B	5	0. 00	23. 64	0—1	$1s^2\ ^1S-4p\ ^1P^\circ$ (4)
515. 612	B	4	0. 00	23. 94	0—1	$1s^2\ ^1S-5p\ ^1P^\circ$ (5)
512. 094	B	3	0. 00	24. 11	0—1	$1s^2\ ^1S-6p\ ^1P^\circ$ (6)
509. 993	B	2	0. 00	24. 21	0—1	$1s^2\ ^1S-7p\ ^1P^\circ$ (7)

He I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac 508. 639	B	1	0. 00	24. 27	0—1	$1s^2\ ^1S-8p\ ^1P^\circ$ (8)
507. 712	B		0. 00	24. 31	0—1	$1s^2\ ^1S-9p\ ^1P^\circ$ (9)
507. 053	B		0. 00	24. 35	0—1	$1s^2\ ^1S-10p\ ^1P^\circ$ (10)
		------	------	-------		
Air 2945. 104	C	(6)	19. 73	23. 92	1—	$2s\ ^3S-5p\ ^3P^\circ$ (11)
2829. 073	C	(4)	19. 73	24. 10	1—	$2s\ ^3S-6p\ ^3P^\circ$ (12)

He II

I P 54.17 Anal A List B April 1949

Limit 438908.670

REFERENCES

A Wavelengths calculated from term values derived by J. E. Mack from the series formula—See *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. I p. 7 (1949). W L, T
J. G. Brennan, unpublished material (April 1949). (Theoretical intensities calculated under the direction of J. E. Mack and F. T. Adler, for inclusion here. "The unit is micromicrowatts per excited atom")

He II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
303. 781‡	A	32753	0. 00	40. 64	½—1½	$1s\ ^2S - 2p\ ^2P^\circ$
303. 786	A	16376	0. 00	40. 64	½— ½	(1)
256. 317	A	10363	0. 00	48. 16	½—1½	$1s\ ^2S - 3p\ ^2P^\circ$
256. 318	A	5182	0. 00	48. 16	½— ½	(2)
243. 027	A	4456	0. 00	50. 80	½—1½	$1s\ ^2S - 4p\ ^2P^\circ$
		2228	0. 00	50. 80	½— ½	(3)
237. 331	A	2300	0. 00	52. 02	½—1½	$1s\ ^2S - 5p\ ^2P^\circ$
		1150	0. 00	52. 02	½— ½	(4)
234. 347	A	1337	0. 00	52. 68	½—1½	$1s\ ^2S - 6p\ ^2P^\circ$
		668	0. 00	52. 68	½— ½	(5)
232. 584	A	844	0. 00	53. 08	½—1½	$1s\ ^2S - 7p\ ^2P^\circ$
		422	0. 00	53. 08	½— ½	(6)
231. 454	A	566	0. 00	53. 34	½—1½	$1s\ ^2S - 8p\ ^2P^\circ$
		283	0. 00	53. 34	½— ½	(7)
230. 686	A	398	0. 00	53. 51	½—1½	$1s\ ^2S - 9p\ ^2P^\circ$
		199	0. 00	53. 51	½— ½	(8)
230. 139	A	291	0. 00	53. 64	½—1½	$1s\ ^2S - 10p\ ^2P^\circ$
		145	0. 00	53. 64	½— ½	(9)
229. 736	A	218	0. 00	53. 74	½—1½	$1s\ ^2S - 11p\ ^2P^\circ$
		109	0. 00	53. 74	½— ½	(10)

He II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
229. 431	A	168	0. 00	53. 81	½—1½	$1s\ ^2S - 12p\ ^2P^\circ$
		84	0. 00	53. 81	½— ½	(11)
1640. 474	A	939	40. 64	48. 16	1½—2½	$2p\ ^2P^\circ - 3d\ ^2D$
1640. 332	A	522	40. 64	48. 16	½—1½	(12)
1640. 490	A	104	40. 64	48. 16	1½—1½	
1215. 171	A	404	40. 64	50. 80	1½—2½	$2p\ ^2P^\circ - 4d\ ^2D$
1215. 088	A	225	40. 64	50. 80	½—1½	(13)
1215. 175	A	45	40. 64	50. 80	1½—1½	
1084. 975	A	207	40. 64	52. 02	1½—2½	$2p\ ^2P^\circ - 5d\ ^2D$
1084. 908	A	115	40. 64	52. 02	½—1½	(14)
1025. 302	A	120	40. 64	52. 68	1½—2½	$2p\ ^2P^\circ - 6d\ ^2D$
1025. 241	A	66	40. 64	52. 68	½—1½	(15)
992. 391	A	75	40. 64	53. 08	1½—2½	$2p\ ^2P^\circ - 7d\ ^2D$
992. 334	A	42	40. 64	53. 08	½—1½	(16)
972. 138	A	50	40. 64	53. 34	1½—2½	$2p\ ^2P^\circ - 8d\ ^2D$
972. 083	A	28	40. 64	53. 34	½—1½	(17)
958. 724	A	35	40. 64	53. 51	1½—2½	$2p\ ^2P^\circ - 9d\ ^2D$
958. 671	A	20	40. 64	53. 51	½—1½	(18)
949. 354	A	26	40. 64	53. 64	1½—2½	$2p\ ^2P^\circ - 10d\ ^2D$
949. 301	A	14	40. 64	53. 64	½—1½	(19)

LITHIUM

Li I

I P 5.37 Anal A List D Aug. 1947

REFERENCES

A R. W. France, Proc. Roy. Soc. London [A] **129**, 354 (1930). W L
A. Fowler, *Report on Series in Line Spectra* p. 97 (Fleetway Press, London, 1922). W L, I, T
H. Kayser, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by R. Ritschl, p. 185 (Julius Springer, Berlin, 1939). I

Li I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air 2741. 204	A	10R	0. 00	4. 50	½—	$2s\ ^2S-4p\ ^2P^\circ$ (1)
2562. 312	A	5R	0. 00	4. 82	½—	$2s\ ^2S-5p\ ^2P^\circ$ (2)
2475. 061	A	4R	0. 00	4. 99	½—	$2s\ ^2S-6p\ ^2P^\circ$ (3)
2425. 426	A	3R	0. 00	5. 09	½—	$2s\ ^2S-7p\ ^2P^\circ$ (4)
2394. 386	A	1R	0. 00	5. 15	½—	$2s\ ^2S-8p\ ^2P^\circ$ (5)

Li II

I P 75.31 Anal B List D Aug. 1947

REFERENCES

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 31 (1934). W L, T
B S. Werner, *Dissertation*, p. 60 (H. Aschehoug & Co., Dansk. Forlag, Kobenhavn, 1927). W L, I, T
H. Kayser, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by R. Ritschl, p. 267, 268 (Julius Springer, Berlin, 1939). I

Li II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 199. 282‡	A	3	0. 00	61. 95	0—1	$1s^2\ ^1S-2p\ ^1P^\circ$ (1)
178. 015	A	1	0. 00	69. 35	0—1	$1s^2\ ^1S-3p\ ^1P^\circ$ (2)
171. 582	A	1	0. 00	71. 95	0—1	$1s^2\ ^1S-4p\ ^1P^\circ$ (3)
Air 2674. 4	B	2	68. 48	73. 10	1—	$3s\ ^3S-5p\ ^3P^\circ$ (4)

BERYLLIUM

Be I

I P 9.28 Anal A List C Aug. 1947

REFERENCES

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B F. Paschen und P. G. Kruger, Ann. der Phys. [5] **8**, 1011 (1931). W L, I, T

Be I

I A	Ref	Int	E P		*J*	Multiplet (No)
			Low	High		
Air 2348. 612‡	A	50	0. 00	5. 25	0−1	$2s^2\ ^1S - 2p\ ^1P^\circ$ (1)
2650. 636	B	10	2. 71	7. 37	2−2	$2p\ ^3P^\circ - 2p^2\ ^3P$† (2)
2650. 613	B	8	2. 71	7. 37	1−1	
2650. 779	B	10	2. 71	7. 37	2−1	
2650. 470	B	10	2. 71	7. 37	1−2	
2494. 735	B	20	2. 71	7. 66	2−	$2p\ ^3P^\circ - 3d\ ^3D$ (3)
2494. 590	B	12	2. 71	7. 66	1−1, 2	
2494. 547	B	8	2. 71	7. 66	0−1	
2986. 09	B	10	6. 43	10. 56	1−2	$3s\ ^3S - 3s\ ^3P^\circ$ (4)

Be II

I P 18.13 Anal A List D Aug. 1947

REFERENCES

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Be II

I A	Ref	Int	E P		*J*	Multiplet (No)
			Low	High		
Vac 1036. 271	A	8	0. 00	11. 91	½−1½	$2s\ ^2S - 3p\ ^2P^\circ$ (1)
842. 057	A	7	0. 00	14. 66	½−	$2s\ ^2S - 4p\ ^2P^\circ$ (2)
1776. 339	B	8	3. 94	10. 89	1½− ½	$2p\ ^2P^\circ - 3s\ ^2S$ (3)
1776. 118	B	6	3. 94	10. 89	½− ½	
1512. 451	B	10	3. 94	12. 10	1½−	$2p\ ^2P^\circ - 3d\ ^2D$ (4)
1512. 303	B	8	3. 94	12. 10	½−1½	
1197. 19	A	10	3. 94	14. 25	1½− ½	$2p\ ^2P^\circ - 4s\ ^2S$ (5)
Air 2453. 89	A	3	10. 89	15. 92	½−	$3s\ ^2S - 5p\ ^2P^\circ$ (6)
2728. 83	A	4	12. 10	16. 63		$3d\ ^2D - 6f\ ^2F^\circ$ (7)

BORON

B I

I P 8.26 Anal B List D Aug. 1947

REFERENCES

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B I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2497. 724‡	A	10R	0. 00	4. 94	1½— ½	$2p\ ^2P^\circ - 3s\ ^2S$
2496. 773	A	8R	0. 00	4. 94	½— ½	(1)
2089. 57	B	(10n)	0. 00	5. 91	1½—2½	$2p\ ^2P^\circ - 2p^2\ ^2D$
2088. 84	B	(9n)	0. 00	5. 91	½—1½	(2)
Vac						
1826. 40	C	(20h)	0. 00	6. 76	1½—2½	$2p\ ^2P^\circ - 3d\ ^2D$
1825. 89	C	(15h)	0. 00	6. 76	½—1½	(3)

B II

I P 25.02 Anal B List D Aug. 1947

REFERENCES

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B II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1362. 460‡	A	5	0. 00	9. 06	0—1	$2s^2\ ^1S - 2p\ ^1P^\circ$ (1)
693. 952	A	2	0. 00	17. 79	0—1	$2s^2\ ^1S - 3p\ ^1P^\circ$ (2)
*1623. 99	A	5	4. 61	12. 21	2—2	$2p\ ^3P^\circ - 2p^2\ ^3P$† (3)
					1—1	
1624. 37	A	4	4. 61	12. 21	2—1	
1623. 57	A	4	4. 61	12. 21	1—2	
Air						
2395. 06	A	5	12. 64	17. 79	2—1	$2p^2\ ^1D - 3p\ ^1P^\circ$ (4)

CARBON

C I

I P 11.20 Anal A List B Sept. 1947

REFERENCES

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B F. Paschen and G. Kruger, Ann. der Phys. [5] **7,** 1 (1930). W L, I, T
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C I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2967. 224	A	5	0. 01	4. 16	2−2	$2p^2\ ^3P-2p^3\ ^5S°$
2964. 846	A	2	0. 00	4. 16	1−2	(1)
Vac						
1656. 998‡	A	10	0. 01	7. 46	2−2	$2p^2\ ^3P-3s\ ^3P°$
1657. 368	A	2	0. 00	7. 45	1−1	(2)
1658. 113	A	5	0. 01	7. 45	2−1	
1657. 891	A	4	0. 00	7. 45	1−0	
1656. 255	A	5	0. 00	7. 46	1−2	
1656. 918	A	3	0. 00	7. 45	0−1	
1561. 40	C	20d	0. 01	7. 91	2−3	$2p^2\ ^3P-2p^3\ ^3D°$
*1560. 702	C	15d	0. 00	7. 91	1−2	(3)
1560. 313	C	8d	0. 00	7. 91	0−1	
1561. 292	D	(2)	0. 01	7. 91	2−2	
*1650. 702	C	15d	0. 00	7. 91	1−1	
1329. 58	D	(6)	0. 01	9. 29	2−	$2p^2\ ^3P-2p^3\ ^3P°$
1329. 099	C	5	0. 00	9. 29	1−	(4)
1328. 820	C	3	0. 00	9. 29	0−1	
*1280. 340	D	6	0. 01	9. 65	2−2	$2p^2\ ^3P-4s\ ^3P°$
			0. 00	9. 64	1−1	(5)
1280. 892	B	4	0. 01	9. 64	2−1	
1280. 646	B	2	0. 00	9. 64	1−0	
1279. 898	B	5	0. 00	9. 65	1−2	
1280. 154	B	2	0. 00	9. 64	0−1	
1279. 251	B	6	0. 01	9. 66	2−3	$2p^2\ ^3P-3d\ ^3F°$ (6)
1277. 617	B	10	0. 01	9. 67	2−3	$2p^2\ ^3P-3d\ ^3D°$
1277. 274	D	9	0. 00	9. 67	1−2	(7)
1277. 154	B	2	0. 00	9. 67	0−1	
1277. 766	B	3	0. 01	9. 67	2−2	
1274. 131	B	5	0. 01	9. 69	2−3	$2p^2\ ^3P-3d\ ^1F°$ (8)
1261. 560	D	8	0. 01	9. 79	2−2	$2p^2\ ^3P-3d\ ^3P°$
1260. 955	D	6	0. 00	9. 79	1−1	(9)
1261. 12	D	7	0. 00	9. 79	1−2	
1260. 745	B	4	0. 00	9. 79	0−1	

C I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1194. 494	B	**7**	0. 01	10. 34	2−3	$2p^2\ ^3P-4d\ ^3F°$ (10)
1193. 284	B	10	0. 01	10. 35	2−3	$2p^2\ ^3P-4d\ ^3D°$
1193. 005	B	8	0. 00	10. 35	1−2	(11)
1192. 923	B	2	0. 00	10. 35	0−1	
1193. 460	B	3	0. 01	10. 35	2−2	
1192. 480	B	2	0. 00	10. 36	1−1	$2p^2\ ^3P-5s\ ^1P°$ (12)
1191. 855	B	1	0. 01	10. 36	2−3	$2p^2\ ^3P-4d\ ^1F°$ (13)
1189. 660	B	6	0. 01	10. 38	2−2	$2p^2\ ^3P-4d\ ^3P°$
1189. 074	B	3	0. 00	10. 38	1−1	(14)
1189. 556	B	4	0. 01	10. 38	2−1	
1188. 935	B	1	0. 00	10. 38	0−1	
1159. 004	B	5	0. 01	10. 66	2−3	$2p^2\ ^3P-5d\ ^3F°$
1158. 729	B	3	0. 00	10. 66	1−2	(15)
1158. 107	B	8	0. 01	10. 67	2−3	$2p^2\ ^3P-5d\ ^3D°$
1158. 017	B	7	0. 00	10. 66	1−2	(16)
1158. 398	B	2	0. 01	10. 66	2−2	
1157. 825	B	3	0. 01	10. 67	2−1	$2p^2\ ^3P-6s\ ^1P°$?
1157. 391	B	2	0. 00	10. 67	1−1	(17)
1157. 333	B	1	0. 01	10. 67	2−3	$2p^2\ ^3P-5d\ ^1F°$ (18)
1156. 619	B	5	0. 01	10. 68	2−2	$2p^2\ ^3P-5d\ ^3P°$
1156. 059	B	2	0. 00	10. 68	1−1	(19)
1156. 502	B	1	0. 01	10. 68	2−1?	
1155. 839	B	1	0. 00	10. 68	0−1	
1141. 705	B	1	0. 01	10. 82	2−2	$2p^2\ ^3P-6d\ ^1D°$ (20)
1140. 688	B	3	0. 01	10. 83	2−3	$2p^2\ ^3P-6d\ ^3F°$
1140. 391	B	1	0. 00	10. 83	1−2	(21)

C I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1139. 894	B	7	0. 01	10. 84	2−3	$2p^2\ ^3P-6d\ ^2D^\circ$
1139. 794	B	6	0. 00	10. 83	1−2	(22)
1140. 070	B	1	0. 01	10. 83	2−2	
1139. 142	B	2	0. 01	10. 84	2−2	$2p^2\ ^3P-6d\ ^3P^\circ$†
1138. 625	B	1	0. 00	10. 84	1−1	(23)
1139. 037	B	1	0. 01	10. 84	2−1	
1129. 927	B	1	0. 01	10. 93	2−3	$2p^2\ ^3P-7d\ ^3F^\circ$
1129. 626	B	1	0. 00	10. 93	1−2	(24)
1129. 161	B	6	0. 01	10. 94	2−3	$2p^2\ ^3P-7d\ ^3D^\circ$ (25)
1128. 748	B	1	0. 01	10. 94	2−2	$2p^2\ ^3P-7d\ ^3P^\circ$ (26)
1122. 325	B	4	0. 01	11. 01	2−3	$2p^2\ ^3P-8d\ ^3D^\circ$ (27)
1122. 179	B	1	0. 01	11. 01	2−2	$2p^2\ ^3P-8d\ ^3P^\circ$ (28)
1117. 706	B	3	0. 01	11. 05	2−3	$2p^2\ ^3P-9d\ ^3D^\circ$ (29)
1114. 414	B	2	0. 01	11. 08	2−3	$2p^2\ ^3P-10d\ ^3D^\circ$ (30)
945. 566	D	(3)	0. 01	13. 06	2−1	$2p^2\ ^3P-2p^3\ ^3S^\circ$
945. 336	D	(2)	0. 00	13. 06	1−1	(31)
945. 193	D	(1)	0. 00	13. 06	0−1	
1993. 65	E	2	1. 26	7. 45	2−1	$2p^2\ ^1D-3s\ ^3P^\circ$ (32)
1930. 930	B	10	1. 26	7. 65	2−1	$2p^2\ ^1D-3s\ ^1P^\circ$ (33)
1481. 771	B	7	1. 26	9. 59	2−2	$2p^2\ ^1D-3d\ ^1D^\circ$ (34)
1470. 20	E	1	1. 26	9. 66	2−3	$2p^2\ ^1D-3d\ ^3F^\circ$ (35)
1467. 450	B	3	1. 26	9. 67	2−1	$2p^2\ ^1D-4s\ ^1P^\circ$ (36)
1463. 328	B	6	1. 26	9. 69	2−3	$2p^2\ ^1D-3d\ ^1F^\circ$ (37)
1459. 054	B	2	1. 26	9. 72	2−1	$2p^2\ ^1D-3d\ ^1P^\circ$ (38)
1364. 140	B	6	1. 26	10. 31	2−2	$2p^2\ ^1D-4d\ ^1D^\circ$ (39)
1359. 329	B	2	1. 26	10. 34	2−3	$2p^2\ ^1D-4d\ ^3F^\circ$ (40)
1357. 058	B	3	1. 26	10. 36	2−1	$2p^2\ ^1D-5s\ ^1P^\circ$ (41)
1355. 825	B	6	1. 26	10. 36	2−3	$2p^2\ ^1D-4d\ ^1F^\circ$ (42)
1354. 286	D	(0)	1. 26	10. 37	2−1	$2p^2\ ^1D-4d\ ^1P^\circ$ (43)

C I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1315. 903	B	4	1. 26	10. 64	2−2	$2p^2\ ^1D-5d\ ^1D^\circ$ (44)
1313. 471	B	6	1. 26	10. 66	2−3	$2p^2\ ^1D-5d\ ^3F^\circ$? (45)
1312. 261	B	2	1. 26	10. 67	2−3	$2p^2\ ^1D-5d\ ^3D^\circ$ (46)
1311. 985	B	2	1. 26	10. 67	2−1	$2p^2\ ^1D-6s\ ^1P^\circ$ (47)
1311. 374	B	8	1. 26	10. 67	2−3	$2p^2\ ^1D-5d\ ^1F^\circ$ (48)
1310. 646	B	4	1. 26	10. 68	2−1	$2p^2\ ^1D-5d\ ^1P^\circ$ (49)
1291. 380	B	1	1. 26	10. 82	2−2	$2p^2\ ^1D-6d\ ^1D^\circ$ (50)
1289. 983	B	3	1. 26	10. 83	2−3	$2p^2\ ^1D-6d\ ^3F^\circ$ (51)
1288. 633	B	2	1. 26	10. 84	2−1	$2p^2\ ^1D-7s\ ^1P^\circ$ (52)
1288. 445	B	5	1. 26	10. 84	2−3	$2p^2\ ^1D-6d\ ^1F^\circ$ (53)
1288. 055	B	1	1. 26	10. 84	2−1	$2p^2\ ^1D-6d\ ^1P^\circ$ (54)
1275. 021	B	5	1. 26	10. 94	2−3	$2p^2\ ^1D-7d\ ^1F^\circ$ (55)
1274. 880	B	2	1. 26	10. 94	2−1	$2p^2\ ^1D-7d\ ^1P^\circ$ (56)
1267. 633	B	1	1. 26	11. 00	2−	$2p^2\ ^1D-8d\ ^3F^\circ$ (57)
1266. 449	B	3	1. 26	11. 01	2−3	$2p^2\ ^1D-8d\ ^1F^\circ$ (58)
1260. 670	B	2	1. 26	11. 05	2−3	$2p^2\ ^1D-9d\ ^1F^\circ$ (59)
Air						
2582. 901	A	5	2. 67	7. 45	0−1	$2p^2\ ^1S-3s\ ^3P^\circ$ (60)
2478. 556	F	10	2. 67	7. 65	0−1	$2p^2\ ^1S-3s\ ^1P^\circ$ (61)
Vac						
1751. 9	B	8	2. 67	9. 72	0−1	$2p^2\ ^1S-3d\ ^1P^\circ$ (62)
1602. 984	B	5	2. 67	10. 37	0−1	$2p^2\ ^1S-4d\ ^1P^\circ$ (63)
1542. 202	B	2	2. 67	10. 68	0−1	$2p^2\ ^1S-5d\ ^1P^\circ$ (64)
1431. 595	A	20	4. 16	12. 79	2−3	$2p^3\ ^5S^\circ-3s\ ^5P$
1432. 115	A	15	4. 16	12. 78	2−2	(65)
1432. 538	A	10	4. 16	12. 78	2−1	

C II

I P 24.28 Anal A List C Sept. 1947

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A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 74 (1934). W L, I, T

B A. Fowler and E. W. H. Selwyn, Proc. Roy. Soc. London [A] **120**, 312 (1928). W L, T
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C II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1335. 684‡	A	14	0. 01	9. 25	1½—2½	$2p\ ^2P^\circ - 2p^2\ ^2D$
1334. 515	A	13	0. 00	9. 25	½—1½	(1)
1037. 017	A	13	0. 01	11. 91	1½— ½	$2p\ ^2P^\circ - 2p^2\ ^2S$
1036. 330	A	12	0. 00	11. 91	½— ½	(2)
904. 134	A	12	0. 01	13. 66	1½—1½	$2p\ ^2P^\circ - 2p^2\ ^2P$
903. 950	A	11	0. 00	13. 66	½— ½	(3)
904. 468	A	10	0. 01	13. 66	1½— ½	
903. 609	A	10	0. 00	13. 66	½—1½	
858. 561	A	9	0. 01	14. 39	1½— ½	$2p\ ^2P^\circ - 3s\ ^2S$
858. 094	A	8	0. 00	14. 39	½— ½	(4)
687. 355	A	11	0. 01	17. 97	1½—2½	$2p\ ^2P^\circ - 3d\ ^2D$
687. 059	A	10	0. 00	17. 97	½—1½	(5)
595. 032	A	7d	0. 01	20. 75	1½—2½	$2p\ ^2P^\circ - 4d\ ^2D$
594. 808	A	6d	0. 00	20. 75	½—1½	(6)
1010. 369	A	10	5. 31	17. 53	2½—1½	$2p^2\ ^4P - 2p^3\ ^4S^\circ$
1010. 074	A	10	5. 31	17. 53	1½—1½	(7)
1009. 854	A	9	5. 31	17. 53	½—1½	
*806. 555	A	7	5. 31	20. 62	2½—2½	$2p^2\ ^4P - 3s\ ^4P^\circ$
*806. 684	A	4	5. 31	20. 61	1½—1½	(8)
			5. 31	20. 61	½— ½	
*806. 846	A	6	5. 31	20. 61	2½—1½	
			5. 31	20. 61	1½— ½	
806. 384	A	5	5. 31	20. 62	1½—2½	
*806. 555	A	7	5. 31	20. 61	½—1½	

C II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
651. 342	A	8	5. 31	24. 27	2½—3½	$2p^2\ ^4P - 3d\ ^4D^\circ$
*651. 262	A	7	5. 31	24. 27	1½—2½	(9)
*651. 216	A	7	5. 31	24. 27	½—1½	
*651. 262	A	7	5. 31	24. 27	1½—1½	
*651. 216	A	7	5. 31	24. 26	½— ½	
1760. 40	A	4	9. 25	16. 26	2½—1½	$2p^2\ ^2D - 3p\ ^2P^\circ$
1760. 81	A	3	9. 25	16. 26	1½— ½	(10)
1323. 916	A	8	9. 25	18. 57		$2p^2\ ^2D - 2p^3\ ^2D^\circ$ (11)
1065. 883	A	7	9. 25	20. 83	2½—1½	$2p^2\ ^2D - 2p^3\ ^2P^\circ$
1066. 121	A	6	9. 25	20. 83	1½— ½	(12)
Air						
2836. 710	B	8	11. 91	16. 26	½—1½	$2p^2\ ^2S - 3p\ ^2P^\circ$
2837. 602	B	7	11. 91	16. 26	½— ½	(13)
2512. 03	B	10	13. 66	18. 57	1½—2½	$2p^2\ ^2P - 2p^3\ ^2D^\circ$
2509. 11	B	9	13. 66	18. 58	½—1½	(14)
2511. 71	B	7	13. 66	18. 58	1½—1½	
2747. 31	B	6	16. 26	20. 75	1½—2½	$3p\ ^2P^\circ - 4d\ ^2D$
2746. 50	B	5	16. 26	20. 75	½—1½	(15)

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C III

I P 47.67 Anal A List C Sept. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 55 (1934). W L, I, T

C III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac 977. 026	A	18	0. 00	12. 64	0—1	$2s^2\ {}^1S - 2p\ {}^1P^\circ$ (1)
386. 203	A	14	0. 00	31. 97	0—1	$2s^2\ {}^1S - 3p\ {}^1P^\circ$ (2)
310. 171	A	7	0. 00	39. 80	0—1	$2s^2\ {}^1S - 4p\ {}^1P^\circ$ (3)
1175. 700	A	14	6. 47	16. 97	2—2	$2p\ {}^3P^\circ - 2p^2\ {}^3P$ (4)
1175. 566	A	12	6. 46	16. 96	1—1	
1176. 351	A	12	6. 47	16. 96	2—1	
1175. 973	A	12	6. 46	16. 96	1—0	
1174. 916	A	12	6. 46	16. 97	1—2	
1175. 248	A	12	6. 46	16. 96	0—1	
538. 312	A	13	6. 47	29. 39	2—1	$2p\ {}^3P^\circ - 3s\ {}^3S$ (5)
538. 150	A	12	6. 46	29. 39	1—1	
538. 075	A	11	6. 46	29. 39	0—1	
459. 633	A	15	6. 47	33. 33	2—2, 3	$2p\ {}^3P^\circ - 3d\ {}^3D$ (6)
459. 521	A	14	6. 46	33. 33	1—1, 2	
459. 462	A	13	6. 46	33. 33	0—1	
371. 747	A	10	6. 47	39. 67	2—3	$2p\ {}^3P^\circ - 4d\ {}^3D$ (7)
*371. 694	A	10	6. 46	39. 67	1—2	
			6. 46	39. 66	0—1	
371. 784	A	8	6. 47	39. 67	2—2	

C III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air 2296. 89	A	20	12. 64	18. 01	1—2	$2p\ {}^1P^\circ - 2p^2\ {}^1D$ (8)
Vac 1247. 368	A	10	12. 64	22. 53	1—0	$2p\ {}^1P^\circ - 2p^2\ {}^1S$ (9)
690. 526	A	7	12. 64	30. 51	1—0	$2p\ {}^1P^\circ - 3s\ {}^1S$ (10)
574. 279	A	12	12. 64	34. 13	1—2	$2p\ {}^1P^\circ - 3d\ {}^1D$ (11)
Air 2610. 02	A	3	33. 33	38. 05	3, 2—2	$3d\ {}^3D - 3s\ {}^3P^\circ$ (12)
2614. 49	A	2	33. 33	38. 04	2, 1—1	
2616. 66	A	1	33. 33	38. 04	1—0	
2982. 20	A	5	34. 13	38. 27	2—1	$3d\ {}^1D - 3s\ {}^1P^\circ$ (13)

C IV

I P 64.22 Anal A List C Sept. 1947

REFERENCE

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C IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1548. 195	A	20	0. 00	7. 97	½—1½	$2s\ ^2S - 2p\ ^2P^\circ$ (1)
1550. 768	A	19	0. 00	7. 96	½— ½	
312. 418	A	15	0. 00	39. 51	½—1½	$2s\ ^2S - 3p\ ^2P^\circ$ (2)
312. 455	A	14	0. 00	39. 51	½— ½	
244. 907	A	10	0. 00	50. 41	½—	$2s\ ^2S - 4p\ ^2P^\circ$ (3)
222. 791	A	7	0. 00	55. 41	½—	$2s\ ^2S - 5p\ ^2P^\circ$ (4)
212. 421	A	5	0. 00	58. 12	½—	$2s\ ^2S - 6p\ ^2P^\circ$ (5)
419. 714	A	14	7. 97	37. 39	1½— ½	$2p\ ^2P^\circ - 3s\ ^2S$ (6)
419. 525	A	13	7. 96	37. 39	½— ½	
384. 178	A	17	7. 97	40. 11	1½—2½	$2p\ ^2P^\circ - 3d\ ^2D$ (7)
384. 032	A	16	7. 96	40. 11	½—1½	
296. 951	A	7	7. 97	49. 55	1½— ½	$2p\ ^2P^\circ - 4s\ ^2S$ (8)
296. 857	A	6	7. 96	49. 55	½— ½	

C IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
289. 230	A	10	7. 97	50. 66	1½—2½	$2p\ ^2P^\circ - 4d\ ^2D$ (9)
289. 143	A	9	7. 96	50. 66	½—1½	
259. 542	A	7	7. 97	55. 54	1½—2½	$2p\ ^2P^\circ - 5d\ ^2D$ (10)
259. 471	A	6	7. 96	55. 54	½—1½	
245. 830	A	5d	7. 97	58. 19	1½—2½	$2p\ ^2P^\circ - 6d\ ^2D$ (11)
245. 775	A	4d	7. 96	58. 19	½—1½	
Air						
2698. 70	A	3	50. 41	54. 98	1½— ½	$4p\ ^2P^\circ - 5s\ ^2S$ (12)
2697. 73	A	2	50. 41	54. 98	½— ½	
2595. 14	A	2d	50. 66	55. 41		$4d\ ^2D - 5p\ ^2P^\circ$ (13)
2524. 40	A	4d	50. 66	55. 54		$4d\ ^2D - 5f\ ^2F^\circ$ (14)
2529. 97	A	6d	50. 67	55. 55		$4f\ ^2F^\circ - 5g\ ^2G$ (15)

NITROGEN

N I

I P 14.49 Anal A List D Oct. 1947

REFERENCES

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N I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1199. 550	A	6	0. 00	10. 29	1½–2½	$2p^3\ {}^4S°-3s\ {}^4P$
1200. 218	A	10	0. 00	10. 29	1½–1½	(1)
1200. 707	A	10	0. 00	10. 28	1½– ½	
1134. 979‡	A	10	0. 00	10. 88	1½–2½	$2p^3\ {}^4S°-2p^4\ {}^4P$
1134. 417	A	10	0. 00	10. 88	1½–1½	(2)
1134. 168	A	10	0. 00	10. 88	1½– ½	
963. 93	B	10	0. 00	12. 81	1½–2½	$2p^3\ {}^4S°-4s\ {}^4P$
964. 57	B	10	0. 00	12. 80	1½–1½	(3)
965. 07	B	10	0. 00	12. 79	1½– ½	
1492. 630	C	10	2. 37	10. 64	–1½	$2p^3\ {}^2D°-3s\ {}^2P$
1494. 669	C	10	2. 37	10. 63	1½– ½	(4)
1243. 170	C	8	2. 37	12. 30	–2½	$2p^3\ {}^2D°-3s'\ {}^2D$
1243. 297	C	8	2. 37	12. 30	–1½	(5)
1167. 442	A	8	2. 37	12. 95	2½–3½	$2p^3\ {}^2D°-3d\ {}^2F†$
1168. 477	D	8	2. 37	12. 94	–2½	(6)

N I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1163. 870	A	9	2. 37	12. 98	–2½	$2p^3\ {}^2D°-3d\ {}^2D†$
1164. 314	A	9	2. 37	12. 98	–1½	(7)
1836. 739	E	4	3. 56	10. 28	– ½	$2p^3\ {}^2P°-3s\ {}^4P$ (8)
1742. 734	C	10	3. 56	10. 64	–1½	$2p^3\ {}^2P°-3s\ {}^2P$
1745. 246	C	10	3. 56	10. 63	– ½	(9)
1411. 937	C	10	3. 56	12. 30		$2p^3\ {}^2P°-3s'\ {}^2D$ (10)
1326. 629	D	10	3. 56	12. 87	–1½	$2p^3\ {}^2P°-4s\ {}^2P$
1327. 960	D	10	3. 56	12. 86	– ½	(11)
1319. 717	E	8	3. 56	12. 91	–1½	$2p^3\ {}^2P°-3d\ {}^2P$
1319. 039	E	8	3. 56	12. 92	– ½	(12)
1310. 569	D	10	3. 56	12. 98	1½–2½	$2p^3\ {}^2P°-3d\ {}^2D$
1310. 967	D	10	3. 56	12. 98	–1½	(13)

N II

I P 29.49 Anal A List C Oct. 1947

REFERENCES

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N II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1085. 699‡	A	12	0. 02	11. 39	2—3	$2p^2\ ^3P - 2p^3\ ^3D^\circ$ (1)
*1084. 568	A	11	0. 01	11. 39	1—2	
1083. 977	A	10	0. 00	11. 39	0—1	
1085. 536	A	10	0. 02	11. 39	2—2	
*1084. 568	A	11	0. 01	11. 39	1—1	
*916. 700	A	12	0. 02	13. 48	2—2	$2p^2\ ^3P - 2p^3\ ^3P^\circ$ (2)
*916. 004	A	11	0. 01	13. 48	1—1	
*916. 700	A	12	0. 02	13. 48	2—1	
915. 955	A	10	0. 01	13. 48	1—0	
*916. 004	A	11	0. 01	13. 48	1—2	
915. 603	A	10	0. 00	13. 48	0—1	
*671. 391	A	8	0. 02	18. 40	2—2	$2p^2\ ^3P - 3s\ ^3P^\circ$ (3)
671. 629	A	6	0. 01	18. 39	1—1	
671. 999	A	6	0. 02	18. 39	2—1	
671. 770	A	6	0. 01	18. 38	1—0	
671. 014	A	6	0. 01	18. 40	1—2	
*671. 391	A	8	0. 00	18. 39	0—1	
645. 167	A	10	0. 02	19. 15	2—1	$2p^2\ ^3P - 2p^3\ ^3S^\circ$ (4)
644. 825	A	9	0. 01	19. 15	1—1	
644. 621	A	8	0. 00	19. 15	0—1	
533. 726	A	6	0. 02	23. 15	2—3	$2p^2\ ^3P - 3d\ ^3D^\circ$ (5)
533. 577	A	5	0. 01	23. 14	1—2	
533. 504	A	4	0. 00	23. 14	0—1	
533. 809	A	4	0. 02	23. 14	2—2	
533. 644	A	4	0. 01	23. 14	1—1	
529. 860	A	5	0. 02	23. 31	2—2	$2p^2\ ^3P - 3d\ ^3P^\circ$ (6)
529. 481	A	3	0. 01	23. 32	1—1	
529. 713	A	3	0. 02	23. 32	2—1	
529. 405	A	3	0. 01	23. 32	1—0	
529. 627	A	3	0. 01	23. 31	1—2	
529. 343	A	3	0. 00	23. 32	0—1	
775. 957	A	12	1. 89	17. 80	2—2	$2p^2\ ^1D - 2p^3\ ^1D^\circ$ (7)
746. 976	A	8	1. 89	18. 42	2—1	$2p^2\ ^1D - 3s\ ^1P^\circ$ (8)
660. 280	A	9	1. 89	20. 59	2—1	$2p^2\ ^1D - 2p^3\ ^1P^\circ$ (9)
582. 150	A	5	1. 89	23. 10	2—2	$2p^2\ ^1D - 3d\ ^1D^\circ$ (10)

N II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
574. 650	A	6	1. 89	23. 37	2—3	$2p^2\ ^1D - 3d\ ^1F^\circ$ (11)
745. 836	A	6	4. 04	20. 59	0—1	$2p^2\ ^1S - 2p^3\ ^1P^\circ$ (12)
635. 180	A	5	4. 04	23. 47	0—1	$2p^2\ ^1S - 3d\ ^1P^\circ$ (13)
1886. 82	C	4	18. 42	24. 96	1—1	$3s\ ^1P^\circ - 4p\ ^1P$ (14)
Air						
2206. 10	C	3	20. 32	25. 92	1—2	$3p\ ^1P - 4d\ ^1D^\circ$ (15)
2317. 01	C	5	20. 58	25. 90	3—4	$3p\ ^3D - 4d\ ^3F^\circ$†
2316. 46	C	4	20. 56	25. 89	2—3	(16)
2316. 65	C	3	20. 56	25. 88	1—2	
2823. 67	B	4	20. 59	24. 96	1—1	$2p^3\ ^1P^\circ - 4p\ ^1P$ (17)
2590. 91	B	4	20. 59	25. 35	1—2	$2p^3\ ^1P^\circ - 4p\ ^1D$ (18)
2522. 27	B	4	21. 07	25. 96	2—3	$3p\ ^3P - 4d\ ^3D^\circ$†
2520. 85	B	3	21. 06	25. 96	1—2	(19)
2520. 27	B	2	21. 06	25. 95	0—1	
2496. 88	B	4	21. 07	26. 01	2—2	$3p\ ^3P - 4d\ ^3P^\circ$†
2490. 37	B	2	21. 06	26. 02	1—1	(20)
2799. 20	B	4	21. 51	25. 92	2—2	$3p\ ^1D - 4d\ ^1D^\circ$ (21)
2709. 82	B	6	21. 51	26. 06	2—3	$3p\ ^1D - 4d\ ^1F^\circ$ (22)
2461. 30	B	3	21. 51	26. 52	2—1	$3p\ ^1D - 5s\ ^1P^\circ$ (23)

N III

I P 47.24 Anal A List C Oct. 1947

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B L. J. Freeman, Proc. Roy. Soc. London [A] **121**, 318 (1928). W L, (I), T
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N III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
991. 579	A	17	0. 02	12. 47	1½—2½	2p ²P°—2p² ²D
989. 790	A	16	0. 00	12. 47	½—1½	(1)
991. 514	A	14	0. 02	12. 47	1½—1½	
764. 357	A	15	0. 02	16. 17	1½— ½	2p ²P°—2p² ²S
763. 340	A	14	0. 00	16. 17	½— ½	(2)
685. 816	A	16	0. 02	18. 02	1½—1½	2p ²P°—2p² ²P
685. 513	A	15	0. 00	18. 01	½— ½	(3)
686. 335	A	14	0. 02	18. 01	1½— ½	
684. 996	A	14	0. 00	18. 02	½—1½	
452. 226	A	11	0. 02	27. 32	1½— ½	2p ²P°—3s ²S
451. 869	A	10	0. 00	27. 32	½— ½	(4)
374. 441	A	12	0. 02	32. 99	1½—2½	2p ²P°—3d ²D
374. 204	A	11	0. 00	32. 99	½—1½	(5)
323. 615	A	6	0. 02	38. 17	1½—1½	2p ²P°—3p ²P
323. 488	A	5	0. 00	38. 16	½— ½	(6)
323. 671	A	4	0. 02	38. 16	1½— ½	
323. 431	A	4	0. 00	38. 17	½—1½	
314. 850	A	9	0. 02	39. 23	1½—2½	2p ²P°—4d ²D
314. 715	A	8	0. 00	39. 23	½—1½	(7)
314. 877	A	6	0. 02	39. 23	1½—1½	
772. 385	A	12	7. 08	23. 06	2½—1½	2p² ⁴P —2p³ ⁴S°
771. 901	A	11	7. 07	23. 06	1½—1½	(8)
771. 544	A	10	7. 06	23. 06	½—1½	

N III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
434. 066	A	7	7. 08	35. 52	2½—2½	2p² ⁴P—3s ⁴P°
*434. 129	A	5	7. 07	35. 50	1½—1½	(9)
			7. 06	35. 50	½— ½	
434. 280	A	6	7. 08	35. 50	2½—1½	
434. 246	A	6	7. 07	35. 50	1½— ½	
433. 911	A	6	7. 07	35. 52	1½—2½	
434. 014	A	6	7. 06	35. 50	½—1½	
362. 946	A	8	7. 08	41. 09	2½—3½	2p² ⁴P—3d ⁴D°
*362. 881	A	8	7. 07	41. 09	1½—2½	(10)
*362. 833	A	7	7. 06	41. 09	½—1½	
362. 985	A	6	7. 08	41. 09	2½—2½	
*362. 881	A	8	7. 07	41. 09	1½—1½	
*362. 833	A	7	7. 06	41. 08	½— ½	
358. 578	A	6	7. 08	41. 51	2½—2½	2p² ⁴P—3d ⁴P°
358. 401	A	3	7. 07	41. 51	1½—1½	(11)
358. 278	A	3	7. 06	41. 52	½— ½	
358. 509	A	5	7. 08	41. 51	2½—1½	
358. 356	A	5	7. 07	41. 52	1½— ½	
358. 469	A	5	7. 07	41. 51	1½—2½	
358. 327	A	5	7. 06	41. 51	½—1½	
979. 919	A	9	12. 47	25. 07	2½—2½	2p² ²D—2p³ ²D°
979. 842	A	8	12. 47	25. 07	1½—1½	(12)
772. 891	A	9	12. 47	28. 44	2½—1½	2p² ²D—2p³ ²P°
772. 975	A	8	12. 47	28. 44	1½— ½	(13)
509. 586	A	5	12. 47	36. 70	2½—1½	2p² ²D—3s ²P°
509. 897	A	4	12. 47	36. 68	1½— ½	(14)

N III—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
428. 180	A	6	12. 47	41. 30	2½—2½	$2p^2$ ^{2}D—$3d$ ^{2}D°
428. 244	A	5	12. 47	41. 30	1½—1½	(15)
418. 705	A	7	12. 47	41. 96	2½—3½	$2p^2$ ^{2}D—$3d$ ^{2}F°
418. 910	A	6	12. 47	41. 94	1½—2½	(16)
1006. 015	A	6	16. 17	28. 44	½—	$2p^2$ ^{2}S—$2p^3$ ^{2}P° (17)
472. 392	A	5	16. 17	42. 31	½—1½	$2p^2$ ^{2}S—$3d$ ^{2}P°
472. 232	A	4	16. 17	42. 31	½— ½	(18)
1751. 75	A	10	18. 02	25. 07	1½—2½	$2p^2$ ^{2}P—$2p^3$ ^{2}D°
1747. 86	A	9	18. 01	25. 07	½—1½	(19)
1751. 24	A	6	18. 02	25. 07	1½—1½	
1184. 544	A	8	18. 02	28. 44	1½—	$2p^2$ ^{2}P—$2p^3$ ^{2}P°
1183. 030	A	7	18. 01	28. 44	½—	(20)
Air						
2713. 95	B	4	28. 44	32. 99	1½—2½	$2p^3$ ^{2}P°—$3d^2$ D†
2714. 08	B	(3)	28. 44	32. 99	½—1½	(21)
Vac						
1805. 5	A	7	30. 33	37. 17	1½— ½	$3p$ ^{2}P°—$4s$ ^{2}S
1804. 3	A	6	30. 33	37. 17	½— ½	(22)
Air						
2247. 92	B	(6)	32. 99	38. 48	2½—1½	$3d$ ^{2}D—$4p$ ^{2}P°†
2248. 88	B	(5)	32. 99	38. 48	1½— ½	(23)

N III—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1885. 25	A	10	32. 99	39. 54		$3d$ ^{2}D—$4f$ ^{2}F° (24)
Air						
2983. 58	B	5	38. 17	42. 31	1½—1½	$3p$ ^{2}P—$3d$ ^{2}P°
2972. 60	B	(4)	38. 16	42. 31	½— ½	(25)
2862. 26	B	(6n)	39. 54	43. 85		$4f$ ^{2}F°—$6g$ ^{2}G (26)
Vac						
*1908. 11	C	7	41. 30	47. 77	2½—3½ 1½—2½	$3d$ ^{2}D°—$4f$ ^{2}F (27)
Air						
2453. 85	B	(4)	41. 51	46. 53	2½—3½	$3d$ ^{4}P°—$4p$ ^{4}D†
2462. 56	B	(1)	41. 51	46. 52	1½—2½	(28)
2468. 36	B	(0)	41. 52	46. 52	½—1½	
Vac						
*1920. 86	C	8	41. 51	47. 93	2½—3½	$3d$ ^{4}P°—$4f$ ^{4}D†
1921. 49	C	4	41. 51	47. 94	1½—2½	(29)
*1920. 86	C	8	41. 52	47. 94	½—1½	
Air						
2063. 99	B	(10)	41. 96	47. 93	3½—4½	$3d$ ^{2}F°—$4f$ ^{2}G
2063. 50	B	(10)	41. 94	47. 92	2½—3½	(30)
2068. 25	B	(6)	41. 96	47. 92	3½—3½	

N IV

I P 77.09 Anal B List C Oct. 1947

REFERENCES

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 62 (1934). W L , I, T

B L. J. Freeman, Proc. Roy. Soc. London [A] **127**, 330 (1930). W L, (I), T
B. Edlén, Zeit. Phys. **98**, 561 (1936). T

N IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
765. 140	A	17	0. 00	16. 13	0—1	$2s^2\ ^1S - 2p\ ^1P^\circ$ (1)
247. 205	A	10	0. 00	49. 98	0—1	$2s^2\ ^1S - 3p\ ^1P^\circ$ (2)
923. 211	A	12	(8. 31	21. 69)	2—2	$2p\ ^3P^\circ - 2p^2\ ^3P$ (3)
923. 045	A	10	(8. 30	21. 67)	1—1	
924. 274	A	10	(8. 31	21. 67)	2—1	
923. 669	A	10	(8. 30	21. 66)	1—0	
921. 982	A	10	(8. 30	21. 69)	1—2	
922. 507	A	10	(8. 29	21. 67)	0—1	
322. 724	A	9	(8. 31	46. 57)	2—1	$2p\ ^3P^\circ - 3s\ ^3S$ (4)
322. 570	A	8	(8. 30	46. 57)	1—1	
322. 503	A	7	(8. 29	46. 57)	0—1	
283. 579	A	12	(8. 31	51. 85)	2—3	$2p\ ^3P^\circ - 3d\ ^3D$† (5)
283. 470	A	11	(8. 30	51. 85)	1—2	
283. 420	A	10	(8. 29	51. 85)	0—1	
225. 025	A	5	(8. 31	63. 13)	2—3	$2p\ ^3P^\circ - 4d\ ^3D$ (6)
225. 136	A	4	(8. 30	63. 13)	1—2	
225. 098	A	3	(8. 29	63. 13)	0—1	
1718. 52	A	10	16. 13	23. 32	1—2	$2p\ ^1P^\circ - 2p^2\ ^1D$ (7)
955. 335	A	10	16. 13	29. 06	1—0	$2p\ ^1P^\circ - 2p^2\ ^1S$ (8)
387. 353	A	4	16. 13	48. 00	1—0	$2p\ ^1P^\circ - 3s\ ^1S$ (9)

N IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
335. 050	A	11	16. 13	52. 98	1—2	$2p\ ^1P^\circ - 3d\ ^1D$ (10)
285. 563	A	5	16. 13	59. 36	1—1	$2p\ ^1P^\circ - 3p\ ^1P$ (11)
270. 995	A	6	16. 13	61. 69	1—2	$2p\ ^1P^\circ - 3p\ ^1D$ (12)
345. 063	A	5	(21. 69	57. 46)	2—2	$2p^2\ ^3P - 3s\ ^3P^\circ$† (13)
345. 107	A	3	(21. 67	57. 44)	1—1	
303. 123	A	6	(21. 69	62. 41)	2—3	$2p^2\ ^3P - 3d\ ^3D^\circ$ (14)
303. 048	A	5	(21. 67	62. 41)	1—2	
303. 009	A	4	(21. 66	62. 40)	0—1	
303. 163	A	4	(21. 69	62. 41)	2—2	
303. 079	A	4	(21. 67	62. 40)	1—1	
297. 815	A	5	(21. 69	63. 14)	2—2	$2p^2\ ^3P - 3d\ ^3P^\circ$† (15)
*297. 644	A	4b	(21. 67	63. 14)	1—1	
			(21. 67	63. 14)	1—0	
351. 931	A	5	23. 32	58. 40	2—1	$2p^2\ ^1D - 3s\ ^1P^\circ$ (16)
323. 175	A	7	23. 32	61. 52	2—2	$2p^2\ ^1D - 3d\ ^1D^\circ$ (17)
315. 053	A	8	23. 82	62. 50	2—3	$2p^2\ ^1D - 3d\ ^1F^\circ$ (18)
Air						
2646. 89	B	(8)	(63. 78	68. 44)	4—5	$4f\ ^3F^\circ - 5g\ ^3G$ (19)
2646. 10	B	(7)	(63. 78	68. 44)	3—4	
2645. 57	B	(7)	(63. 78	68. 44)	2—3	

N V

I P 97.47 Anal B List C Oct. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 44 (1934). W L, I, T

N V

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1238. 800	A	8	0. 00	9. 97	½—1½	$2s\ ^2S - 2p\ ^2P^\circ$ (1)
1242. 778	A	7	0. 00	9. 93	½— ½	
209. 270	A	7	0. 00	58. 99	½—1½	$2s\ ^2S - 3p\ ^2P^\circ$ (2)
209. 303	A	6	0. 00	58. 98	½— ½	
162. 562	A	4	0. 00	75. 94	½—	$2s\ ^2S - 4p\ ^2P^\circ$ (3)
266. 375	A	7	9. 97	56. 31	1½— ½	$2p\ ^2P^\circ - 3s\ ^2S$ (4)
266. 192	A	6	9. 93	56. 31	½— ½	
247. 710	A	11	9. 97	59. 80	1½—2½	$2p\ ^2P^\circ - 3d\ ^2D$ (5)
247. 563	A	10	9. 93	59. 80	½—1½	
186. 153	A	5	9. 97	76. 28	1½—2½	$2p\ ^2P^\circ - 4d\ ^2D$ (6)
186. 070	A	4	9. 93	76. 28	½—1½	

OXYGEN

O I

I P 13.56 Anal A List C Dec. 1947

REFERENCES

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B B. Edlén, Kungl. Svenska Vetenskapsakad. Handl. [3] **20,** No. 10, p. 26 (1943). W L, T
C J. C. Boyce and C. A. Rieke, Phys. Rev. **47,** 653 (1935). W L, (I)
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O I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1355. 605	B	8	0. 00	9. 11	2—2	$2p^4\ ^3P-3s\ ^5S^\circ$
1358. 524	B	5	0. 02	9. 11	1—2	(1)
1302. 174‡	A	10	0. 00	9. 48	2—1	$2p^4\ ^3P-3s\ ^3S^\circ$
1304. 858	A	10	0. 02	9. 48	1—1	(2)
1306. 023	A	10	0. 03	9. 48	0—1	
1039. 226	B	8	0. 00	11. 88	2—1	$2p^4\ ^3P-4s\ ^3S^\circ$
1040. 932	A	8	0. 02	11. 88	1—1	(3)
1041. 686	A	7	0. 03	11. 88	0—1	
1025. 766	B	9	0. 00	12. 03	2—	$2p^4\ ^3P-3d\ ^3D^\circ$
1027. 421	A	8	0. 02	12. 03	1—	(4)
1028. 155	B	7	0. 03	12. 03	0—1	
988. 775	C	(8)	0. 00	12. 49	2—3	$2p^4\ ^3P-3s'\ ^3D^\circ$†
990. 205	A	(8)	0. 02	12. 49	1—2	(5)
990. 794	A	(4)	0. 03	12. 49	0—1	

O I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1152. 129	A	(5)	1. 96	12. 67	2—2	$2p^4\ ^1D-3s'\ ^1D^\circ$ (6)
999. 493	A	(2)	1. 96	14. 31	2—1	$2p^4\ ^1D-3s''\ ^1P^\circ$ (7)
923. 011	B	(—)	1. 96	15. 35	2—3	$2p^4\ ^1D-3d'\ ^1F^\circ$ (8)
1217. 643	A	(2)	4. 17	14. 31	0—1	$2p^4\ ^1S-3s''\ ^1P^\circ$ (9)
Air						
2883. 78	D	(3)	10. 94	15. 22	—2	$3p\ ^3P-3d'\ ^3P^\circ$
2878. 95	D	(2)	10. 94	15. 23	—1	(10)
2876. 30	D	(1n)	10. 94	15. 23	1—0	

O II

I P 35.00 Anal A List D Dec. 1947

REFERENCES

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 136 (1934). W L, I, T
B A. Fowler, Proc. Roy. Soc. London [A] **110**, 476 (1926). W L, I, T
C. Mihul, Ann. de Phys. [10] **9**, 261 (1928). T

O II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
834. 462‡	A	15	0. 00	14. 79	1½—2½	$2p^3\ ^4S°-2p^4\ ^4P$ (1)
833. 326	A	15	0. 00	14. 81	1½—1½	
832. 754	A	14	0. 00	14. 82	1½— ½	
539. 086	A	8	0. 00	22. 90	1½—2½	$2p^3\ ^4S°-3s\ ^4P$ (2)
539. 547	A	8	0. 00	22. 88	1½—1½	
539. 853	A	7	0. 00	22. 87	1½— ½	
430. 177	A	6	0. 00	28. 70	1½—2½	$2p^3\ ^4S°-3d\ ^4P$ (3)
430. 041	A	6	0. 00	28. 71	1½—1½	
429. 918	A	5	0. 00	28. 71	1½— ½	
718. 484	A	17	3. 31	20. 49	2½—	$2p^3\ ^2D°-2p^4\ ^2D$ (4)
718. 562	A	16	3. 31	20. 49	1½—	
616. 291	A	7	3. 31	23. 34	2½—1½	$2p^3\ ^2D°-3s\ ^2P$ (5)
617. 051	A	6	3. 31	23. 32	1½— ½	
616. 363	A	4	3. 31	23. 34	1½—1½	
555. 056	A	5	3. 31	25. 55	2½—	$2p^3\ ^2D°-3s'\ ^2D$ (6)
555. 121	A	5	3. 31	25. 55	1½—	
538. 256	A	10	3. 31	26. 24	2½—1½	$2p^3\ ^2D°-2p^4\ ^2P$ (7)
537. 830	A	9	3. 31	26. 27	1½— ½	
538. 318	A	7	3. 31	26. 24	1½—1½	
485. 086	A	6	3. 31	28. 76	2½—3½	$2p^3\ ^2D°-3d\ ^2F†$ (8)
485. 515	A	5	3. 31	28. 74	1½—2½	
483. 976	A	5	3. 31	28. 82	2½—1½	$2p^3\ ^2D°-3d\ ^2P†$ (9)
483. 752	A	4	3. 31	28. 83	1½— ½	
481. 587	A	4	3. 31	28. 94	2½—2½	$2p^3\ ^2D°-3d\ ^2D†$ (10)
481. 755	A	3	3. 31	28. 94		
796. 661	A	10	5. 00	20. 49		$2p^3\ ^2P°-2p^4\ ^2D$ (11)

O II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
672. 948	A	8	5. 00	23. 34	—1½	$2p^3\ ^2P°-3s\ ^2P$ (12)
673. 768	A	7	5. 00	23. 32	— ½	
644. 148	A	12	5. 00	24. 16	— ½	$2p^3\ ^2P°-2p^4\ ^2S$ (13)
600. 585	A	6	5. 00	25. 55		$2p^3\ ^2P°-3s'\ ^2D$ (14)
580. 967	A	7	5. 00	26. 24	—1½	$2p^3\ ^2P°-2p^4\ ^2P$ (15)
580. 400	A	6	5. 00	26. 27	— ½	
518. 242	A	5	5. 00	28. 82	—1½	$2p^3\ ^2P°-3d\ ^2P$ (16)
517. 937	A	4	5. 00	28. 83	— ½	
515. 498	A	5	5. 00	28. 94	1½—2½	$2p^3\ ^2P°-3d\ ^2D$ (17)
515. 640	A	4	5. 00	28. 94	—1½	
Air						
2445. 55	B	10	23. 34	28. 39	1½—2½	$3s\ ^2P-3p'\ ^2D°$ (18)
2433. 56	B	9	23. 32	28. 39	½—1½	
2444. 26	B	5	23. 34	28. 39	1½—1½	
2300. 35	B	8	23. 34	28. 71	1½—1½	$3s\ ^2P-3p'\ ^2P°†$ (19)
2293. 32	B	6	23. 32	28. 70	½— ½	
2733. 34	B	10	25. 18	29. 69	½—1½	$3p\ ^2S°-4s\ ^2P$ (20)
2747. 46	B	6	25. 18	29. 67	½— ½	
2530. 30	B	5	26. 14	31. 01	2½—3½	$3p\ ^2D°-3d'\ ^2F$ (21)
2517. 97	B	4	26. 11	31. 01	1½—2½	
2575. 300	B	6	26. 45	31. 24	1½—2½	$3p\ ^2P°-3d'\ ^2D†$ (22)
2571. 476	B	4	26. 44	31. 24	½—1½	

O III

I P 54.71 Anal A List C Oct. 1947

REFERENCES

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 126 (1934). W L, I, T
B A. Fowler, Proc. Roy. Soc. London [A] **117**, 317 (1928). W L, I, T
B. Edlén, Naturwiss. **30**, 279 (1942). T

O III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
835. 292	A	16	0. 04	14. 82	2−3	$2p^2\ ^3P - 2p^3\ ^3D^\circ$ (1)
833. 742	A	16	0. 01	14. 82	1−2, 1	
835. 096	A	14	0. 04	14. 82	2−2, 1	
832. 927	A	14	0. 00	14. 82	0−1	
703. 850	A	18	0. 04	17. 58	2−2, 1	$2p^2\ ^3P - 2p^3\ ^3P^\circ$ (2)
702. 899	A	17	0. 01	17. 58	1−2, 1	
702. 822	A	16	0. 01	17. 58	1−0	
702. 332	A	16	0. 00	17. 58	0−1	
508. 182	A	18	0. 04	24. 33	2−1	$2p^2\ ^3P - 2p^3\ ^3S^\circ$ (3)
507. 683	A	17	0. 01	24. 33	1−1	
507. 391	A	16	0. 00	24. 33	0−1	
374. 075	A	10	0. 04	33. 04	2−2	$2p^2\ ^3P - 3s\ ^3P^\circ$ (4)
374. 165	A	8	0. 01	33. 01	1−1	
374. 436	A	8	0. 04	33. 01	2−1	
374. 331	A	8	0. 01	32. 99	1−0	
373. 805	A	8	0. 01	33. 04	1−2	
374. 005	A	8	0. 00	33. 01	0−1	
305. 769	A	10	0. 04	40. 41	2−3	$2p^2\ ^3P - 3d\ ^3D^\circ$ (5)
305. 656	A	9	0. 01	40. 40	1−2	
305. 596	A	8	0. 00	40. 40	0−1	
305. 836	A	8	0. 04	40. 40	2−2	
305. 703	A	8	0. 01	40. 40	1−1	
305. 879	A	4	0. 04	40. 40	2−1	
303. 799	A	9	0. 04	40. 67	2−2	$2p^2\ ^3P - 3d\ ^3P^\circ$ (6)
303. 515	A	7	0. 01	40. 69	1−1	
303. 693	A	7	0. 04	40. 69	2−1	
303. 460	A	7	0. 01	40. 69	1−0	
303. 621	A	7	0. 01	40. 67	1−2	
303. 411	A	7	0. 00	40. 69	0−1	
599. 598	A	18	2. 50	23. 09	2−2	$2p^2\ ^1D - 2p^3\ ^1D^\circ$ (7)
525. 795	A	18	2. 50	25. 98	2−1	$2p^2\ ^1D - 2p^3\ ^1P^\circ$ (8)
395. 558	A	12	2. 50	33. 71	2−1	$2p^2\ ^1D - 3s\ ^1P^\circ$ (9)
328. 448	A	10	2. 50	40. 09	2−2	$2p^2\ ^1D - 3d\ ^1D^\circ$ (10)
320. 979	A	12	2. 50	40. 96	2−3	$2p^2\ ^1D - 3d\ ^1F^\circ$ (11)
277. 385	A	7	2. 50	47. 01	2−3	$2p^2\ ^1D - 4d\ ^1F^\circ$ (12)

O III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
597. 818	A	15	5. 33	25. 98	0−1	$2p^2\ ^1S - 2p^3\ ^1P^\circ$ (13)
434. 975	A	10	5. 33	33. 71	0−1	$2p^2\ ^1S - 3s\ ^1P^\circ$ (14)
345. 309	A	10	5. 33	41. 08	0−1	$2p^2\ ^1S - 3d\ ^1P^\circ$ (15)
610. 746	A	8	14. 82	35. 03	3−2	$2p^3\ ^3D^\circ - 2p^4\ ^3P$ (16)
*610. 043	A	7	14. 82	35. 06	2−1	
609. 705	A	6	14. 82	35. 07	1−0	
610. 850	A	6	14. 82	35. 03	2−2	
*610. 043	A	7	14. 82	35. 06	1−1	
898. 957	A	8	23. 09	36. 82	2−2	$2p^3\ ^1D^\circ - 2p^4\ ^1D$ (17)
Air						
2983. 78	B	9	33. 71	37. 85	1−2	$3s\ ^1P^\circ - 3p\ ^1D$ (18)
2454. 99	B	8	33. 71	38. 74	1−0	$3s\ ^1P^\circ - 3p\ ^1S$ (19)
2597. 69	B	8	40. 67	45. 42	2−1	$3d\ ^3P^\circ - 4p\ ^3S$†
2605. 41	B	6	40. 69	45. 42	1−1	(20)
2558. 06	B	8	40. 96	45. 79	3−2	$3d\ ^1F^\circ - 4p\ ^1D$ (21)
2686. 14	B	10	41. 78	46. 37	3−2	$3s\ ^5P - 3p\ ^5S^\circ$ (22)
2674. 57	B	8	41. 76	46. 37	2−2	
2665. 69	B	7	41. 74	46. 37	1−2	
2695. 49	B	6	44. 85	49. 42	1−2	$3p\ ^3S^\circ - 3d\ ^3P$ (23)
2687. 53	B	5	44. 85	49. 44	1−1	
2683. 65	B	4	44. 85	49. 44	1−0	

O IV

I P 77.08 Anal A List D Dec. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 92 (1934). W L, I, T

O IV **O IV**

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)	I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac							Vac						
790. 203	A	16	0. 05	15. 67	1½—2½	$2p\ ^2P^\circ - 2p^2\ ^2D$							
787. 710	A	15	0. 00	15. 67	½—1½	(1)							
790. 103	A	13	0. 05	15. 67	1½—1½		625. 852	A	14	8. 83	28. 55	2½—1½	$2p^2\ ^4P - 2p^3\ ^4S^\circ$
							625. 130	A	14	8. 80	28. 55	1½—1½	(6)
609. 829	A	15	0. 05	20. 29	1½— ½	$2p\ ^2P^\circ - 2p^2\ ^2S$	624. 617	A	13	8. 79	28. 55	½—1½	
608. 395	A	14	0. 00	20. 29	½— ½	(2)							
							233. 561	A	8	8. 83	61. 68	2½—3½	$2p^2\ ^4P - 3d\ ^4D^\circ$†
554. 514	A	18	0. 05	22. 31	1½—1½	$2p\ ^2P^\circ - 2p^2\ ^2P$	233. 495	A	7	8. 80	61. 67	1½—2½	(7)
554. 074	A	17	0. 00	22. 28	½— ½	(3)	*233. 457	A	7	8. 79	61. 67	½—	
555. 262	A	16	0. 05	22. 28	1½— ½								
553. 328	A	16	0. 00	22. 31	½—1½								
279. 937	A	11	0. 05	44. 15	1½— ½	$2p\ ^2P^\circ - 3s\ ^2S$	779. 905	A	10	15. 67	31. 50	2½—2½	$2p^2\ ^2D - 2p^3\ ^2D^\circ$
279. 633	A	10	0. 00	44. 15	½— ½	(4)	779. 821	A	9	15. 67	31. 50	1½—1½	(8)
238. 573	A	15	0. 05	51. 79	1½—2½	$2p\ ^2P^\circ - 3d\ ^2D$	260. 389	A	10	15. 67	63. 08	2½—3½	$2p^2\ ^2D - 3d\ ^2F^\circ$
238. 361	A	14	0. 00	51. 79	½—1½	(5)	260. 556	A	9	15. 67	63. 05	1½—2½	(9)

O V

I P 113.38 Anal A List D Dec. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 65 (1934). W L, I, T

O V

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
629. 732	A	15	0. 00	19. 60	0—1	$2s^2\ ^1S - 2p\ ^1P^\circ$ (1)
172. 168	A	12	0. 00	71. 70	0—1	$2s^2\ ^1S - 3p\ ^1P^\circ$ (2)
760. 445	A	12	(10. 19	26. 43)	2—2	$2p\ ^3P^\circ - 2p^2\ ^3P$ (3)
760. 229	A	10	(10. 15	26. 39)	1—1	
762. 001	A	10	(10. 19	26. 39)	2—1	
761. 130	A	10	(10. 15	26. 37)	1—0	
758. 677	A	10	(10. 15	26. 43)	1—2	
759. 440	A	10	(10. 14	26. 39)	0—1	
215. 245	A	9	(10. 19	67. 55)	2—1	$2p\ ^3P^\circ - 3s\ ^3S$ (4)
215. 104	A	8	(10. 15	67. 55)	1—1	
215. 034	A	7	(10. 14	67. 55)	0—1	
192. 906	A	14	(10. 19	74. 19)	2—3	$2p\ ^3P^\circ - 3d\ ^3D$ (5)
192. 800	A	13	(10. 15	74. 19)	1—2	
192. 751	A	12	(10. 14	74. 18)	0—1	
*167. 991	A	8	(10. 19	83. 68)	2—3, 1—2, 0—1	$2p\ ^3P^\circ - 3p\ ^3D$ (6)
168. 077	A	4	(10. 19	83. 64)	2—2	
168. 042	A	4	(10. 15	83. 62)	1—1	
1371. 287	A	10	19. 60	28. 61	1—2	$2p\ ^1P^\circ - 2p^2\ ^1D$ (7)

O V

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
774. 522	A	7	19. 60	35. 54	1—0	$2p\ ^1P^\circ - 2p^2\ ^1S$ (8)
248. 459	A	6	19. 60	69. 29	1—0	$2p\ ^1P^\circ - 3s\ ^1S$ (9)
220. 352	A	13	19. 60	75. 63	1—2	$2p\ ^1P^\circ - 3d\ ^1D$ (10)
194. 593	A	8	19. 60	83. 04	1—1	$2p\ ^1P^\circ - 3p\ ^1P$ (11)
185. 747	A	9	19. 60	86. 07	1—2	$2p\ ^1P^\circ - 3p\ ^1D$ (12)
203. 890	A	8	(26. 43	86. 97)	2—3	$2p^2\ ^3P - 3d\ ^3D^\circ$†
203. 821	A	7	(26. 39	86. 96)	1—2	(13)
203. 783	A	6	(26. 37	86. 95)	0—1	
202. 393	A	7	(26. 43	87. 42)	2—2	$2p^2\ ^3P - 3d\ ^3P^\circ$†
202. 226	A	5	(26. 39	87. 44)	1—1	(14)
202. 335	A	5	(26. 43	87. 44)	2—1	
202. 282	A	5	(26. 39	87. 42)	1—2	
216. 018	A	8	28. 61	85. 75	2—2	$2p^2\ ^1D - 3d\ ^1D^\circ$ (15)
207. 794	A	10	28. 61	88. 02	2—3	$2p^2\ ^1D - 3d\ ^1F^\circ$ (16)

O VI

I P 137.52 Anal B List D Dec. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 45 (1934). W L, I, T

O VI

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1031. 912	A	10	0. 00	11. 96	½—1½	$2s\ ^2S - 2p\ ^2P^\circ$ (1)
1037. 613	A	9	0. 00	11. 90	½— ½	
150. 088	A	10	0. 00	82. 25	½—1½	$2s\ ^2S - 3p\ ^2P^\circ$ (2)
150. 124	A	9	0. 00	82. 23	½— ½	
184. 117	A	9	11. 96	79. 01	1½— ½	$2p\ ^2P^\circ - 3s\ ^2S$ (3)
183. 937	A	8	11. 90	79. 01	½— ½	
173. 082	A	13	11. 96	83. 29	1½—2½	$2p\ ^2P^\circ - 3d\ ^2D$ (4)
172. 935	A	12	11. 90	83. 28	½—1½	
129. 872	A	6	11. 96	107. 02	1½—2½	$2p\ ^2P^\circ - 4d\ ^2D$ (5)
129. 786	A	5	11. 90	107. 02	½—1½	

FLUORINE

F I

I P 17.35 Anal B List D Dec. 1947

REFERENCE

A K. Lidén, Ark. Fysik (Stockholm) **I**, No. 9, 251 (1949). W L, I, T

F I

I A	Ref	Int	E P		*J*	Multiplet (No)
			Low	High		
Vac						
954. 825‡	A	1000	0. 00	12. 93	1½−1½	$2p^5\ ^2P^\circ-3s\ ^2P$
955. 545	A	750	0. 05	12. 97	½− ½	(1)
951. 871	A	500	0. 00	12. 97	1½− ½	
958. 524	A	500	0. 05	12. 93	½−1½	
806. 964	A	150	0. 00	15. 30	1½−2½	$2p^5\ ^2P^\circ-3s'\ ^2D$
809. 599	A	125	0. 05	15. 30	½−1½	(2)

F II

I P 34.84 Anal B List D Dec. 1947

REFERENCES

A I. S. Bowen, Phys. Rev. **45**, 82 (1934). W L, I, T
B. Edlén, Zeit. Phys. **93**, 433 (1935). T
H. Dingle, Proc. Roy. Soc. London [A] **128**, 600 (1930). T

F II

I A	Ref	Int	E P		*J*	Multiplet (No)
			Low	High		
Vac						
606. 81‡	A	9	0. 00	20. 34	2−2	$2p^4\ ^3P-2p^5\ ^3P^\circ$
606. 95	A	4	0. 04	20. 38	1−1	(1)
605. 67	A	8	0. 00	20. 38	2−1	
606. 27	A	7	0. 04	20. 40	1−0	
608. 06	A	8	0. 04	20. 34	1−2	
607. 48	A	7	0. 06	20. 38	0−1	
546. 846	A	6	0. 00	22. 57	2−1	$2p^4\ ^3P-3s\ ^3S^\circ$
547. 873	A	4	0. 04	22. 57	1−1	(2)
548. 324	A	3	0. 06	22. 57	0−1	
471. 990	A	6	0. 00	26. 15	2−3	$2p^4\ ^3P-3s'\ ^3D^\circ$
472. 710	A	5	0. 04	26. 16	1−2	(3)
473. 021	A	3	0. 06	26. 16	0−1	

NEON

Ne I

I P 21.47 Anal A List D Feb. 1948

REFERENCES

A J. C. Boyce, Phys. Rev. **46,** 378 (1934). W L, I, T

B F. Paschen, Ann. der Phys. [4] **60,** 405 (1919). W L, I, T

W. F. Meggers and C. J. Humphreys, Bur. Std. J. Research **10,** 429, RP540 (1933). T

B. Edlén, unpublished material (Nov. 1946). T

Ne I **Ne I**

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)	I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac 743. 70	A	12	0. 00	16. 60	0—1	$2p^6\ {}^1S - 3s\ [1\frac{1}{2}]^\circ$ (1)	Air 2992. 438	B	8	16. 55	20. 67	2—1	$3s\ [1\frac{1}{2}]^\circ - 5p\ [\ \frac{1}{2}]$
							2992. 420	B	8	16. 60	20. 72	1—0	(8)
735. 89‡	A	30	0. 00	16. 64	0—1	$2p^6\ {}^1S - 3s'\ [\ \frac{1}{2}]^\circ$ (2)	2982. 663	B	9	16. 55	20. 69	2—3	$3s\ [1\frac{1}{2}]^\circ - 5p\ [2\frac{1}{2}]$ (9)
629. 729	A	6	0. 00	19. 60	0—1	$2p^6\ {}^1S - 4s\ [1\frac{1}{2}]^\circ$ (3)	2974. 714	B	9	16. 55	20. 70	2—2	$3s\ [1\frac{1}{2}]^\circ - 5p\ [1\frac{1}{2}]$ (10)
626. 819	A	6	0. 00	19. 69	0—1	$2p^6\ {}^1S - 4s'\ [\ \frac{1}{2}]^\circ$ (4)	2947. 297	B	8	16. 60	20. 79	1—2	$3s\ [1\frac{1}{2}]^\circ - 5p'[1\frac{1}{2}]$ (11)
619. 092	A	4	0. 00	19. 94	0—1	$2p^6\ {}^1S - 3d\ [\ \frac{1}{2}]^\circ$ (5)	2913. 168	B	8	16. 55	20. 78	2—1	$3s\ [1\frac{1}{2}]^\circ - 5p'[\ \frac{1}{2}]$ (12)
618. 668	A	5	0. 00	19. 95	0—1	$2p^6\ {}^1S - 3d\ [1\frac{1}{2}]^\circ$ (6)	2675. 64	B	8	16. 60	21. 21	1—1	$3s\ [1\frac{1}{2}]^\circ - 7p'[1\frac{1}{2}]$
							2675. 24	B	8	16. 60	21. 21	1—2	(13)
615. 623	A	5	0. 00	20. 05	0—1	$2p^6\ {}^1S - 3d'[1\frac{1}{2}]^\circ$ (7)	2932. 721	B	7	16. 78	20. 98	2—0	$3s'[\ \frac{1}{2}]^\circ - 6p\ [\ \frac{1}{2}]$ (14)

Ne II

I P 40.91 Anal A List C Nov. 1948

REFERENCES

A J. C. Boyce, Phys. Rev. **46,** 378 (1934). W L, I, T

B T. L. de Bruin und C. J. Bakker, Zeit. Phys. **69,** 19 (1931). W L, I, T

Ne II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
460. 725‡	A	15	0. 00	26. 79	1½— ½	$2p^5\ ^2P^\circ - 2p^6\ ^2S$
462. 388	A	14	0. 10	26. 79	½— ½	(1)
456. 344	A	4	0. 00	27. 05	1½—2½	$2p^5\ ^2P^\circ - 3s\ ^4P$
456. 895	A	5	0. 10	27. 12	½—1½	(2)
455. 270	A	7	0. 00	27. 12	1½—1½	
454. 648	A	5	0. 10	27. 15	1½— ½	
446. 252	A	8	0. 00	27. 66	1½—1½	$2p^5\ ^2P^\circ - 3s\ ^2P$
446. 591	A	7	0. 10	27. 74	½— ½	(3)
445. 032	A	7	0. 00	27. 74	1½— ½	
447. 813	A	8	0. 10	27. 66	½—1½	
405. 852	A	9	0. 00	30. 42	1½—	$2p^5\ ^2P^\circ - 3s'\ ^2D$
407. 136	A	8	0. 10	30. 42	½—1½	(4)
361. 427	A	5	0. 00	34. 16	1½— ½	$2p^5\ ^2P^\circ - 3s''\ ^2S$
362. 456	A	4	0. 10	34. 16	½— ½	(5)
356. 795	A	5d	0. 00	34. 60	1½—2½	$2p^5\ ^2P^\circ - 3d\ ^2D$
357. 534	A	5	0. 10	34. 62	½—1½	(6)
356. 534	A	3	0. 00	34. 62	1½—1½	

Ne II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1688. 38	A	4	26. 79	34. 11	½—1½	$2p^6\ ^2S - 3p'\ ^2P^\circ$
1681. 70	A	3	26. 79	34. 14	½— ½	(7)
Air						
2955. 73	B	7	27. 05	31. 23	2½—1½	$3s\ ^4P - 3p\ ^4S^\circ$†
3011. 65	B	6	27. 12	31. 23	1½—1½	(8)
Vac						
1916. 16	B	10	27. 66	34. 11	1½—1½	$3s\ ^2P - 3p'\ ^2P^\circ$
1930. 11	B	8	27. 74	34. 14	½— ½	(9)
1907. 56	B	8	27. 66	34. 14	1½— ½	
1938. 92	B	8	27. 74	34. 11	½—1½	
Air						
2792. 05	B	5	30. 39	34. 81	2½—2½	$3p\ ^4P^\circ - 4s\ ^4P$†
2780. 06	B	2	30. 42	34. 86	1½—1½	(10)
2770. 06	B	1	30. 44	34. 90	½— ½	

Ne III

I P 63.5 Anal C List C Sept. 1948

REFERENCES

A J. C. Boyce, Phys. Rev. **46**, 378 (1934). W L, I, T
B V. v. Keussler, Zeit. Phys. **85**, 1 (1933). W L, I
C T. L. de Bruin, Zeit. Phys. **77**, 505 (1932). W L, I, T

Ne III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
489. 501	A	10	0. 00	25. 22	2−2	$2p^4\ ^3P - 2p^5\ ^3P^\circ$
489. 641	A	4	0. 08	25. 29	1−1	(1)
488. 103	A	8	0. 00	25. 29	2−1	
488. 868	A	7	0. 08	25. 33	1−0	
491. 050	A	9	0. 08	25. 22	1−2	
490. 310	A	7	0. 11	25. 29	0−1	
313. 048	A	4	0. 00	39. 44	2−1	$2p^4\ ^3P - 3s\ ^3S^\circ$
313. 677	A	3	0. 08	39. 44	1−1	(2)
313. 92	A	1	0. 11	39. 44	0−1	
283. 206	B	6	0. 00	43. 60	2−3	$2p^4\ ^3P - 3s'\ ^3D^\circ$
*283. 690	B	3u	0. 08	43. 60	1−2	(3)
283. 894	B	3	0. 11	43. 60	0−1	
*283. 178	B	3u	0. 00	43. 60	2−2	
*283. 690	B	3u	0. 08	43. 60	1−1	
*283. 178	B	3u	0. 00	43. 60	2−1	
267. 059	B	3u	0. 00	46. 22	2−2, 1	$2p^4\ ^3P - 3s''\ ^3P^\circ$
267. 516	B	3u	0. 08	46. 23	1−	(4)
267. 709	B	2	0. 11	46. 23	0−1	
251. 145	B	2u	0. 00	49. 16	2−	$2p^4\ ^3P - 3d\ ^3D^\circ$
251. 558	B	2	0. 08	49. 16	1−2, 1	(5)
251. 726	B	2	0. 11	49. 16	0−1	
379. 308	A	7	3. 19	35. 74	2−1	$2p^4\ ^1D - 2p^5\ ^1P^\circ$ (6)

Ne III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
301. 124	A	4	3. 19	44. 19	2−2	$2p^4\ ^1D - 3s'\ ^1D^\circ$ (7)
282. 50	A	0	3. 19	46. 89	2−1	$2p^4\ ^1D - 3s''\ ^1P^\circ$ (8)
427. 840	A	3	6. 88	35. 74	0−1	$2p^4\ ^1S - 2p^5\ ^1P^\circ$ (9)
308. 559	A	1	6. 88	46. 89	0−1	$2p^4\ ^1S - 3s''\ ^1P^\circ$ (10)
Air						
2590. 04	C	40	(38. 78	43. 55)	2−3	$3s\ ^5S^\circ - 3p\ ^5P$
2593. 60	C	30	(38. 78	43. 54)	2−2	(11)
2595. 68	C	20	(38. 78	43. 54)	2−1	
2677. 90	C	30	39. 44	44. 04	1−2, 0	$3s\ ^3S^\circ - 3p\ ^3P$
2678. 64	C	25	39. 44	44. 04	1−1	(12)
Vac						
1257. 190	A	6	39. 44	49. 25	1−2	$3s\ ^3S^\circ - 3p'\ ^3P$
1255. 685	A	5	39. 44	49. 27	1−1	(13)
1255. 026	A	2	39. 44	49. 27	1−0	

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Ne IV

I P 96.77 Anal B List C Sept. 1948

REFERENCES

A J. C. Boyce, Phys. Rev. **46**, 381 (1934). W L, T
B F. W. Paul and H. D. Polster, Phys. Rev. **59**, 424 (1941). W L, I, T

Ne IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
543. 884	A	150	0. 00	22. 70	1½—2½	$2p^3\ {}^4S°-2p^4\ {}^4P$ (1)
542. 076	A	100	0. 00	22. 77	1½—1½	
541. 124	A	80	0. 00	22. 81	1½— ½	
208. 485	B	100	0. 00	59. 21	1½—2½	$2p^3\ {}^4S°-3s\ {}^4P$ (2)
208. 734	B	100	0. 00	59. 14	1½—1½	
208. 899	B	80	0. 00	59. 10	1½— ½	
172. 620	B	80	0. 00	71. 52	1½—2½	$2p^3\ {}^4S°-3d\ {}^4P$ (3)
172. 525	B	50	0. 00	71. 55	1½—1½	
172. 492	B	40	0. 00	71. 57	1½— ½	
*469. 817	A	200	(5. 06	31. 33)	2½—2½	$2p^3\ {}^2D°-2p^4\ {}^2D$ (4)
					1½—1½	
469. 865	A	200	(5. 06	31. 33)	1½—2½	
358. 70	A	200w	(5. 06	39. 47)	—1½	$2p^3\ {}^2D°-2p^4\ {}^2P$ (5)
357. 831	B	50	(5. 06	39. 56)	1½— ½	

Ne IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
212. 556	B	150	(5. 06	63. 13)		$2p^3\ {}^2D°-3s'\ {}^2D$ (6)
186. 575	B	150	(5. 06	71. 22)		$2p^3\ {}^2D°-3d''\ {}^2D$ (7)
521. 810	A	25	(7. 67	31. 33)	1½—2½	$2p^3\ {}^2P°-2p^4\ {}^2D$ (8)
521. 730	A	25	(7. 67	31. 33)	½—1½	
421. 584	A	150	(7. 67	36. 95)	— ½	$2p^3\ {}^2P°-2p^4\ {}^2S$ (9)
388. 23	A	100	(7. 67	39. 47)	—1½	$2p^3\ {}^2P°-2p^4\ {}^2P$ (10)
387. 13	A	125	(7. 67	39. 56)	— ½	
194. 276	B	100	(7. 67	71. 22)		$2p^3\ {}^2P°-3d''\ {}^2D$ (11)

Ne V

I P 125.9 Anal B List C Sept. 1948

REFERENCE

A F. W. Paul and H. D. Polster, Phys. Rev. **59**, 424 (1941). W L, I, T
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§ Blend N III

Ne V

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
572. 336	A	80	0. 14	21. 71	2—3	$2p^2\ {}^3P-2p^3\ {}^3D°$ (1)
569. 830	A	50	0. 05	21. 72	1—2	
568. 418	A	40	0. 00	21. 72	0—1	
572. 106	A	25	0. 14	21. 72	2—2	
569. 759	A	25	0. 05	21. 72	1—1	
*482. 987	A	50	0. 14	25. 70	2—2	$2p^2\ {}^3P-2p^3\ {}^3P°$ (2)
*481. 361	A	25	0. 05	25. 70	1—1	
*482. 987	A	50	0. 14	25. 70	2—1	
481. 281	A	15	0. 05	25. 70	1—0	
*481. 361	A	25	0. 05	25. 70	1—2	
480. 406	A	25	0. 00	25. 70	0—1	

Ne V

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
*359. 385§§	A	50	0. 14	34. 49	2—1	$2p^2\ {}^3P-2p^3\ {}^3S°$ (3)
*358. 472§	A	50	0. 05	34. 49	1—1	
357. 955	A	40	0. 00	34. 49	0—1	
416. 198	A	80	(3. 74	33. 40)	2—2	$2p^2\ {}^1D-2p^3\ {}^1D°$ (4)
365. 594	A	100	(3. 74	37. 51)	2—1	$2p^2\ {}^1D-2p^3\ {}^1P°$ (5)
173. 932	A	50	(3. 74	74. 72)	2—1	$2p^2\ {}^1D-3s\ {}^1P°$ (6)

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Na I

I P 5.12 Anal A List C July 1947

REFERENCE

A A. Fowler, *Report on Series in Line Spectra* p. 99 (Fleetway Press, London, 1922). W L, I T
H. Kayer, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by R. Ritschl, p. 193 (Julius Springer, Berlin, 1939). (I)

Na I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air 2852. 828	A	6R	0. 00	4. 33	½–1½	$3s\ ^2S-5p\ ^2P^\circ$ (1)
2853. 031	A	5R	0. 00	4. 33	½– ½	
2680. 335	A	5R	0. 00	4. 60	½–1½	$3s\ ^2S-6p\ ^2P^\circ$ (2)
2680. 443	A	4R	0. 00	4. 60	½– ½	
2593. 828	A	(3R)	0. 00	4. 76	½–1½	$3s\ ^2S-7p\ ^2P^\circ$ (3)
2593. 927	A	(2R)	0. 00	4. 76	½– ½	

Na I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air 2543. 817	A	------	0. 00	4. 85	½–1½	$3s\ ^2S-8p\ ^2P^\circ$ (4)
2543. 875	A	------	0. 00	4. 85	½– ½	
2512. 128	A	------	0. 00	4. 91	½–1½	$3s\ ^2S-9p\ ^2P^\circ$ (5)
2512. 210	A	------	0. 00	4. 91	½– ½	
2490. 733	A	------	0. 00	4. 95	½–	$3s\ ^2S-10p\ ^2P^\circ$ (6)

Na II

I P 47.10 Anal B List C June 1947

REFERENCES

A J. Söderqvist, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. **7**, p. 26 (1934). W L, I, T
B S. Frisch, Zeit. Phys. **70**, 498 (1931). W L, I, T

Na II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac 376. 375	A	3	0. 00	32. 80	0–1	$2p^6\ ^1S-3s\ [1½]^\circ$ (1)
372. 069‡	A	6	0. 00	33. 18	0–1	$2p^6\ ^1S-3s'[\ ½]^\circ$ (2)
301. 432	A	1	0. 00	40. 95	0–1	$2p^6\ ^1S-3d\ [1½]^\circ$ (3)
300. 151	A	1	0. 00	41. 13	0–1	$2p^6\ ^1S-3d'[1½]^\circ$ (4)
Air 2917. 516	B	5	32. 71	36. 94	2–2	$3s\ [1½]^\circ-3p\ [1½]$
*2984. 183	B	7	32. 80	36. 94	1–2	(5)
2859. 481	B	5	32. 71	37. 02	2–1	$3s\ [1½]^\circ-3p'[1½]$ (6)
2841. 721	B	7	32. 71	37. 05	2–2	$3s\ [1½]^\circ-3p'[1½]$
2904. 914	B	7	32. 80	37. 05	1–2	(7)
2881. 140	B	6	32. 80	37. 08	1–0	$3s\ [\ ½]^\circ-3p\ [1½]$ (8)

Na II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air 2974. 991	B	6	32. 87	37. 02	0–1	$3s'\ [\ ½]^\circ-3p'[1½]$ (9)
2671. 829	B	6	36. 20	40. 82	1–1	$3p\ [\ ½]-3d\ [\ ½]^\circ$ (10)
2660. 996	B	7	36. 20	40. 84	1–2	$3p\ [\ ½]-3d\ [1½]^\circ$ (11)
2611. 815	B	7	36. 20	40. 92	1–2	$3p\ [\ ½]-4s\ [1½]^\circ$ (12)
2531. 548	B	6	36. 20	41. 07	1–0	$3p\ [\ ½]-4s'[\ ½]^\circ$ (13)
2951. 231	B	8	36. 70	40. 88	3–4	$3p\ [2½]-3d\ [3½]^\circ$ (14)
*2984. 183	B	7	36. 81	40. 94	1–2	$3p\ [1½]-3d\ [2½]^\circ$ (15)
2893. 946	B	6	36. 81	41. 07	1–0	$3p\ [1½]-4s'[\ ½]^\circ$ (16)

MAGNESIUM

Mg I

I P 7.61 Anal A List C July 1947

REFERENCES

A F. Paschen, Sitz. Preuss. Akad. Wiss. **32,** 709 (1931). W L, (I), T
A. S. King, Mt. Wilson Contr. No. 150; Astroph. J. **48,** 13 (1918). I
A. Fowler, *Report on Series in Line Spectra* p. 116 (Fleetway Press, London, 1922). I
H. Kayser und H. Konen, *Handbuch der Spectroscopie* **7,** p. 1028 (S. Hirzel, Leipzig, 1934). (I)

Mg I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2852. 120‡	A	300R	0. 00	4. 33	0—1	$3s^2\ ^1S - 3p\ ^1P^\circ$ (1)
2025. 82	A	(15n)	0. 00	6. 09	0—1	$3s^2\ ^1S - 4p\ ^1P^\circ$ (2)
2941. 990	A	8	2. 70	6. 90	2—1	$3p\ ^3P^\circ - 6s\ ^3S$
2938. 469	A	4	2. 70	6. 90	1—1	(3)
2936. 735	A	2	2. 70	6. 90	0—1	
2906. 35	A	(5)	2. 70	6. 95	2—2	$3p\ ^3P^\circ - 5d\ ^1D$
2902. 90	A	(3)	2. 70	6. 95	1—2	(4)
2851. 647	A	8	2. 70	7. 03	2—3	$3p\ ^3P^\circ - 5d\ ^3D$
2848. 338	A	7	2. 70	7. 03	1—	(5)
2846. 711	A	6	2. 70	7. 03	0—	
*2779. 832	A	12	2. 70	7. 14	2—2	$3p\ ^3P^\circ - 3p^2\ ^3P$
			2. 70	7. 14	1—1	(6)
2782. 974	A	10	2. 70	7. 14	2—1	
*2781. 418	A	10	2. 70	7. 14	1—0	
*2776. 695	A	10	2. 70	7. 14	1—2	
*2778. 277	A	10	2. 70	7. 14	0—1	
*2781. 418	A	10	2. 70	7. 14	2—1	$3p\ ^3P^\circ - 7s\ ^3S$
*2778. 277	A	10	2. 70	7. 14	1—1	(7)
*2776. 695	A	10	2. 70	7. 14	0—1	
2768. 346	A	(8)	2. 70	7. 16	2—2	$3p\ ^3P^\circ - 6d\ ^1D$
2765. 220	A	(6)	2. 70	7. 16	1—2	(8)

Mg I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2736. 559	A	10n	2. 70	7. 21	2—3	$3p\ ^3P^\circ - 6d\ ^3D$
2733. 509	A	5n	2. 70	7. 21	1—	(9)
2732. 009	A		2. 70	7. 21	0—	
2698. 16	A	5	2. 70	7. 28	2—1	$3p\ ^3P^\circ - 8s\ ^3S$
2695. 19	A	4	2. 70	7. 28	1—1	(10)
2693. 74	A	3	2. 70	7. 28	0—1	
2672. 56	A	6	2. 70	7. 32	2—3	$3p\ ^3P^\circ - 7d\ ^3D$
2669. 63	A	5	2. 70	7. 32	1—	(11)
2668. 23	A	4	2. 70	7. 32	0—	
2649. 12	A	4	2. 70	7. 36	2—1	$3p\ ^3P^\circ - 9s\ ^3S$
2646. 26	A	3	2. 70	7. 36	1—1	(12)
2644. 87	A	2	2. 70	7. 36	0—1	
2632. 94	A	5	2. 70	7. 39	2—3	$3p\ ^3P^\circ - 8d\ ^3D$
2630. 10	A	4	2. 70	7. 39	1—	(13)
2628. 72	A	4	2. 70	7. 39	0—	
2617. 56	A	3	2. 70	7. 42	2—1	$3p\ ^3P^\circ - 10s\ ^3S$
2614. 74	A	2	2. 70	7. 42	1—1	(14)
2613. 37	A		2. 70	7. 42	0—1	
2915. 447	A	(7)	5. 73	9. 96	2—3	$3s\ ^1D - 3d\ ^1F^\circ$ (15)

Mg II

I P 14.97 Anal A List C May 1947

REFERENCE

A A. Fowler, *Report on Series in Line Spectra*, p. 118 (Fleetway Press, London, 1922). W L, I, T

Mg II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2795. 523‡	A	50	0. 00	4. 41	½—1½	$3s\ ^2S - 3p\ ^2P^\circ$ (1)
2802. 698	A	50	0. 00	4. 40	½— ½	
2936. 496	A	35	4. 41	8. 62	1½— ½	$3p\ ^2P^\circ - 4s\ ^2S$ (2)
2928. 625	A	35	4. 40	8. 62	½— ½	
2797. 989	A	40	4. 41	8. 83	1½—2½	$3p\ ^2P^\circ - 3d\ ^2D$ (3)
2790. 768	A	40	4. 40	8. 83	½—1½	

Mg II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2660. 821	A	10	8. 83	13. 46	2½—	$3d\ ^2D - 6f\ ^2F^\circ$ (4)
2660. 755	A		8. 83	13. 46	1½—	
2449. 573	A	6	8. 83	13. 86		$3d\ ^2D - 7f\ ^2F^\circ$ (5)
2971. 70	A	1	9. 96	14. 11	1½— ½	$4p\ ^2P^\circ - 9s\ ^2S$ (6)
2969. 02	A	0	9. 95	14. 11	½— ½	
2967. 87	A	1	9. 96	14. 11	1½— ½	$4p\ ^2P^\circ - 8d\ ^2D$ (7)
2965. 19	A	0	9. 95	14. 11	½— ½	

Mg III

I P 79.79 Anal B List D July 1947

REFERENCE

A J. Söderqvist, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 7, 27 (1934). W L, I, T

Mg III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
234. 258	A	12	0. 00	52. 70	0—1	$2p^6\ ^1S - 3s\ [1½]^\circ$ (1)
231. 730	A	14	0. 00	53. 27	0—1	$2p^6\ ^1S - 3s'\ [\ ½]^\circ$ (2)
187. 194	A	8	0. 00	65. 95	0—1	$2p^6\ ^1S - 3d\ [1½]^\circ$ (3)
186. 510	A	9	0. 00	66. 19	0—1	$2p^6\ ^1S - 3d'\ [1½]^\circ$ (4)

Mg III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2396. 04	A	3d	52. 55	57. 70	2—1	$3s\ [1½]^\circ - 3p\ [\ ½]$ (5)
2468. 50	A	3	52. 70	57. 70	1—1	
2065. 54	A	5d	52. 55	58. 52	2—3	$3s\ [1½]^\circ - 3p\ [2½]$ (6)
2092. 64	A	4d	52. 70	58. 60	1—2	
2040. 23	A	3d	52. 55	58. 60	2—2	
2529. 97	A	2	52. 82	57. 70	0—1	$3s'\ [\ ½]^\circ - 3p\ [\ ½]$ (7)

ALUMINUM

Al I

I P 5.96 Anal A List C Aug. 1947

REFERENCES

A A. Fowler, *Report on Series in Line Spectra*, p. 156 (Fleetway Press, London, 1922). W L, I, T

B F. Paschen, Ann. der Phys. [5] **12**, 522 (1932). W L, I, T

Al I

I A	Ref	Int	E P Low	E P High	*J*	Multiplet (No.)
Air						
2660. 393	A	10R	0. 01	4. 65	1½— ½	$3p\ ^2P°-5s\ ^2S$
2652. 484	A	10R	0. 00	4. 65	½— ½	(1)
2575. 113	A	10R	0. 01	4. 81	1½—2½	$3p\ ^2P°-4d\ ^2D$
2567. 997	A	10R	0. 00	4. 81	½—1½	(2)
2575. 411	A	3R	0. 01	4. 81	1½—1½	
2378. 408	A	3	0. 01	5. 20	1½— ½	$3p\ ^2P°-6s\ ^2S$
2372. 084	A	3	0. 00	5. 20	½— ½	(3)
2373. 132	A	8R	0. 01	5. 21	1½—2½	$3p\ ^2P°-5d\ ^2D$
2367. 064	A	8R	0. 01	5. 21	½—1½	(4)
2373. 360	A	2R	0. 01	5. 21	1½—1½	
2269. 093	A	4R	0. 01	5. 45	1½—2½	$3p\ ^2P°-6d\ ^2D$
2263. 453	A	4R	0. 00	5. 45	½—1½	(5)
2269. 212	A	2R	0. 01	5. 45	1½—1½	
2263. 731	A	2	0. 01	5. 47	1½— ½	$3p\ ^2P°-7s\ ^2S$
2257. 999	A	2	0. 00	5. 47	½— ½	(6)
2210. 046	A	2R	0. 01	5. 60	1½—2½	$3p\ ^2P°-7d\ ^2D$
*2204. 627	A	2R	0. 00	5. 60	½—1½	(7)
*2204. 627	A	2R	0. 01	5. 61	1½— ½	$3p\ ^2P°-8s\ ^2S$
2199. 64	A	1	0. 00	5. 61	½— ½	(8)

Al I

I A	Ref	Int	E P Low	E P High	*J*	Multiplet (No.)
Air						
2174. 028	A	1R	0. 01	5. 69	1½—2½	$3p\ ^2P°-8d\ ^2D$
2168. 805	A	1R	0. 00	5. 69	½—1½	(9)
2180. 96	B	8	3. 13	8. 79	½—1½?	$4s\ ^2S-3d\ ^2P°$
2177. 35	B	6	3. 13	8. 80	½— ½?	(10)
2372. 115	B	10	3. 60	8. 80	2½—3½	$3p^2\ ^4P-3d\ ^4D°$†
2369. 289	B	8	3. 59	8. 80	1½—2½	(11)
2367. 596	B	5	3. 58	8. 80	½—1½	
2373. 549	B	6	3. 60	8. 80	2½—2½	
2370. 208	B	6	3. 59	8. 80	1½—1½	
2368. 090	B	5	3. 58	8. 79	½— ½	
2321. 570	B	8	3. 60	8. 91	2½—2½	$3p^2\ ^4P-3d\ ^4P°$
2314. 992	B	1	3. 59	8. 92	1½—1½	(12)
2311. 031	B	1	3. 58	8. 92	½— ½	
2319. 069	B	4	3. 60	8. 92	2½—1½	
2313. 527	B	4	3. 59	8. 92	1½— ½	
2317. 487	B	5	3. 59	8. 91	1½—2½	
2312. 491	B	2	3. 58	8. 92	½—1½	
2837. 95	B	12	4. 00	8. 35	2½—2½	$3d\ ^2D-3d\ ^2D°$
2840. 11	B	10	4. 00	8. 35	1½—1½	(13)

Al II

I P 18.75 Anal A List C July 1947

REFERENCES

A R. A. Sawyer and F. Paschen, Ann. der Phys. [4] **84**, 1 (1927). W L, I, T

B F. Paschen and R. Ritschl, Ann. der Phys. [5] **18**, 885 (1933). W L, T

C R. V. Zumstein, Phys. Rev. **38**, 2214 (1931). W L

Al II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2669. 166	A	10	0. 00	4. 62	0—1	$3s^2\ {}^1S - 3p\ {}^3P^\circ$ (1)
Vac						
1670. 81‡	A	15	0. 00	7. 39	0—1	$3s^2\ {}^1S - 3p\ {}^1P^\circ$ (2)
Air						
2087. 0	A	5	4. 64	10. 55	2—2	$3p\ {}^3P^\circ - 3p^2\ {}^1D$ (3)
2081. 5	A	2	4. 62	10. 55	1—2	
Vac						
1862. 34	C	10	4. 64	11. 27	2—1	$3p\ {}^3P^\circ - 4s\ {}^3S$ (4)
1858. 05	C	7	4. 62	11. 27	1—1	
1855. 95	C	3	4. 62	11. 27	0—1	
1763. 95	A	10	4. 64	11. 64	2—2	$3p\ {}^3P^\circ - 3p^2\ {}^3P$† (5)
1763. 79	A	8	4. 62	11. 62	1—1	
1767. 60	A	10	4. 64	11. 62	2—1	
1724. 981	C	15	4. 64	11. 80	2—1	$3p\ {}^3P^\circ - 3d\ {}^3D$ (6)
1721. 279	C	10	4. 62	11. 80	1—1	
1719. 459	C	8	4. 62	11. 80	0—1	
Air						
2816. 189	B	20	7. 39	11. 77	1—0	$3p\ {}^1P^\circ - 4s\ {}^1S$ (7)
Vac						
1989. 85	A	2	7. 39	13. 59	1—2	$3p\ {}^1P^\circ - 3d\ {}^1D$ (8)

Al II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1625. 60	A	3	7. 39	14. 98	1—0	$3p\ {}^1P^\circ - 5s\ {}^1S$ (9)
1539. 74	A	10	7. 39	15. 41	1—2	$3p\ {}^1P^\circ - 4d\ {}^1D$ (10)
Air						
2631. 553	A	7	10. 55	15. 24	2—3	$3p^2\ {}^1D - 4f\ {}^1F^\circ$ (11)
2475. 260	A	4	10. 55	15. 54	2—1	$3p^2\ {}^1D - 5p\ {}^1P^\circ$ (12)
2902. 14	B	2	11. 27	15. 52	1—2	$4s\ {}^3S - 5p\ {}^3P^\circ$ (13)
2903. 22	B	1	11. 27	15. 52	1—1	
2903. 718	B	0. 5	11. 27	15. 52	1—0	
2637. 696	A	5	11. 80	16. 47	3—4	$3d\ {}^3D - 5f\ {}^3F^\circ$ (14)
2638. 263	A	4	11. 80	16. 47	2—3	
2638. 695	A	3	11. 80	16. 47	1—2	
2638. 182	A	0. 5	11. 80	16. 47	3—3	
2638. 625	A	0. 5	11. 80	16. 47	2—2	
2638. 547	A	0	11. 80	16. 47	3—2	
2532. 655	A	2	11. 80	16. 67	3—2	$3d\ {}^3D - 6p\ {}^3P^\circ$ (15)
2533. 16	A	1	11. 80	16. 67	2—1	
2533. 41	A	0. 5	11. 80	16. 67	1—0	

Al III

I P 28.33 Anal A List D May 1947

REFERENCES

A R. V. Zumstein, Phys. Rev. **38,** 2214 (1931). W L

B E. Ekefors, Zeit. Phys. **51,** 471 (1928). W L, I
F. Paschen, Ann. der Phys. [4] **71,** 142 (1923). T

Al III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1854. 722	A	10	0. 00	6. 66	½—1½	$3s\ {}^2S - 3p\ {}^2P^\circ$ (1)
1862. 782	A	10	0. 00	6. 63	½— ½	
695. 817	B	5	0. 00	17. 74	½—1½	$3s\ {}^2S - 4p\ {}^2P^\circ$ (2)
696. 212	B	4	0. 00	17. 73	½— ½	
560. 390	B	7	0. 00	22. 03	½—	$3s\ {}^2S - 5p\ {}^2P^\circ$ (3)

SILICON

Si I

I P 8.11 Anal A List A Oct. 1947

REFERENCES

A C. C. Kiess, J. Research Nat. Bur. Std. **21**, 185, RP1124 (1938). W L, I, T
B N. E. Wagman, Univ. Pittsburgh Bul. **34**, No. 1, 9 (1937). W L

Si I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2516.109‡	B	250r	0.03	4.93	2–2	$3p^2\ ^3P - 4s\ ^3P°$ (1)
2519.203	B	100r	0.01	4.91	1–1	
2528.510	B	175r	0.03	4.91	2–1	
2524.108	B	125r	0.01	4.90	1–0	
2506.896	B	150r	0.01	4.93	1–2	
2514.315	B	100r	0.00	4.91	0–1	
2452.12	A	20	0.03	5.06	2–1	$3p^2\ ^3P - 4s\ ^1P°$ (2)
2443.37	A	20	0.01	5.06	1–1	
2438.77	A	25	0.00	5.06	0–1	
2216.670	A	150r	0.03	5.59	2–3	$3p^2\ ^3P - 3d\ ^3D°$ (3)
2210.880	A	100r	0.01	5.59	1–2	
2207.972	A	75r	0.00	5.59	0–1	
2218.052	A	50r	0.03	5.59	2–2	
2211.737	A	75r	0.01	5.59	1–1	
2218.914	A	25r	0.03	5.59	2–1	
2121.22	A	7	0.03	5.85	2–2	$3p^2\ ^3P - 3d\ ^1D°$ (4)
2114.59	A	4b	0.01	5.85	1–2	
2054.81	A	8	0.03	6.03	2–3	$3p^2\ ^3P - 3p^3\ ^3D°$ (5)
2061.18	A	8	0.01	6.00	1–2	
2065.49	A	5	0.00	5.97	0–1	
2067.40	A	1	0.03	6.00	2–2	
2010.97	A	8	0.03	6.16	2–3	$3p^2\ ^3P - 3d\ ^3F°$ (6)
2008.43	A	3	0.01	6.15	1–2	
Vac						
1988.36	A	30	0.03	6.23	2–2	$3p^2\ ^3P - 3d\ ^3P°$ (7)
1980.00	A	10	0.01	6.24	1–1	
1985.73	A	20	0.03	6.24	2–1	
1978.57	A	12	0.01	6.25	1–0	
1982.60	A	20	0.01	6.23	1–2	
1976.96	A	15	0.00	6.24	0–1	
1881.86	A	12	0.03	6.59	2–3	$3p^2\ ^3P - 3d\ ^1F°$ (8)
1880.96	A	5	0.03	6.59	2–1	$3p^2\ ^3P - 3d\ ^1P°$ (9)
1875.82	A	10	0.01	6.59	1–1	
1873.11	A	8	0.00	6.59	0–1	

Si I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1850.68	A	50r	0.03	6.70	2–3	$3p^2\ ^3P - 4d\ ^3D°$ (10)
1847.47	A	35r	0.01	6.69	1–2	
1845.53	A	25r	0.00	6.69	0–1	
1852.48	A	25r	0.03	6.69	2–2	
1848.16	A	20r	0.01	6.69	1–1	
1853.17	A	10	0.03	6.69	2–1	
1841.47	A	20r	0.03	6.73	2–2	$3p^2\ ^3P - 5s\ ^3P°$ (11)
1843.77	A	15	0.01	6.71	1–1	
1848.75	A	18	0.03	6.71	2–1	
1846.13	A	12	0.01	6.70	1–0	
1836.52	A	20	0.01	6.73	1–2	
1841.16	A	10	0.00	6.71	0–1	
1829.89	A	7	0.03	6.77	2–1	$3p^2\ ^3P - 5s\ ^1P°$ (12)
1825.04	A	1	0.01	6.77	1–1	
1822.46	A	10	0.00	6.77	0–1	
1776.85	A	10	0.03	6.98	2–2	$3p^2\ ^3P - 4d\ ^1D°$ (13)
1772.24	A	1	0.01	6.98	1–2	
1770.94	A	10	0.03	7.00	2–2	$3p^2\ ^3P - 4d\ ^3P°$ (14)
*1776.03	A	6	0.01	7.00	1–1	
1770.63	A	8	0.03	7.00	2–1	
1765.02	A	5	0.01	7.00	1–0	
1766.34	A	5	0.01	7.00	1–2	
1763.67	A	4	0.00	7.00	0–1	
1747.36	A	4	0.03	7.09	2–3	$3p^2\ ^3P - 4d\ ^3F°$ (15)
1745.35	A	2	0.01	7.08	1–2	
1749.74	A	0	0.03	7.08	2–2	
1707.09	A	0	0.03	7.26	2–1	$3p^2\ ^3P - 4d\ ^1P°$ (16)
1702.81	A	5	0.01	7.26	1–1	
1700.60	A	4	0.00	7.26	0–1	
1704.44	A	7r	0.03	7.27	2–3	$3p^2\ ^3P - 4d\ ^1F°$ (17)
1697.96	A	20r	0.03	7.30	2–3	$3p^2\ ^3P - 5d\ ^3D°$ (18)
1696.20	A	20r	0.01	7.29	1–2	
1693.30	A	7r	0.00	7.29	0–1	
1700.43	A	15r	0.03	7.29	2–2	
1695.50	A	5r	0.01	7.29	1–1	
1699.70	A	1	0.03	7.29	2–1	

Si I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1698. 18	A	4b	0. 03	7. 30	2—	$3p^2\ ^3P - 1^\circ$ (19)
1697. 55	A	3b	0. 03	7. 30	2—	$3p^2\ ^3P - 2^\circ$ (20)
1686. 83	A	4	0. 03	7. 35	2—2	$3p^2\ ^3P - 6s\ ^3P^\circ$
1689. 28	A	3	0. 01	7. 32	1—1	(21)
1693. 47	A	5	0. 03	7. 32	2—1	
1690. 77	A	3	0. 01	7. 31	1—0	
1682. 67	A	3	0. 01	7. 35	1—2	
1687. 06	A	1	0. 00	7. 32	0—1	
1676. 80	A	1	0. 00	7. 36	0—1	$3p^2\ ^3P - 6s\ ^1P^\circ$ (22)
1675. 23	A	4r	0. 03	7. 40	2—2	$3p^2\ ^3P - 5d\ ^3P^\circ$
1668. 52	A	3	0. 01	7. 41	1—1	(23)
1672. 60	A	3	0. 03	7. 41	2—1	
1667. 63	A	3	0. 01	7. 41	1—0	
1671. 11	A	2	0. 01	7. 40	1—2	
1666. 36	A	2	0. 00	7. 41	0—1	
1664. 54	A	2	0. 03	7. 44	2—2	$3p^2\ ^3P - 5d\ ^1D^\circ$
1660. 47	A	0	0. 01	7. 44	1—2	(24)
1653. 36	A	1	0. 03	7. 49	2—3	$3p^2\ ^3P - 5d\ ^3F^\circ$
1651. 05	A	0	0. 01	7. 49	1—2	(25)
1633. 15	A	2r	0. 01	7. 57	1—1	$3p^2\ ^3P - 5d\ ^1P^\circ$
1631. 11	A	4r	0. 00	7. 57	0—1	(26)
1629. 96	A	8r	0. 03	7. 60	2—3	$3p^2\ ^3P - 6d\ ^3D^\circ$
1630. 15	A	7r	0. 01	7. 58	1—2	(27)
1625. 71	A	5r	0. 00	7. 59	0—1	
1633. 99	A	3	0. 03	7. 58	2—2	
1627. 70	A	2	0. 01	7. 59	1—1	
1633. 90	A	4	0. 03	7. 58	2—3	$3p^2\ ^3P - 5d\ ^1F^\circ$ (28)
1623. 34	A	0	0. 03	7. 63	2—2	$3p^2\ ^3P - 7s\ ^3P^\circ$
1625. 58	A	1	0. 01	7. 60	1—1	(29)
1629. 47	A	7r	0. 03	7. 60	2—1	
1627. 03	A	1	0. 01	7. 60	1—0	
1619. 53	A	1	0. 01	7. 63	1—2	
1622. 87	A	4r	0. 03	7. 63	2—2	$3p^2\ ^3P - 6d\ ^3P^\circ$
1616. 55	A	3	0. 01	7. 65	1—1	(30)
1620. 39	A	3	0. 03	7. 65	2—1	
1619. 00	A	0	0. 01	7. 63	1—2	
1614. 55	A	3	0. 00	7. 65	0—1	
1615. 89	A	3	0. 00	7. 64	0—1	$3p^2\ ^3P - 7s\ ^1P^\circ$ (31)
1614. 60	A	1	0. 03	7. 67	2—2	$3p^2\ ^3P - 6d\ ^1D^\circ$ (32)
1608. 92	A	2	0. 03	7. 70	2—3	$3p^2\ ^3P - 6d\ ^3F^\circ$
1605. 87	A	1	0. 01	7. 70	1—2	(33)

Si I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1594. 92	A	4r	0. 03	7. 77	2—2	$3p^3\ ^3P - 8s\ ^3P^\circ$
1597. 83	A	2	0. 03	7. 75	2—1	(34)
1595. 50	A	1	0. 01	7. 75	1—0	
1591. 17	A	0	0. 01	7. 77	1—2	
1592. 15	A	3r	0. 00	7. 75	0—1	
1597. 99	A	3	0. 03	7. 75	2—3	$3p^2\ ^3P - 6d\ ^1F^\circ$ (35)
1594. 53	A	5r	0. 03	7. 77	2—3	$3p^2\ ^3P - 7d\ ^3D^\circ$
1592. 35	A	3r	0. 01	7. 76	1—2	(36)
1590. 49	A	2r	0. 00	7. 76	0—1	
1595. 82	A	1	0. 03	7. 76	2—2	
1592. 45	A	1	0. 01	7. 76	1—1	
1589. 60	A	1	0. 03	7. 79	2—1	$3p^2\ ^3P - 8s\ ^1P^\circ$
1586. 00	A	1	0. 01	7. 79	1—1	(37)
*1583. 97	A	0	0. 00	7. 79	0—1	
*1583. 97	A	0	0. 03	7. 82	2—3	$3p^2\ ^3P - 7d\ ^3F^\circ$ (38)
1576. 76	A	1	0. 03	7. 86	2—3	$3p^2\ ^3P - 7d\ ^1F^\circ$ (39)
1573. 85	A	1r	0. 03	7. 87	2—3	$3p^2\ ^3P - 8d\ ^3D^\circ$ (40)
1565. 30	A	1	0. 00	7. 89	0—1	$3p^2\ ^3P - 9s\ ^1P^\circ$ (41)
Air						
2970. 35	A	15	0. 78	4. 93	2—2	$3p^2\ ^1D - 4s\ ^3P^\circ$
2987. 65	A	25	0. 78	4. 91	2—1	(42)
2881. 595	A	200r	0. 78	5. 06	2—1	$3p^2\ ^1D - 4s\ ^1P^\circ$ (43)
2563. 67	A	4	0. 78	5. 59	2—2	$3p^2\ ^1D - 3d\ ^3D^\circ$
2564. 82	A	3	0. 78	5. 59	2—1	(44)
2435. 160	A	100r	0. 78	5. 85	2—2	$3p^2\ ^1D - 3d\ ^1D^\circ$ (45)
2291. 03	A	7	0. 78	6. 16	2—3	$3p^2\ ^1D - 3d\ ^3F^\circ$
2295. 40	A	1	0. 78	6. 15	2—2	(46)
2261. 70	A	1	0. 78	6. 23	2—2	$3p^2\ ^1D - 3d\ ^3P^\circ$ (47)
2124. 111	A	100r	0. 78	6. 59	2—3	$3p^2\ ^1D - 3d\ ^1F^\circ$ (48)
2122. 99	A	10	0. 78	6. 59	2—1	$3p^2\ ^1D - 3d\ ^1P^\circ$ (49)
2084. 47	A	20	0. 78	6. 70	2—3	$3p^2\ ^1D - 4d\ ^3D^\circ$ (50)

Si I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air 2082. 01	A	15	0. 78	6. 71	2—1	$3p^2\ ^1D - 5s\ ^3P^\circ$ (51)
2058. 13	A	50	0. 78	6. 77	2—1	$3p^2\ ^1D - 5s\ ^1P^\circ$ (52)
Vac 1991. 23	A	5	0. 78	6. 98	2—2	$3p^2\ ^1D - 4d\ ^1D^\circ$ (53)
1983. 82	A	3	0. 78	7. 00	2—2	$3p^2\ ^1D - 4d\ ^3P^\circ$ (54)
1954. 96	A	6	0. 78	7. 09	2—3	$3p^2\ ^1D - 4d\ ^3F^\circ$ (55)
1957. 96	A	0	0. 78	7. 08	2—2	
1904. 66	A	12	0. 78	7. 26	2—1	$3p^2\ ^1D - 4d\ ^1P^\circ$ (56)
1901. 34	A	50	0. 78	7. 27	2—3	$3p^2\ ^1D - 4d\ ^1F^\circ$ (57)
1893. 22	A	25	0. 78	7. 30	2—3	$3p^2\ ^1D - 5d\ ^3D^\circ$ (58)
1895. 41	A	2	0. 78	7. 29	2—1	
1893. 54	A	4	0. 78	7. 30	2—	$3p^2\ ^1D - 1^\circ$ (59)
1892. 70	A	3	0. 78	7. 30	2—	$3p^2\ ^1D - 2^\circ$ (60)
1887. 71	A	12	0. 78	7. 32	2—1	$3p^2\ ^1D - 6s\ ^3P^\circ$ (61)
1874. 86	A	25	0. 78	7. 36	2—1	$3p^2\ ^1D - 6s\ ^1P^\circ$ (62)
1865. 04	A	2	0. 78	7. 40	2—2	$3p^2\ ^1D - 5d\ ^3P^\circ$ (63)
1861. 80	A	1	0. 78	7. 41	2—1	
1851. 80	A	10	0. 78	7. 44	2—2	$3p^2\ ^1D - 5d\ ^1D^\circ$ (64)
1838. 00	A	10	0. 78	7. 49	2—3	$3p^2\ ^1D - 5d\ ^3F^\circ$ (65)
1840. 00	A	2	0. 78	7. 49	2—2	
1817. 87	A	2b	0. 78	7. 57	2—1	$3p^2\ ^1D - 5d\ ^1P^\circ$ (66)
1809. 05	A	30	0. 78	7. 60	2—3	$3p^2\ ^1D - 6d\ ^3D^\circ$ (67)
1814. 09	A	30	0. 78	7. 58	2—2	
1814. 02	A	50	0. 78	7. 58	2—3	$3p^2\ ^1D - 5d\ ^1F^\circ$ (68)
1808. 48	A	4b	0. 78	7. 60	2—1	$3p^2\ ^1D - 7s\ ^3P^\circ$ (69)
1797. 33	A	3	0. 78	7. 65	2—1	$3p^2\ ^1D - 6d\ ^3P^\circ$ (70)
1799. 14	A	10	0. 78	7. 64	2—1	$3p^2\ ^1D - 7s\ ^1P^\circ$ (71)
1790. 28	A	4	0. 78	7. 67	2—2	$3p^2\ ^1D - 6d\ ^1D^\circ$ (72)
1783. 23	A	8	0. 78	7. 70	2—3	$3p^2\ ^1D - 6d\ ^3F^\circ$ (73)
1784. 11	A	1	0. 78	7. 70	2—2	

Si I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac *1766. 03	A	6	0. 78	7. 77	2—2	$3p^2\ ^1D - 8s\ ^3P^\circ$ (74)
1769. 60	A	1	0. 78	7. 75	2—1	
1769. 78	A	15	0. 78	7. 75	2—3	$3p^2\ ^1D - 6d\ ^1F^\circ$ (75)
1765. 61	A	5b	0. 78	7. 77	2—3	$3p^2\ ^1D - 7d\ ^3D^\circ$ (76)
1759. 56	A	3	0. 78	7. 79	2—1	$3p^2\ ^1D - 8s\ ^1P^\circ$ (77)
1752. 68	A	0	0. 78	7. 82	2—3	$3p^2\ ^1D - 7d\ ^3F^\circ$ (78)
1743. 88	A	5b	0. 78	7. 86	2—3	$3p^2\ ^1D - 7d\ ^1F^\circ$ (79)
1740. 34	A	3h	0. 78	7. 87	2—3	$3p^2\ ^1D - 8d\ ^3D^\circ$ (80)
1736. 50	A	1	0. 78	7. 89	2—1	$3p^2\ ^1D - 9s\ ^1P^\circ$ (81)
Air 2842. 35	A	3	1. 90	6. 24	0—1	$3p^2\ ^1S - 3d\ ^3P^\circ$ (82)
2631. 28	A	50r	1. 90	6. 59	0—1	$3p^2\ ^1S - 3d\ ^1P^\circ$ (83)
2577. 13	A	10	1. 90	6. 69	0—1	$3p^2\ ^1S - 4d\ ^3D^\circ$ (84)
2568. 63	A	15	1. 90	6. 71	0—1	$3p^2\ ^1S - 5s\ ^3P^\circ$ (85)
2532. 38	A	20	1. 90	6. 77	0—1	$3p^2\ ^1S - 5s\ ^1P^\circ$ (86)
2303. 03	A	20	1. 90	7. 26	0—1	$3p^2\ ^1S - 4d\ ^1P^\circ$ (87)
2289. 61	A	10	1. 90	7. 29	0—1	$3p^2\ ^1S - 5d\ ^3D^\circ$ (88)
2278. 30	A	7	1. 90	7. 32	0—1	$3p^2\ ^1S - 6s\ ^3P^\circ$ (89)
2259. 58	A	7	1. 90	7. 36	0—1	$3p^2\ ^1S - 6s\ ^1P^\circ$ (90)
2177. 30	A	8b	1. 90	7. 57	0—1	$3p^2\ ^1S - 5d\ ^1P^\circ$ (91)
2167. 74	A	7	1. 90	7. 59	0—1	$3p^2\ ^1S - 6d\ ^3D^\circ$ (92)
2163. 78	A	10b	1. 90	7. 60	0—1	$3p^2\ ^1S - 7s\ ^3P^\circ$ (93)
2147. 91	A	3	1. 90	7. 65	0—1	$3p^2\ ^1S - 6d\ ^3P^\circ$ (94)
2150. 43	A	5	1. 90	7. 64	0—1	$3p^2\ ^1S - 7s\ ^1P^\circ$ (95)
2094. 20	A	2	1. 90	7. 79	0—1	$3p^2\ ^1S - 8s\ ^1P^\circ$ (96)

Si II

I P 16.27 Anal B List A Sept. 1948

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Si II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1816. 94‡	B	8	0. 04	6. 83	1½—2½	$3p\ ^2P^\circ - 3p^2\ ^2D$
1808. 01	B	7	0. 00	6. 83	½—1½	(1)
1817. 42	B	2	0. 04	6. 83	1½—1½	
1533. 44	B	5	0. 04	8. 09	1½— ½	$3p\ ^2P^\circ - 4s\ ^2S$
1526. 70	B	4	0. 00	8. 09	½— ½	(2)
1309. 28	A	2	0. 04	9. 46	1½— ½	$3p\ ^2P^\circ - 3p^2\ ^2S$
1304. 41	A	1	0. 00	9. 46	½— ½	(3)
1265. 04	C	10	0. 04	9. 80	1½—2½	$3p\ ^2P^\circ - 3d\ ^2D$
1260. 66	C	8	0. 00	9. 79	½—1½	(4)
1194. 50	D	5	0. 04	10. 37	1½—1½	$3p\ ^2P^\circ - 3p^2\ ^2P$
1193. 31	D	3	0. 00	10. 35	½— ½	(5)
1197. 42	D	3	0. 04	10. 35	1½— ½	
1190. 42	D	4	0. 00	10. 37	½—1½	
993. 09	C	1	0. 04	12. 47	1½—2½	$3p\ ^2P^\circ - 4d\ ^2D$
990. 32	C	0	0. 00	12. 47	½—1½	(6)
1350. 07	E	4	(5. 48	14. 62)	2½—2½	$3p^2\ ^4P - 4s\ ^4P^\circ$
1350. 58	E	3	(5. 46	14. 60)	1½—1½	(7)
1353. 75	E	3	(5. 48	14. 60)	2½—1½	
1352. 68	E	3	(5. 46	14. 58)	1½— ½	
1346. 92	E	3	(5. 46	14. 62)	1½—2½	
1348. 55	E	3	(5. 44	14. 60)	½—1½	
1251. 16	E	4	(5. 48	15. 34)	2½—1½	$3p^2\ ^4P - 3p^3\ ^4S^\circ$
1248. 40	E	3	(5. 46	15. 34)	1½—1½	(8)
1246. 73	E	3	(5. 44	15. 34)	½—1½	
Air						
2072. 61	C	10	6. 83	12. 78	2½—	$3p^2\ ^2D - 4f\ ^2F^\circ$
2071. 94	C	8	6. 83	12. 78	1½—2½	(9)

Si II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1711. 0	C	6d?	6. 83	14. 04		$3p^2\ ^2D - 5f\ ^2F^\circ$ (10)
1563. 1	C	3d?	6. 83	14. 73		$3p^2\ ^2D - 6f\ ^2F^\circ$ (11)
1485. 4	C	3	6. 83	15. 14		$3p^2\ ^2D - 7f\ ^2F^\circ$ (12)
1438. 9	C	1	6. 83	15. 41		$3p^2\ ^2D - 8f\ ^2F^\circ$ (13)
1408. 8	C	0	6. 83	15. 59		$3p^2\ ^2D - 9f\ ^2F^\circ$ (14)
Air						
2604. 44	C	2	8. 09	12. 82	½—1½	$4s\ ^2S - 5p\ ^2P^\circ$
2606. 09	C	1	8. 09	12. 82	½— ½	(15)
2058. 532	C	1	8. 09	14. 08	½—1½	$4s\ ^2S - 6p\ ^2P^\circ$
2058. 917	C	0	8. 09	14. 08	½— ½	(16)
2905. 70	C	3	9. 80	14. 04	2½—	$3d\ ^2D - 5f\ ^2F^\circ$
2904. 29	C	2	9. 79	14. 04	1½—2½	(17)
2501. 99	C	1	9. 80	14. 73	2½—	$3d\ ^2D - 6f\ ^2F^\circ$
2500. 96	C	1	9. 79	14. 73	1½—2½	(18)
2726. 74	C	2	10. 03	14. 56	1½— ½	$4p\ ^2P^\circ - 7s\ ^2S$
2722. 29	C	1	10. 02	14. 56	½— ½	(19)
2682. 27	C	2	10. 03	14. 63	1½—	$4p\ ^2P^\circ - 6d\ ^2D$
2677. 98	C	1	10. 02	14. 63	½—1½	(20)

Si III

I P 33.32 Anal B List D July 1947

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Si III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac 1895. 46	A	2	0. 00	6. 51	0—1	$3s^2\ {}^1S - 3p\ {}^3P^\circ$ (1)
1206. 52	A	10	0. 00	10. 23	0—1	$3s^2\ {}^1S - 3p\ {}^1P^\circ$ (2)
566. 54	A	3	0. 00	21. 79	0—1	$3s^2\ {}^1S - 4p\ {}^1P^\circ$ (3)
*1298. 90	A	8	6. 55 6. 51	16. 05 16. 02	2—2 1—1	$3p\ {}^3P^\circ - 3p^2\ {}^3P$ (4)
1303. 30	A	7	6. 55	16. 02	2—1	
1301. 12	A	7	6. 51	16. 00	1—0	
1294. 55	A	7	6. 51	16. 05	1—2	
1296. 72	A	7	6. 50	16. 02	0—1	
1113. 20	A	9	6. 55	17. 63	2—	$3p\ {}^3P^\circ - 3d\ {}^3D$ (5)
1109. 95	A	8	6. 51	17. 63	1—	
1108. 35	A	7	6. 50	17. 64	0—1	

Si III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac 997. 40	A	5	6. 55	18. 92	2—1	$3p\ {}^3P^\circ - 4s\ {}^3S$ (6)
994. 82	A	5	6. 51	18. 92	1—1	
993. 54	A	5	6. 50	18. 92	0—1	
Air 2559. 22	B	7	10. 23	15. 05	1—2	$3p\ {}^1P^\circ - 3p^2\ {}^1D$ (7)
2541. 83	B	10	10. 23	15. 09	1—2	$3p\ {}^1P^\circ - 3d\ {}^1D$ (8)
Vac 1417. 20	A	5	10. 23	18. 94	1—0	$3p\ {}^1P^\circ - 3p^2\ {}^1S$ (9)
1312. 61	A	4	10. 23	19. 64	1—0	$3p\ {}^1P^\circ - 4s\ {}^1S$ (10)

Si IV

I P 44.95 Anal B List D Sept. 1948

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Si IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac 1393. 73	A	10	0. 00	8. 86	½—1½	$3s\ {}^2S - 3p\ {}^2P^\circ$ (1)
1402. 73	A	8	0. 00	8. 80	½— ½	
457. 7	B	(3)	0. 00	26. 97	½—	$3s\ {}^2S - 4p\ {}^2P^\circ$ (2)
1128. 326	A	5	8. 86	19. 80	1½—2½	$3p\ {}^2P^\circ - 3d\ {}^2D$ (3)
1122. 495	A	4	8. 80	19. 80	½—1½	
818. 121	A	4	8. 86	23. 95	1½— ½	$3p\ {}^2P^\circ - 4s\ {}^2S$ (4)
815. 060	A	3	8. 80	23. 95	½— ½	

PHOSPHORUS

P I

I P 10.9 Anal B List C Nov. 1947

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P I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1774. 942‡	A	(12)	0. 00	6. 96	1½−2½	$3p^3\ {}^4S°-4s\ {}^4P$
1782. 830	A	(12)	0. 00	6. 92	1½−1½	(1)
1787. 686	A	(12)	0. 00	6. 91	1½− ½	
1679. 730	A	(12)	0. 00	7. 35	1½−2½	$3p^3\ {}^4S°-3p^4\ {}^4P$
1674. 661	A	(12)	0. 00	7. 37	1½−1½	(2)
1671. 720	A	(6)	0. 00	7. 38	1½− ½	
Air						
2223. 35	B	3	1. 40	6. 96	2½−2½	$3p^3\ {}^2D°-4s\ {}^4P$
2234. 99	B	3	1. 40	6. 92	1½−1½	(3)
2235. 77	B	5	1. 40	6. 92	2½−1½	
2222. 59	B	0	1. 40	6. 96	1½−2½	
2136. 199	A	(11)	1. 40	7. 18	2½−1½	$3p^3\ {}^2D°-4s\ {}^2P$
2149. 108	A	(12)	1. 40	7. 14	1½− ½	(4)
2135. 466	A	(10)	1. 40	7. 18	1½−1½	
Vac						
1859. 401	A	(12)	1. 40	8. 04	2½−	$3p^3\ {}^2D°-4s'\ {}^2D$
1858. 924	A	(12)	1. 40	8. 04	1½−	(5)

P I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1685. 957	A	(11)	1. 40	8. 73	2½−3½	$3p^3\ {}^2D°-3d\ {}^2F†$
1694. 055	A	(10)	1. 40	8. 69	1½−2½	(6)
Air						
2677. 12	B	5	2. 31	6. 92	1½−1½	$3p^3\ {}^2P°-4s\ {}^4P†$
2688. 02	B	2	2. 31	6. 91	1½− ½	(7)
2535. 65	B	50	2. 31	7. 18	1½−1½	$3p^3\ {}^2P°-4s\ {}^2P$
2553. 28	B	40	2. 31	7. 14	½− ½	(8)
2554. 93	B	30	2. 31	7. 14	1½− ½	
2534. 01	B	25	2. 31	7. 18	½−1½	
2154. 081	A	(12)	2. 31	8. 04	1½−	$3p^3\ {}^2P°-4s'\ {}^2D$
2152. 950	A	(11)	2. 31	8. 04	½−	(9)
2033. 489	A	(10)	2. 31	8. 38	1½−1½	$3p^3\ {}^2P°-3p^4\ {}^2P$
2023. 472	A	(6)	2. 31	8. 41	½− ½	(10)
2024. 546	A	(6)	2. 31	8. 41	1½− ½	
2032. 447	A	(8)	2. 31	8. 38	½−1½	

P II

I P 19.57 Anal B List C Oct. 1947

REFERENCES

A H. A. Robinson, Phys. Rev. **49**, 297 (1936). W L, I, T
B I. S. Bowen, Phys. Rev. **29**, 510 (1927). W L, (I), T

P II **P II**

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)	I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac							Air						
1542. 321‡	A	15	0. 06	8. 06	2−3	$3p^2\ ^3P-3p^3\ ^3D^\circ$ (1)	2606. 01	B	(3)	8. 06	12. 80	3−3	$3p^3\ ^3D^\circ-4p\ ^3D$ (4)
1535. 955	A	12	0. 02	8. 06	1−2		2626. 16	B	(4)	8. 06	12. 76	2−2	
1532. 558	A	12	0. 00	8. 06	0−1		2636. 78	B	(3)	8. 06	12. 74	1−1	
1543. 144	A	12	0. 06	8. 06	2−2		2628. 55	B	(2)	8. 06	12. 76	3−2	
1536. 459	A	12	0. 02	8. 06	1−1		2638. 18	B	(2)	8. 06	12. 74	2−1	
1543. 638	A	2	0. 06	8. 06	2−1		2603. 71	B	(2)	8. 06	12. 80	2−3	
							2624. 76	B	(3)	8. 06	12. 76	1−2	
1310. 685	A	10	0. 06	9. 48	2−2	$3p^2\ ^3P-3p^3\ ^3P^\circ$ (2)							
1304. 688	A	10	0. 02	9. 48	1−1		2484. 152	A	8	8. 06	13. 03	3−2	$3p^3\ ^3D^\circ-4p\ ^3P$ (5)
1309. 877	A	10	0. 06	9. 48	2−1		2497. 328	A	8	8. 06	13. 00	2−1	
1304. 484	A	10	0. 02	9. 48	1−0		2500. 922	A	7	8. 06	12. 99	1−0	
1305. 531	A	10	0. 02	9. 48	1−2		2481. 984	A	3	8. 06	13. 03	2−2	
1301. 878	A	10	0. 00	9. 48	0−1		2496. 003	A	7	8. 06	13. 00	1−1	
							2480. 704	A	0	8. 06	13. 03	1−2	
1153. 997	A	10	0. 06	10. 76	2−2	$3p^2\ ^3P-4s\ ^3P^\circ$ (3)							
1155. 020	A	10	0. 02	10. 71	1−1								
1159. 085	A	10	0. 06	10. 71	2−1								
1156. 968	A	10	0. 02	10. 69	1−0		2281. 003	A	10	10. 76	16. 17	2−	$4s\ ^3P^\circ-5$ (6)
1149. 960	A	10	0. 02	10. 76	1−2								
1152. 803	A	10	0. 00	10. 71	0−1								
							2285. 114	A	10	10. 97	16. 37	1−	$4s\ ^1P^\circ-19$ (7)

P III

I P 30.03 Anal A List D April 1949

REFERENCES

A H. A. Robinson, Phys. Rev. **51**, 728 (1937). W L, I, T
I. S. Bowen, Phys. Rev. **39**, 13 (1932). T

P III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
*1344. 343	A	15	0. 07	9. 25	1½—2½	$3p\ ^2P°-3p^2\ ^2D$
1334. 866	A	10	0. 00	9. 25	½—1½	(1)
*1344. 900	A	10	0. 07	9. 25	1½—1½	
1003. 592	A	10	0. 07	12. 37	1½— ½	$3p\ ^2P°-3p^2\ ^2S$
998. 000	A	10	0. 00	12. 37	½— ½	(2)
918. 706	A	5	0. 07	13. 51	1½—1½	$3p\ ^2P°-3p^2\ ^2P$
917. 130	A	4	0. 00	13. 46	½— ½	(3)
921. 863	A	5	0. 07	13. 46	1½— ½	
913. 989	A	5	0. 00	13. 51	½—1½	
859. 667	A	8	0. 07	14. 43	1½—2½	$3p\ ^2P°-3d\ ^2D$
855. 618	A	5	0. 00	14. 43	½—1½	(4)

P III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
847. 658	A	3d	7. 09	21. 66	2½—3½	$3p^2\ ^4P-3d\ ^4D°$†
845. 656	A	1	7. 05	21. 65	1½—2½	(5)
844. 635	A	1	7. 03	21. 64	½—1½	
1502. 273	A	10	9. 25	17. 47	2½—1½	$3p^2\ ^2D-4p\ ^2P°$
1504. 719	A	9	9. 25	17. 45	1½— ½	(6)
1501. 551	A	7	9. 25	17. 47	1½—1½	
1380. 464	A	10	9. 25	18. 19	2½—2½	$3p^2\ ^2D-3p^3\ ^2D°$
1381. 111	A	10	9. 25	18. 19	1½—1½	(7)
1381. 633	A	8	9. 25	18. 19	2½—1½	
1379. 873	A	5	9. 25	18. 19	1½—2½	

P IV

I P 51.15 Anal A List D April 1949

REFERENCES

A I. S. Bowen, Phys. Rev. **39,** 10 (1932). W L, I, T
H. A. Robinson, Phys. Rev. **51,** 731 (1937). T
H. Kayser, *Tabelle der Hauptlinien der Linienspektren aller Elemente,* 2d Edition by R. Ritschl, p. 248 (Julius Springer, Berlin, 1939). (I)

P IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
950. 669	A	(25)	0. 00	12. 99	0—1	$3s^2\ ^1S-3p\ ^1P°$ (1)
*1030. 545	A	8	8. 47	20. 45	2, 1—2, 1	$3p\ ^3P°-3p^2\ ^3P$
1035. 542	A	7	8. 47	20. 39	2—1	(2)
1033. 135	A	7	8. 41	20. 36	1—0	
1025. 579	A	7	8. 41	20. 45	1—2	
1028. 131	A	7	8. 38	20. 39	0—1	

P IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
827. 932	A	8	8. 47	23. 38	2—	$3p\ ^3P°-3d\ ^3D$
824. 733	A	7	8. 41	23. 38	1—2, 1	(3)
823. 177	A	6	8. 38	23. 38	0—1	
631. 765	A	7	8. 47	28. 01	2—1	$3p\ ^3P°-4s\ ^3S$
629. 914	A	6	8. 41	28. 01	1—1	(4)
628. 983	A	5	8. 38	28. 01	0—1	
1888. 55	A	8	12. 99	19. 52	1—2	$3p\ ^1P°-3d\ ^1D$ (5)

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S I

I P 10.31 Anal A List B Dec. 1947

REFERENCES

A J. E. Ruedy, Phys. Rev. **44**, 757 (1933). W L, I, T
B. Edlén, Phys. Rev. **62**, 434 (1942); and unpublished material (Nov. 1946). T

S I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1900. 27	A	20R	0. 00	6. 50	2—2	$3p^4\ ^3P-4s\ ^5S°$
1914. 68	A	15R	0. 05	6. 50	1—2	(1)
1807. 31‡	A	25R	0. 00	6. 83	2—1	$3p^4\ ^3P-4s\ ^3S°$
1820. 37	A	25R	0. 05	6. 83	1—1	(2)
1826. 25	A	25R	0. 07	6. 83	0—1	
1473. 98	A	15R	0. 00	8. 38	2—3	$3p^4\ ^3P-4s'\ ^3D°$
1483. 05	A	15R	0. 05	8. 37	1—2	(3)
1487. 12	A	15R	0. 07	8. 37	0—1	
1474. 37	A	12R	0. 00	8. 37	2—2	
1483. 24	A	12R	0. 05	8. 37	1—1	
1474. 54	A	6R	0. 00	8. 37	2—1	
1472. 97	A	15R	0. 00	8. 38	2—3	$3p^4\ ^3P-3d\ ^5D°$
1481. 65	A	15R	0. 05	8. 38	1—2	(4)
1485. 61	A	12	0. 07	8. 38	0—1	
1425. 10	A	15R	0. 00	8. 66	2—3	$3p^4\ ^3P-3d\ ^3D°$
1433. 28	A	15R	0. 05	8. 66	1—2	(5)
1436. 94	A	12R	0. 07	8. 66	0—1	
1401. 50	A	10R	0. 00	8. 81	2—1	$3p^4\ ^3P-5s\ ^3S°$
1409. 32	A	12R	0. 05	8. 81	1—1	(6)
1412. 85	A	12R	0. 07	8. 81	0—1	
1388. 39	A	12R	0. 00	8. 89	2—2	$3p^4\ ^3P-3p^5\ ^3P°$
1389. 16	A	5R	0. 05	8. 94	1—1	(7)
1381. 55	A	15R	0. 00	8. 94	2—1	
1385. 51	A	12R	0. 05	8. 96	1—0	
1396. 10	A	15R	0. 05	8. 89	1—2	
1392. 59	A	12R	0. 07	8. 94	0—1	

S I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1316. 59	A	8R	0. 00	9. 38	2—3	$3p^4\ ^3P-4d\ ^3D°$
1323. 52	A	10R	0. 05	9. 38	1—2	(8)
1326. 64	A	9R	0. 07	9. 38	0—1	
1295. 62	A	6	0. 00	9. 53	2—2	$3p^4\ ^3P-4s''\ ^3P°$
1302. 86	A	6R	0. 05	9. 52	1—1	(9)
1296. 18	A	5	0. 00	9. 52	2—1	
1303. 12	A	7R	0. 05	9. 52	1—0	
1302. 32	A	9R	0. 05	9. 53	1—2	
1305. 89	A	9R	0. 07	9. 52	0—1	
1706. 38	A	8	1. 14	8. 38	2—3	$3p^4\ ^1D-4s'\ ^3D°$
1707. 13	A	8	1. 14	8. 37	2—1	(10)
1666. 68	A	25R	1. 14	8. 55	2—2	$3p^4\ ^1D-4s'\ ^1D°$ (11)
1448. 20	A	12R	1. 14	9. 66	2—1	$3p^4\ ^1D-4s''\ ^1P°$ (12)
1782. 25	A	12R	2. 74	9. 66	0—1	$3p^4\ ^1S-4s''\ ^1P°$ (13)

S II

I P 23.3 Anal B List C Oct. 1947

REFERENCES

A S. B. Ingram, Phys. Rev. **32**, 172 (1928). W L, I, T
B M. Gilles, Ann. de Phys. [10] **15**, 301 (1931). W L, (I), T
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S II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1259.53‡	A	5	0.00	9.80	1½—2½	$3p^3\ {}^4S°-3p^4\ {}^4P$ (1)
1253.79	A	5	0.00	9.85	1½—1½	
1250.50	A	3	0.00	9.87	1½— ½	
906.87	A	3	0.00	13.61	1½—2½	$3p^3\ {}^4S°-4s\ {}^4P$ (2)
910.49	A	3	0.00	13.56	1½—1½	
912.74	A	3	0.00	13.53	1½— ½	
1102.32	A	3	1.84	13.04	2½—1½	$3p^3\ {}^2D°-3p^4\ {}^2P$ (3)
1096.57	A	2	1.83	13.09	1½— ½	
1014.42	A	2	1.84	14.01	2½—1½	$3p^3\ {}^2D°-4s\ {}^2P$† (4)
1019.53	A	2	1.83	13.94	1½— ½	
996.00	A	2	1.84	14.23	2½—3½	$3p^3\ {}^2D°-3d\ {}^2F$ (5)
1000.48	A	2	1.83	14.17	1½—2½	
937.69	A	3	1.84	15.00	2½—	$3p^3\ {}^2D°-4s'\ {}^2D$ (6)
937.41	A	3	1.83	15.00	1½—	

S II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1234.14	A	3	3.03	13.04	1½—1½	$3p^3\ {}^2P°-3p^4\ {}^2P$ (7)
1226.70	A	1	3.03	13.09	½— ½	
1227.45	A	1	3.03	13.09	1½— ½	
1233.36	A	0	3.03	13.04	½—1½	
1125.00	A	1	3.03	14.01	1½—1½	$3p^3\ {}^2P°-4s\ {}^2P$ (8)
1131.05	A	2	3.03	13.94	½— ½	
1131.65	A	2	3.03	13.94	1½— ½	
1124.39	A	1	3.03	14.01	½—1½	
1031.34	A	1	3.03	15.00	1½—	$3p^3\ {}^2P°-4s'\ {}^2D$ (9)
1030.87	A	1	3.03	15.00	½—1½	
Air						
2847.73	B	(3)	13.04	17.37	1½—2½	$3p^4\ {}^2P-4p'\ {}^2D°$ (10)
2881.01	B	(1)	13.09	17.38	½—1½	
2629.1	A	2	13.04	17.73	1½—1½	$3p^4\ {}^2P-4p'\ {}^2P°$† (11)
2670.0	A	3	13.09	17.71	½— ½	

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S III

I P 34.9 Anal B List C Oct. 1947

REFERENCES

A S. B. Ingram, Phys. Rev. **33**, 907 (1929). W L, I, T
B H. A. Robinson, Phys. Rev. **52**, 724 (1937). W L, I, T
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S III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1200. 97	A	4	0. 10	10. 38	2—3	$3p^2\ ^3P - 3p^3\ ^3D^\circ$ (1)
1194. 02	A	4	0. 04	10. 38	1—2	
1190. 17	A	2	0. 00	10. 37	0—1	
1201. 71	A	2	0. 10	10. 38	2—2	
1194. 40	A	3	0. 04	10. 37	1—1	
1202. 10	A	0	0. 10	10. 37	2—1	
1021. 32	A	2	0. 10	12. 19	2—2	$3p^2\ ^3P - 3p^3\ ^3P^\circ$ (2)
*1015. 51	A	2	0. 04	12. 19	1—1	
1021. 10	A	1	0. 10	12. 19	2—1	
*1015. 51	A	2	0. 04	12. 19	1—0	
1015. 76	A	1	0. 04	12. 19	1—2	
1012. 49	A	3	0. 00	12. 19	0—1	
735. 251	B	4	0. 10	16. 89	2—1	$3p^2\ ^3P - 3p^3\ ^1P^\circ$ (3)
732. 376	B	5	0. 04	16. 89	1—1	
730. 783	B	0	0. 00	16. 89	0—1	
728. 69	A	3	0. 10	17. 04	2—1	$3p^2\ ^3P - 3p^3\ ^3S^\circ$ (4)
725. 86	A	3	0. 04	17. 04	1—1	
724. 29	A	3	0. 00	17. 04	0—1	
702. 78	P		0. 10	17. 67	2—2	$3p^2\ ^3P - 3d\ ^3P^\circ$ (5)
*700. 15	A	3	0. 04	17. 67	1—1	
702. 82	P		0. 10	17. 67	2—1	
700. 29	A	3	0. 04	17. 67	1—0	
*700. 15	A	3	0. 04	17. 67	1—2	
698. 73	A	2	0. 00	17. 67	0—1	
683. 47	A	1	0. 10	18. 17	2—2	$3p^2\ ^3P - 4s\ ^3P^\circ$ (6)
685. 35	A	0	0. 10	18. 11	2—1	
683. 07	A	0	0. 04	18. 11	1—0	
*680. 95	A	2	0. 04	18. 17	1—2	
*681. 50	A	1	0. 00	18. 11	0—1	
680. 69	A	2	0. 10	18. 24	2—3	$3p^2\ ^3P - 3d\ ^3D^\circ$ (7)
678. 46	A	2	0. 04	18. 23	1—2	
677. 75	A	2	0. 00	18. 22	0—1	
*680. 95	A	2	0. 10	18. 23	2—2	
679. 11	A	2	0. 04	18. 22	1—1	
*681. 50	A	1	0. 10	18. 22	2—1	
1077. 835	B	8	1. 40	12. 86	2—2	$3p^2\ ^1D - 3p^3\ ^1D^\circ$ (8)
796. 692	B	4	1. 40	16. 89	2—1	$3p^2\ ^1D - 3p^3\ ^1P^\circ$ (9)
788. 984	B	4	1. 40	17. 04	2—1	$3p^2\ ^1D - 3p^3\ ^3S^\circ$ (10)

S III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
738. 474	B	4	1. 40	18. 11	2—1	$3p^2\ ^1D - 4s\ ^3P^\circ$† (11)
729. 529	B	4	1. 40	18. 32	2—1	$3p^2\ ^1D - 4s\ ^1P^\circ$ (12)
836. 315	B	4	3. 35	18. 11	0—1	$3p^2\ ^1S - 4s\ ^3P^\circ$ (13)
824. 887	B	4	3. 35	18. 32	0—1	$3p^2\ ^1S - 4s\ ^1P^\circ$ (14)
Air						
2863. 53	A	5	21. 07	25. 38	3—4	$4p\ ^3D - 4d\ ^3F^\circ$† (15)
2856. 02	A	4	20. 99	25. 32	2—3	
2872. 00	A	2	20. 96	25. 26	1—2	
2904. 31	A	6	21. 07	25. 32	3—3	
2756. 89	A	8	21. 07	25. 54	3—3	$4p\ ^3D - 4d\ ^3D^\circ$† (16)
2731. 10	A	7	20. 99	25. 51	2—2	
2718. 88	A	7	20. 96	25. 50	1—1	
2775. 25	A	5	21. 07	25. 51	3—2	
2741. 01	A	5	20. 99	25. 50	2—1	
2496. 24	A	6	21. 07	26. 01	3—2	$4p\ ^3D - 5s\ ^3P^\circ$† (17)
2508. 15	A	7	20. 99	25. 92	2—1	
2499. 08	A	6	20. 96	25. 90	1—0	
2460. 50	A	5	20. 99	26. 01	2—2	
2489. 59	A	5	20. 96	25. 92	1—1	
2964. 80	A	4	21. 38	25. 54	2—3	$4p\ ^3P - 4d\ ^3D^\circ$† (18)
2950. 23	A	3	21. 33	25. 51	1—2	
2985. 98	A	6	21. 38	25. 51	2—2	
2665. 40	A	7	21. 38	26. 01	2—2	$4p\ ^3P - 5s\ ^3P^\circ$ (19)
2691. 68	A	5	21. 33	25. 92	1—1	
2721. 40	A	5	21. 38	25. 92	2—1	
2702. 76	A	5	21. 33	25. 90	1—0	
2636. 88	A	4	21. 33	26. 01	1—2	
2680. 47	A	4	21. 31	25. 92	0—1	
2726. 82	A	7	21. 48	26. 01	1—2	$4p\ ^3S - 5s\ ^3P^\circ$ (20)
2785. 49	A	6	21. 48	25. 92	1—1	
2797. 39	A	4	21. 48	25. 90	1—0	

S IV

I P 47.1 Anal C List C Sept. 1948

REFERENCES

A I. S. Bowen, Phys. Rev. **31**, 37 (1928). W L, I, T
B R. A. Millikan and I. S. Bowen, Phys. Rev. **25**, 600 (1925). W L, I, T
C I. S. Bowen, Phys. Rev. **39**, 13 (1932). W L, I, T

S IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1072. 992	A	6	0. 12	11. 62	1½—2½	$3p\ ^2P^\circ - 3p^2\ ^2D$ (1)
1062. 672	A	6	0. 00	11. 62	½—1½	
1073. 522	A	4	0. 12	11. 62	1½—1½	
815. 97	B	5	0. 12	15. 25	1½— ½	$3p\ ^2P^\circ - 3p^2\ ^2S$ (2)
809. 69	B	4	0. 00	15. 25	½— ½	
750. 23	B	5	0. 12	16. 57	1½—1½	$3p\ ^2P^\circ - 3p^2\ ^2P$ (3)
748. 40	B	5	0. 00	16. 50	½— ½	
753. 76	B	5	0. 12	16. 50	1½— ½	
744. 92	B	5	0. 00	16. 57	½— ½	
661. 42	B	6	0. 12	18. 78	1½—2½	$3p\ ^2P^\circ - 3d\ ^2D$ (4)
657. 34	B	5	0. 00	18. 78	½—1½	
551. 17	B	2	0. 00	22. 40	½— ½	$3p\ ^2P^\circ - 4s\ ^2S$ (5)

S IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
803. 996	C	4	(8. 98	24. 33)	2½—1½	$3p^2\ ^4P - 3p^3\ ^4S^\circ$ (6)
800. 477	C	4	(8. 91	24. 33)	1½—1½	
798. 277	C	3	(8. 87	24. 33)	½—1½	
666. 114	C	4	(8. 98	27. 51)	2½—2½	$3p^2\ ^4P - 3d\ ^4P^\circ$ (7)
664. 822	C	3	(8. 98	27. 55)	2½—1½	
663. 707	C	3	(8. 91	27. 51)	1½—2½	
660. 945	C	3	(8. 87	27. 55)	½—1½	
655. 553	C	4	(8. 98	27. 81)	2½—3½	$3p^2\ ^4P - 3d\ ^4D^\circ$† (8)
653. 560	C	4	(8. 91	27. 80)	1½—2½	
652. 523	C	3	(8. 87	27. 79)	½—1½	

S V

I P 72.2 Anal C List C Sept. 1948

REFERENCE

A I. S. Bowen, Phys. Rev. **39**, 8 (1932). W L, I, T

S V

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac 786. 476	A	8	0. 00	15. 70	0—1	$3s^2\ ^1S - 3p\ ^1P^\circ$ (1)
*854. 792	A	7	(10. 39	24. 84)	2—2	$3p\ ^3P^\circ - 3p^2\ ^3P$ (2)
			(10. 30	24. 74)	1—1	
860. 462	A	5	(10. 39	24. 74)	2—1	
857. 872	A	5	(10. 30	24. 69)	1—0	
849. 241	A	6	(10. 30	24. 84)	1—2	
852. 185	A	5	(10. 26	24. 74)	0—1	
*663. 155	A	5	(10. 39	29. 01)	2—3	$3p\ ^3P^\circ - 3d\ ^3D$ (3)
*659. 853	A	4	(10. 30	29. 01)	1—2	
658. 262	A	3	(10. 26	29. 01)	0—1	
*663. 155	A	5	(10. 39	29. 01)	2—2	
*659. 853	A	4	(10. 30	29. 01)	1—1	
*663. 155	A	5	(10. 39	29. 01)	2—1	
439. 65	A	1	(10. 39	38. 48)	2—1	$3p\ ^3P^\circ - 4s\ ^3S$ (4)
438. 19	A	1	(10. 30	38. 48)	1—1	
437. 37	A	1	(10. 26	38. 48)	0—1	

S VI

I P 87.67 Anal B List C Sept. 1948

REFERENCES

A H. A. Robinson, Phys. Rev. **52**, 724 (1937). W L, I, T

B I. S. Bowen and R. A. Millikan, Phys. Rev. **25**, 295 (1925). (I), T

S VI

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac 933. 382	A	(5)	0. 00	13. 23	½—1½	$3s\ ^2S - 3p\ ^2P^\circ$ (1)
944. 517	A	(4)	0. 00	13. 07	½— ½	
248. 985	A	4	0. 00	13. 23	½—1½	$3s\ ^2S - 4p\ ^2P^\circ$ (2)
249. 271	A	4	0. 00	13. 07	½— ½	
712. 682	A	(2)	13. 23	30. 55	1½—2½	$3p\ ^2P^\circ - 3d\ ^2D$ (3)
706. 480	A	(1)	13. 07	30. 54	½—1½	
712. 844	A	(0)	13. 23	30. 54	1½—1½	
390. 859	A	8	13. 23	44. 81	1½— ½	$3p\ ^2P^\circ - 4s\ ^2S$ (4)
388. 940	A	6	13. 07	44. 81	½— ½	
464. 654	A	10	30. 55	57. 11		$3d\ ^2D - 4f\ ^2F^\circ$ (5)

CHLORINE

Cl I

I P 12.9 Anal A List A Jan. 1948

REFERENCES

A L. A. Turner, Phys. Rev. **27,** 397 (1926). W L, I, T
C. C. Kiess, Bur. Std. J. Research **10,** 827, RP570 (1933). T
J. B. Green and J. T. Lynn, Phys. Rev. **69,** 165 (1946). T

Cl I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
*1389. 9	A	4	0. 00	8. 88	1½—2½	$3p^5\ ^2P^\circ - 4s\ ^4P$
1396. 5	A	3	0. 11	8. 95	½—1½	(1)
1379. 6	A	5	0. 00	8. 95	1½—1½	
*1389. 9	A	4	0. 11	8. 99	½— ½	
1347. 2‡	A	5	0. 00	9. 16	1½—1½	$3p^5\ ^2P^\circ - 4s\ ^2P$
1351. 7	A	3	0. 11	9. 24	½— ½	(2)
1335. 8	A	2	0. 00	9. 24	1½— ½	
1363. 5	A	5	0. 11	9. 16	½—1½	

Cl II

I P 23.70 Anal A List D Dec. 1948

REFERENCE

A See:. C. C. Kiess and T. L. de Bruin, J. Research Nat. Bur. Std. **23**, 443, RP1244 (1939). W L, I, T

Cl II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1071. 05‡	A	(20)	0. 00	11. 53	2—2	$3p^4\ ^3P - 3p^5\ ^3P°$†
1071. 76	A	(10)	0. 09	11. 60	1—1	(1)
1063. 83	A	(10)	0. 00	11. 60	2—1	
1079. 08	A	(15)	0. 09	11. 53	1—2	
888. 07	A	(4)	0. 00	13. 90	2—1	$3p^4\ ^3P - 4s\ ^3S°$
893. 56	A	(3)	0. 09	13. 90	1—1	(2)
895. 95	A	(3)	0. 12	13. 90	0—1	
864. 67	A	(5)	0. 00	14. 28	2—1	$3p^4\ ^3P - 3p^5\ ^1P°$
872. 00	A	(0)	0. 12	14. 28	0—1	(3)
834. 67	A	(10)	0. 00	14. 79	2—3	$3p^4\ ^3P - 3d\ ^3D°$†
839. 63	A	(2)	0. 09	14. 79	1—2	(4)
841. 41	A	(4)	0. 12	14. 79	0—1	
788. 75	A	(4)	0. 00	15. 65	2—3	$3p^4\ ^3P - 4s'\ ^3D°$
793. 34	A	(3)	0. 09	15. 65	1—2	(5)
795. 36	A	(2)	0. 12	15. 64	0—1	
789. 01	A	(7)	0. 00	15. 65	2—2	
793. 47	A	(3)	0. 09	15. 64	1—1	
Air						
2688. 04	A	150	13. 90	18. 49	1—2	$4s\ ^3S° - 4p'\ ^3P$
2676. 95	A	100	13. 90	18. 51	1—1	(6)
2672. 19	A	50	13. 90	18. 52	1—0	
2658. 74	A	100	14. 28	18. 92	1—2	$3p^5\ ^1P° - 4p'\ ^1D$ (7)

Cl II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2564. 84	A	20	14. 79	19. 60	3—3	$3d\ ^3D° - 4p''\ ^3D$†
2565. 29	A	15	14. 79	19. 60	2—2	(8)
2251. 50	A	40	14. 79	20. 27	3—2	$3d\ ^3D° - 1$
2250. 96	A	20	14. 79	20. 27	2—2	(9)
2253. 16	A	30	14. 79	20. 27	1—2	
2502. 75	A	40	15. 89	20. 82	3—2	$4p\ ^5P - 6s\ ^5S°$
2498. 53	A	30	15. 88	20. 82	2—2	(10)
2496. 04	A	20	15. 88	20. 82	1—2	
*2434. 10	A	50	15. 89	20. 96	3—4	$4p\ ^5P - 5d\ ^5D°$
*2430. 16	A	30	15. 88	20. 96	2—3	(11)
2427. 79	A	20	15. 88	20. 96	1—2	
*2434. 10	A	50	15. 89	20. 96	3—3	
*2430. 16	A	30	15. 88	20. 96	2—2	
*2667. 36	A	40	16. 27	20. 89	2—1	$4p\ ^3P - 6s\ ^3S°$
2666. 46	A	20	16. 27	20. 89	1—1	(12)
*2667. 36	A	40	16. 27	20. 89	0—1	
2549. 85	A	50	16. 27	21. 11	2—3	$4p\ ^3P - 5d\ ^3D°$
2546. 94	A	20	16. 27	21. 11	1—2	(13)
2544. 84	A	15	16. 27	21. 12	0—1	
2547. 76	A	12	16. 27	21. 11	2—2	
2543. 98	A	10	16. 27	21. 12	1—1	
2906. 25	A	20	17. 96	22. 20	1—1	$4p'\ ^1P - 4d'\ ^1P°$ (14)

Strongest Unclassified Lines of Cl II

2912. 06	A	15	2459. 86	A	10	
2763. 88	A	10	2452. 30	A	10	
2754. 10	A	25	2445. 34	A	20	
2648. 19	A	10	2424. 01	A	10	
2615. 13	A	10	2412. 48	A	10	

Cl III

I P 39.7 Anal B List C Nov. 1947

REFERENCES

A I. S. Bowen, Phys. Rev. **31**, 34 (1928). W L, I, T
B I. S. Bowen, Phys. Rev. **45**, 401 (1934). W L, I, T

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1015.023	A	7	0.00	12.16	1½–2½	$3p^3\ ^4S^\circ - 3p^4\ ^4P$
1008.777	A	6	0.00	12.24	1½–1½	(1)
1005.280	A	5	0.00	12.28	1½– ½	
572.693	A	4	0.00	21.56	1½–2½	$3p^3\ ^4S^\circ - 4s\ ^4P$
574.408	A	3	0.00	21.49	1½–1½	(2)
575.582	A	3	0.00	21.45	1½– ½	
557.118	B	7	0.00	22.16	1½–2½	$3p^3\ ^4S^\circ - 3d\ ^4P$
556.605	B	7	0.00	22.18	1½–1½	(3)
556.232	B	6	0.00	22.19	1½– ½	
606.345	B	5	2.24	22.60	2½–2½	$3p^3\ ^2D^\circ - 3d\ ^2D\dagger$
609.673	B	4	2.23	22.48	1½–1½	(4)
561.680	B	7	2.24	24.22	2½–3½	$3p^3\ ^2D^\circ - 3d'\ ^2F$
561.530	B	7	2.23	24.21	1½–2½	(5)
561.738	B	7	2.24	24.21	2½–2½	
591.428	B	4	3.69	24.56	1½–1½	$3p^3\ ^2P^\circ - 3d'\ ^2P\dagger$
591.646	B	4	3.68	24.55	½– ½	(6)
1822.50	B	6	18.21	24.98	4½–3½	$3d\ ^4F - 4p\ ^4D^\circ\dagger$
1828.40	B	5	18.16	24.91	3½–2½	(7)
1832.08	B	4	18.12	24.85	2½–1½	
1833.31	B	4	18.09	24.82	1½– ½	
1808.51	B	4	18.16	24.98	3½–3½	
1817.73	B	4	18.12	24.91	2½–2½	
1901.61	B	5	18.76	25.25	3½–2½	$3d\ ^4D - 4p\ ^4P^\circ\dagger$
1912.90	B	4	18.75	25.20	2½–1½	(8)
1917.87	B	4	18.75	25.19	1½– ½	
Air						
2578.26	B	5	22.11	26.89	1½–2½	$4s\ ^2P - 4p'\ ^2D^\circ\dagger$
2528.08	B	5	22.02	26.90	½–1½	(9)
2323.50	B	6	22.11	27.42	1½–1½	$4s\ ^2P - 4p'\ ^2P^\circ\dagger$
*2298.51	B	5	22.02	27.39	½– ½	(10)
2336.45	B	5	22.11	27.39	1½– ½	
2965.56	B	6	23.26	27.42	2½–1½	$4s'\ ^2D - 4p'\ ^2P^\circ$
2991.82	B	5	23.26	27.39	1½– ½	(11)
2970.67	B	4	23.26	27.42	1½–1½	
2616.97	B	4	24.98	29.70	3½–4½	$4p\ ^4D^\circ - 4d\ ^4F\dagger$
2609.50	B	4	24.91	29.64	2½–3½	(12)
2603.59	B	5	24.85	29.59	1½–2½	
2601.16	B	4	24.82	29.57	½–1½	
2651.19	B	3	24.98	29.64	3½–3½	
2633.18	B	5	24.91	29.59	2½–2½	
2618.78	B	4	24.85	29.57	1½–1½	

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2519.45	A	5	24.98	29.88	3½–3½	$4p\ ^4D^\circ - 4d\ ^4D\dagger$
2504.23	A	5	24.91	29.84	2½–2½	(13)
2484.27	A	4	24.85	29.82	1½–1½	
2469.20	B	5	24.82	29.82	½– ½	
2510.92	A	4	24.91	29.82	2½–1½	
2471.07	B	5	24.98	29.98	3½–2½	$4p\ ^4D^\circ - 4d\ ^4P\dagger$
2419.5	B	5	24.91	30.01	2½–1½	(14)
2394.73	B	5	24.85	30.01	1½–1½	
2283.93	A	7	24.98	30.39	3½–2½	$4p\ ^4D^\circ - 5s\ ^4P\dagger$
2291.38	A	4	24.91	30.29	2½–1½	(15)
2253.07	A	7	24.91	30.39	2½–2½	
2268.95	A	5	24.85	30.29	1½–1½	
2278.34	A	5	24.82	30.24	½– ½	
2665.54	A	6	25.25	29.88	2½–3½	$4p\ ^4P^\circ - 4d\ ^4D\dagger$
2661.65	A	5	25.20	29.84	1½–2½	(16)
2403.32	A	5	25.25	30.39	2½–2½	$4p\ ^4P^\circ - 5s\ ^4P$
2422.47	A	4	25.20	30.29	1½–1½	(17)
2442.47	A	5	25.19	30.24	½– ½	
2447.14	A	6	25.25	30.29	2½–1½	
2448.58	A	6	25.20	30.24	1½– ½	
2379.47	A	5	25.20	30.39	1½–2½	
2416.42	A	7	25.19	30.29	½–1½	
2580.67	B	6	25.42	30.21	2½–3½	$4p\ ^2D^\circ - 4d\ ^2F\dagger$
2577.13	B	5	25.31	30.10	1½–2½	(18)
2340.64	B	6	25.42	30.70	2½–2½	$4p\ ^2D^\circ - 4d\ ^2D\dagger$
*2298.51	B	5	25.31	30.68	1½–1½	(19)
2710.37	B	7	25.42	29.98	1½–2½	$4p\ ^4S^\circ - 4d\ ^4P\dagger$
*2691.52	B	5	25.42	30.01	1½–1½	(20)
2486.91	A	5	25.42	30.39	1½–2½	$4p\ ^4S^\circ - 5s\ ^4P\dagger$
						(21)
2532.48	B	5	25.82	30.70	1½–2½	$4p\ ^2P^\circ - 4d\ ^2D\dagger$
2531.76	B	5	25.81	30.68	½–1½	(22)
2632.67	B	5	26.75	31.44	3½–2½	$4p'\ ^2F^\circ - 4d'\ ^2D$
2624.71	B	3	26.73	31.43	2½–1½	(23)
2620.05	B	4	26.73	31.44	2½–2½	
2370.37	B	6	26.75	31.96	3½–2½	$4p'\ ^2F^\circ - 5s'\ ^2D$
2359.67	B	6	26.73	31.96	2½–1½	(24)
2684.76	B	5	26.89	30.21	2½–3½	$4p'\ ^2D^\circ - 4d\ ^2F\dagger$
2685.40	B	4	26.90	30.10	1½–2½	(25)
2436.1	B	5	26.89	31.96	2½–2½	$4p'\ ^2D^\circ - 5s'\ ^2D$
2439.69	B	5	26.90	31.96	1½–1½	(26)

ARGON

A I

I P 15.69 Anal A List D April 1948

REFERENCES

A J. C. Boyce, Phys. Rev. **48,** 396 (1935). W L, I, T
K. W. Meissner, Zeit. Phys. **39,** 172 (1926); **40,** 839 (1927). T
E. Rasmussen, Dissertation, p. 22, Copenhagen (1932); Zeit. Phys. **75,** 695 (1932). T
W. F. Meggers and C. J. Humphreys, Bur. Std. J. Research **10,** 437, RP540 (1933). T
C. J. Humphreys, J. Research Nat. Bur. Std. **20,** 26, RP1061 (1938). T
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A I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1066. 660	A	15	0. 00	11. 57	0—1	$3p^6\ {}^1S-4s$ [1½]° (1)
1048. 218‡	A	25	0. 00	11. 78	0—1	$3p^6\ {}^1S-4s'$ [½]° (2)
894. 30	A	4	0. 00	13. 80	0—1	$3p^6\ {}^1S-3d$ [½]° (3)
876. 06	A	4	0. 00	14. 09	0—1	$3p^6\ {}^1S-3d$ [1½]° (4)

A II

I P 27.5 Anal B List C April 1948

REFERENCES

A J. C. Boyce, Phys. Rev. **48,** 397 (1935). W L, I, T
B A. H. Rosenthal, Ann. der Phys. [5] **4,** 49 (1930). W L, I
See C. E. Moore, *Atomic Energy Levels,* Circ. Nat. Bur. Std. 467, Vol. I, p. 216 (1949). T

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
919. 78‡	A	15	0. 00	13. 42	1½— ½	$3p^5\ ^2P°-3p^6\ ^2S$
932. 046	A	10	0. 18	13. 42	½— ½	(1)
754. 817	A	3	0. 00	16. 35	1½—2½	$3p^5\ ^2P°-3d\ ^4D$
762. 192	A	2	0. 18	16. 37	½—1½	(2)
744. 920	A	5	0. 00	16. 57	1½—2½	$3p^5\ ^2P°-4s\ ^4P$†
748. 193	A	4	0. 18	16. 68	½—1½	(3)
740. 263	A	12	0. 00	16. 68	1½—1½	
745. 318	A	5	0. 18	16. 74	½— ½	
723. 353	A	14	0. 00	17. 07	1½—1½	$3p^5\ ^2P°-4s\ ^2P$
725. 542	A	9	0. 18	17. 19	½— ½	(4)
718. 083	A	4	0. 00	17. 19	1½— ½	
730. 929	A	8	0. 18	17. 07	½—1½	
698. 760	A	4	0. 00	17. 67	1½—2½	$3p^5\ ^2P°-3d\ ^4F$†
704. 516	A	3	0. 18	17. 70	½—1½	(5)
671. 854	A	10	0. 00	18. 37	1½—2½	$3p^5\ ^2P°-4s'\ ^2D$
679. 410	A	8	0. 18	18. 35	½—1½	(6)
672. 849	A	3	0. 00	18. 35	1½—1½	
666. 014	A	10	0. 00	18. 54	1½—2½	$3p^5\ ^2P°-3d\ ^2F$
						(7)
661. 868	A	15	0. 00	18. 65	1½—2½	$3p^5\ ^2P°-3d\ ^2D$
670. 947	A	10	0. 18	18. 58	½—1½	(8)
664. 558	A	6	0. 00	18. 58	1½—1½	
597. 695	A	5	0. 00	20. 65	1½— ½	$3p^5\ ^2P°-4s''\ ^2S$
602. 854	A	4	0. 18	20. 65	½— ½	(9)
580. 261	A	8	0. 00	21. 27	1½—2½	$3p^5\ ^2P°-3d'\ ^2D$
583. 437	A	8	0. 18	21. 34	½—1½	(10)
578. 605	A	4	0. 00	21. 34	1½—1½	

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
573. 360	A	6	0. 00	21. 53	1½—1½	$3p^5\ ^2P°-3d'\ ^2P$
576. 731	A	5	0. 18	21. 58	½— ½	(11)
572. 015	A	5	0. 00	21. 58	1½— ½	
578. 107	A	4	0. 18	21. 53	½—1½	
519. 326	A	6	0. 00	23. 77	1½—2½	$3p^5\ ^2P°-4d\ ^2D$†
522. 791	A	4	0. 18	23. 79	½—1½	(12)
1941. 062	A	2	13. 42	19. 78	½—1½	$3p^6\ ^2S-4p\ ^2P°$
1961. 356	A	2	13. 42	19. 72	½— ½	(13)
1574. 985	A	4	13. 42	21. 26	½—1½	$3p^6\ ^2S-4p'\ ^2P°$
1560. 188	A	3	13. 42	21. 33	½— ½	(14)
Air						
2942. 90	B	8	17. 07	21. 26	1½—1½	$4s\ ^2P-4p'\ ^2P°$
2979. 05	B	6	17. 19	21. 33	½— ½	(15)
2891. 61	B	5	17. 07	21. 33	1½— ½	
3033. 52	B	6	17. 19	21. 26	½—1½	
2844. 12	B	2	17. 07	21. 41	1½—2½	$4s\ ^2P-4p'\ ^2D°$
2932. 60	B	4	17. 19	21. 40	½—1½	(16)
2847. 81	B	2	17. 07	21. 40	1½—1½	
2806. 16	B	5	19. 78	24. 18	1½—2½	$4p\ ^2P°-5s'\ ^2D$
2764. 66	B	3	19. 72	24. 18	½—1½	(17)
2534. 74	B	5	19. 78	24. 65	1½—2½	$4p\ ^2P°-4d'\ ^2D$
2510. 63	B	0	19. 72	24. 63	½—1½	(18)
2544. 72	B	5	19. 78	24. 63	1½—1½	

A III

I P 40.8 Anal C List D Feb. 1948

REFERENCES

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B T. L. de Bruin, *Zeeman Verhandelingen*, p. 415 (Martinus Nyhöff, The Hague, 1935). W L, I, T
J. C. Boyce, Phys. Rev. **49**, 351 (1936). T
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B. Edlén, Phys. Rev. **62**, 434 (1942). T

A III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
878. 728	A	12	0. 00	14. 05	2—2	$3p^4\ ^3P - 3p^5\ ^3P^\circ$ (1)
879. 622	A	8	0. 14	14. 17	1—1	
871. 099	A	10	0. 00	14. 17	2—1	
875. 534	A	9	0. 14	14. 24	1—0	
887. 404	A	10	0. 14	14. 05	1—2	
883. 179	A	9	0. 19	14. 17	0—1	
690. 170	A	8d	0. 00	17. 89	2—	$3p^4\ ^3P - 3d\ ^5D^\circ$† (2)
695. 537	A	6	0. 14	17. 89	1—	
*637. 282	A	20*	0. 00	19. 37	2—3	$3p^4\ ^3P - 3d\ ^3D^\circ$ (3)
641. 808	A	12	0. 14	19. 37	1—2	
643. 256	A	9	0. 19	19. 39	0—1	
*637. 282	A	20	0. 00	19. 37	2—2	
641. 364	A	5	0. 14	19. 39	1—1	
636. 818	A	3	0. 00	19. 39	2—1	
553. 470	A	9	0. 00	22. 30	2—1	$3p^4\ ^3P - 4s\ ^3S^\circ$ (4)
556. 893	A	6	0. 14	22. 30	1—1	
558. 321	A	5	0. 19	22. 30	0—1	
769. 152	A	12	1. 73	17. 78	2—1	$3p^4\ ^1D - 3p^5\ ^1P^\circ$ (5)

A III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1669. 671	A	7	17. 89	25. 28	4—3	$3d\ ^5D^\circ - 4p\ ^5P$† (6)
1673. 425	A	7	17. 89	25. 26	3—2	
1675. 637	A	4	17. 89	25. 25	2—1	
1914. 398	A	9	19. 37	25. 82	3—2	$3d\ ^3D^\circ - 4p\ ^3P$† (7)
1915. 564	A	7	19. 37	25. 82	2—1	
Air						
2484. 11	B	6	23. 01	27. 98	4—4	$3d'\ ^3F^\circ - 4p'\ ^3F$† (8)
2508. 91	B	3	23. 04	27. 96	3—3	
2533. 92	B	3	23. 07	27. 94	2—2	
2724. 84	B	10	23. 30	27. 83	3—3	$3d'\ ^3D^\circ - 4p'\ ^3D$† (9)
2678. 38	B	9	23. 19	27. 79	2—2	
2631. 90	B	7	23. 11	27. 80	1—1	
2345. 17	B	9	23. 30	28. 56	3—2	$3d'\ ^3D^\circ - 4p'\ ^3P$† (10)
2282. 21	B	7	23. 19	28. 59	2—1	
2242. 29	B	6	23. 11	28. 61	1—0	

A IV

I P 59.6 Anal C List D Nov. 1947

REFERENCES

A J. C. Boyce, Phys. Rev. **48**, 401 (1935). W L, I, T

B T. L. de Bruin, Physica **3**, No. 8, 809 (1936). W L, I, T

A IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
850. 602	A	25	0. 00	14. 51	1½—2½	$3p^3\ {}^4S° - 3p^4\ {}^4P$ (1)
843. 772	A	20	0. 00	14. 63	1½—1½	
840. 029	A	15	0. 00	14. 70	1½— ½	
801. 409	A	10	2. 62	18. 02	2½—2½	$3p^3\ {}^2D° - 3p^4\ {}^2D$† (2)
801. 086	A	10	2. 60	18. 01	1½—1½	
*689. 007	A	12	2. 62	20. 54	2½—1½	$3p^3\ {}^2D° - 3p^4\ {}^2P$ (3)
683. 278	A	10	2. 60	20. 67	1½— ½	

A IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2809. 44	B	16	31. 11	35. 50	2½—3½	$4s\ {}^4P - 4p\ {}^4D°$† (4)
2788. 96	B	14	30. 97	35. 40	1½—2½	
2776. 26	B	10	30. 89	35. 33	½—1½	
2640. 34	B	15	31. 11	35. 78	2½—2½	$4s\ {}^4P - 4p\ {}^4P°$† (5)
2608. 06	B	10	30. 97	35. 71	1½—1½	
2757. 92	B	14	33. 10	37. 58	2½—3½	$4s'\ {}^2D - 4p'\ {}^2F°$† (6)
2784. 47	B	12	33. 11	37. 54	1½—2½	

A V

I P 75 Anal C List B Oct. 1947

REFERENCE

A L. W. Phillips and W. L. Parker, Phys. Rev. **60**, 301 (1941). W L, I, T

A V

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
834. 878	A	4b	0. 25	15. 04	2—3	$3p^2\ {}^3P - 3p^3\ {}^3D°$† (1)
827. 055	A	5	0. 09	15. 02	1—2	
822. 159	A	4	0. 00	15. 02	0—1	
715. 645	A	3	0. 25	17. 50	2—2	$3p^2\ {}^3P - 3p^3\ {}^3P°$ (2)
*709. 195	A	5	0. 09	17. 50	1—	
715. 599	A	4	0. 25	17. 50	2—1	
705. 353	A	3	0. 00	17. 50	0—1	
527. 693	A	6	0. 25	23. 65	2—1	$3p^2\ {}^3P - 3p^3\ {}^3S°$ (3)
524. 189	A	5	0. 09	23. 65	1—1	
522. 090	A	3	0. 00	23. 65	0—1	
463. 938	A	7	0. 25	26. 86	2—2	$3p^2\ {}^3P - 3d\ {}^3P°$† (4)
459. 728	A	1	0. 09	26. 95	1—1	
462. 415	A	3	0. 25	26. 95	2—1	
461. 227	A	6b	0. 09	26. 86	1—2	

A V

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
449. 065	A	18	0. 25	27. 74	2—3	$3p^2\ {}^3P - 3d\ {}^3D°$† (5)
446. 949	A	8	0. 09	27. 72	1—2	
445. 997	A	5	0. 00	27. 68	0—1	
337. 998	A	6	0. 25	36. 77	2—2	$3p^2\ {}^3P - 4s\ {}^3P°$† (6)
558. 481	A	5	2. 01	24. 12	2—1	$3p^2\ {}^1D - 3p^3\ {}^1P°$ (7)
350. 878	A	3	2. 01	37. 20	2—1	$3p^2\ {}^1D - 4s\ {}^1P°$ (8)

POTASSIUM

K I

I P 4.32 Anal A List D May 1948

REFERENCES

A H. R. Kratz (who has observed the principal series in absorption to $n=79$) Phys. Rev. **75**, 1844 (1949). W L, T
A. Fowler, *Report on Series in Line Spectra*, p. 102 (Fleetway Press, London, 1922). W L, I, T

K I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
3217. 151	A	6R	0. 00	3. 84	½−1½	$4s\ ^2S-7p\ ^2P^\circ$
3217. 615	A	4R	0. 00	3. 84	½− ½	(1)
3101. 791	A	4R	0. 00	3. 98	½−1½	$4s\ ^2S-8p\ ^2P^\circ$
3102. 051	A	2R	0. 00	3. 98	½− ½	(2)
3034. 751	A	4R	0. 00	4. 07	½−1½	$4s\ ^2S-9p\ ^2P^\circ$
3034. 911	A		0. 00	4. 07	½− ½	(3)
2992. 108	A	2R	0. 00	4. 12	½−1½	$4s\ ^2S-10p\ ^2P^\circ$
2992. 215	A		0. 00	4. 12	½− ½	(4)
2963. 203	A	1R	0. 00	4. 16	½−1½	$4s\ ^2S-11p\ ^2P^\circ$
2963. 277	A		0. 00	4. 16	½− ½	(5)
2942. 661	A	1R	0. 00	4. 19	½−1½	$4s\ ^2S-12p\ ^2P^\circ$
2942. 713	A		0. 00	4. 19	½− ½	(6)

K II

I P 31.7 Anal C List B May 1948

REFERENCES

A I. S. Bowen, Phys. Rev. **31**, 497 (1928). W L, I, T
B T. L. de Bruin, Zeit. Phys. **38**, 94 (1926). W L, I, T

K II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)	I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac							Air						
612. 61	A	4	0. 00	20. 15	0—1	$3p^6$ ^{1}S —$4s$ [1½]° (1)	2777. 89	B	2	22. 62	27. 06	1—2	$4p$ [½]—$4d$ [2½]° (4)
600. 75‡	A	5	0. 00	20. 55	0—1	$3p^6$ ^{1}S —$4s'$ [½]° (2)	2504. 60	B	3	22. 62	27. 54	1—1	$4p$ [½]—$4d'$ [1½]° (5)
607. 90	A	5	0. 00	20. 31	0—1	$3p^6$ ^{1}S —$3d$ [½]° (3)	2743. 55	B	4	23. 05	27. 54	2—1	$4p$ [2½]—$4d'$ [1½]° (6)
							2808. 99	B	3	23. 15	27. 54	1—1	$4p$ [1½]—$4d'$ [1½]° (7)
Strongest Unclassified Lines of K II													
2550. 02	B	6					2342. 30	B	3				

K III

I P 46 Anal C List D Jan. 1948

REFERENCES

A E. Ekefors, Zeit. Phys. **71,** 75 (1931). W L, I
B T. L. de Bruin, Zeit. Phys. **53,** 658 (1929). W L, (I), T
B. Edlén, Zeit. Phys. **104,** 410 (1937). T
W.-Z. Tsien, Chinese J. Phys. **3,** No. 2, 118 (1939). T

K III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)	I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac							Air						
765. 644	A	6	0. 00	16. 12	1½— ½	$3p^5$ ^{2}P°—$3p^6$ ^{2}S (1)	2992. 24	B	(6)	25. 61	29. 73	2½—3½	$4s$ ^{4}P —$4p$ ^{4}D°† (7)
778. 528	A	7	0. 27	16. 12	½— ½		3052. 07	B	(6)	25. 76	29. 81	1½—2½	
							3056. 84	B	(5)	25. 86	29. 90	½—1½	
520. 611	A	10	0. 00	23. 71	1½—2½	$3p^5$ ^{2}P°—$3d$ ^{2}D (2)	2938. 45	B	(5)	25. 61	29. 81	2½—2½	
529. 796	A	8	0. 27	23. 57	½—1½		2986. 20	B	(5)	25. 76	29. 90	1½—1½	
523. 792	A	5	0. 00	23. 57	1½—1½								
							2550. 02	B	(6)	25. 61	30. 45	2½—1½	$4s$ ^{4}P —$4p$ ^{4}S° (8)
497. 104	A	15	0. 00	24. 83	1½—2½	$3p^5$ ^{2}P°—$3d$ ^{2}F (3)	2635. 11	B	(5)	25. 76	30. 45	1½—1½	
							2689. 90	B	(5)	25. 86	30. 45	½—1½	
470. 089	A	20	0. 00	26. 26	1½—1½	$3p^5$ ^{2}P°—$4s$ ^{2}P (4)							
471. 569	A	15	0. 27	26. 45	½— ½								
466. 793	A	15	0. 00	26. 45	1½— ½								
474. 920	A	9	0. 27	26. 26	½—1½								
444. 344	A	15	0. 00	27. 78	1½—2½	$3p^5$ ^{2}P°—$4s'$ ^{2}D (5)							
448. 595	A	15	0. 27	27. 79	½—1½								
413. 792	A	10	0. 00	29. 83	1½— ½	$3p^5$ ^{2}P°—$4s''$ ^{2}S (6)							

CALCIUM

Ca I

I P 6.09 Anal A List B June 1948

REFERENCES

A N. E. Wagman, Univ. Pittsburgh Bul. **34**, No. 1, 1 (1937). W L, T
B H. Crew and G. V. McCawley, Astroph. J. **39**, 29 (1914). W L, I
C H. N. Russell and F. A. Saunders, Astroph. J. **61**, 38 (1925); and unpublished material. W L, I, T
H. Kayser, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by R. Ritschl, p. 186 (Julius Springer, Berlin, 1939). (I)

Ca I

I A	Ref	Int	E P		*J*	Multiplet (No)
			Low	High		
Air 2734. 82	C		0. 00	4. 51	0—1	$4s^2\ {}^1S - 5p\ {}^3P^\circ$ (1)
2721. 645	A	10	0. 00	4. 53	0—1	$4s^2\ {}^1S - 4p'\ {}^1P^\circ$ (2)
2617. 66	C	3	0. 00	4. 71	0—1	$4s^2\ {}^1S - 4p'\ {}^3D^\circ$? (3)
2541. 40	C	0	0. 00	4. 86	0—1	$4s^2\ {}^1S - 4p'\ {}^3P^\circ$ (4)
2398. 559	A	2	0. 00	5. 15	0—1	$4s^2\ {}^1S - 5p\ {}^1P^\circ$ (5)
2275. 471	A	1	0. 00	5. 42	0—1	$4s^2\ {}^1S - 6p\ {}^1P^\circ$ (6)
2200. 728	A	1	0. 00	5. 61	0—1	$4s^2\ {}^1S - 7p\ {}^1P^\circ$ (7)

Ca I

I A	Ref	Int	E P		*J*	Multiplet (No)
			Low	High		
Air 2150. 78	B	1	0. 00	5. 74	0—1	$4s^2\ {}^1S - 8p\ {}^1P^\circ$ (8)
2770. 79	C	3hv	1. 89	6. 34	2—3	$4p\ {}^3P^\circ - 4d'\ {}^3D$ (9)
2764. 60	C	2hv	1. 88	6. 34	1—2	
2762. 05	C	2	1. 87	6. 34	0—1	
2772. 80	C	1	1. 89	6. 34	2—2	
2766. 13	C	1	1. 88	6. 34	1—1	
2757. 40	C	2h	1. 89	6. 37	2—1	$4p\ {}^3P^\circ - 4d'\ {}^3S$ (10)
2749. 34	C	1h	1. 88	6. 37	1—1	
2745. 49	C	1h	1. 87	6. 37	0—1	
2564. 09	C	3	1. 89	6. 70	2—2	$4p\ {}^3P^\circ - 4d'\ {}^3P$ (11)
2558. 20	C	2	1. 88	6. 70	1—1	
2565. 20	C	2	1. 89	6. 70	2—1	
2558. 60	C	2	1. 88	6. 70	1—0	
2557. 18	C	2	1. 88	6. 70	1—2	
2554. 82	C	2	1. 87	6. 70	0—1	

Ca II

I P 11.82 Anal A List B May 1948

REFERENCES

A F. A. Saunders and H. N. Russell, Astroph. J. **62**, 1 (1925). W L, I, T
B A. G. Shenstone, unpublished material (1930). W L, I

Ca II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1649. 96	A	2	0. 00	7. 48	½−1½	$4s\ ^2S - 5p\ ^2P^\circ$ (1)
1652. 02	A	1	0. 00	7. 47	½− ½	
1342. 07	A	1	0. 00	9. 20	½−1½	$4s\ ^2S - 6p\ ^2P^\circ$ (2)
Air						
2131. 43	A	2	1. 69	7. 48	2½−1½	$3d\ ^2D - 5p\ ^2P^\circ$ (3)
2132. 25	A	1	1. 69	7. 47	1½− ½	
2128. 733	B	0	1. 69	7. 48	1½−1½	
Vac						
1840. 21	A		1. 69	8. 40	2½−	$3d\ ^2D - 4f\ ^2F^\circ$ (4)
1838. 08	A		1. 69	8. 40	1½−2½	
1644. 25	A	0	1. 69	9. 20		$3d\ ^2D - 6p\ ^2P^\circ$ (5)
1555. 1	A		1. 69	9. 63	2½−	$3d\ ^2D - 5f\ ^2F^\circ$ (6)
1553. 5	A		1. 69	9. 63	1½−2½	
Vac						
1434. 3	A		1. 69	10. 30	2½−	$3d\ ^2D - 6f\ ^2F^\circ$ (7)
1433. 1	A		1. 69	10. 30	1½−2½	
Air						
2208. 606	A	3	3. 14	8. 73	1½− ½	$4p\ ^2P^\circ - 6s\ ^2S$ (8)
2197. 791	A	2	3. 11	8. 73	½− ½	
2112. 763	A	2	3. 14	8. 98	1½−2½	$4p\ ^2P^\circ - 5d\ ^2D$ (9)
2103. 239	A	2	3. 11	8. 98	½−1½	
2113. 19	A	1	3. 14	8. 98	1½−1½	
Vac						
1851. 10	A	2	3. 14	9. 81	1½− ½	$4p\ ^2P^\circ - 7s\ ^2S$ (10)
1843. 6	A	1	3. 11	9. 81	½− ½	
1815. 04	A	1	3. 14	9. 94	1½−2½	$4p\ ^2P^\circ - 6d\ ^2D$ (11)
1807. 74	A	1	3. 11	9. 94	½−1½	

Ca III

I P 51.00 Anal C List C May 1948

REFERENCES

A I. S. Bowen, Phys. Rev. **31,** 497 (1928). W L, I, T

B J. A. Anderson, See I. S. Bowen, Phys. Rev. **31,** 497 (1928). W L, I

Ca III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
490. 56	A	2	0. 00	25. 16	0−1	$3p^6\ ^1S - 3d\ [\ ½]^\circ$ (1)
409. 948	A	5	0. 00	30. 11	0−1	$3p^6\ ^1S - 4s\ [1½]^\circ$ (2)
403. 734	A	5	0. 00	30. 58	0−1	$3p^6\ ^1S - 4s'\ [\ ½]^\circ$ (3)
1562. 50	A	6	26. 34	34. 24	3−2	$3d\ [3½]^\circ - 4p\ [2½]$ (4)
1870. 28	A	6	28. 20	34. 80	3−2	$3d\ [2½]^\circ - 4p'\ [1½]$ (5)
1854. 72	A	6	27. 88	34. 53	2−2	$3d'\ [2½]^\circ - 4p\ [1½]$ (6)
Air						
2899. 78	B	9	29. 94	34. 20	2−3	$4s\ [1½]^\circ - 4p\ [2½]$ (7)
2988. 61	B	7	30. 11	34. 24	1−2	
2869. 95	B	7	29. 94	34. 24	2−2	
2687. 78	B	8	29. 94	34. 53	2−2	$4s\ [1½]^\circ - 4p\ [1½]$ (8)
2881. 80	B	7	30. 11	34. 40	1−1	
2791. 63	B	6	30. 11	34. 53	1−2	
Air						
2620. 82	B	6	30. 11	34. 82	1−0	$4s\ [1½]^\circ - 4p\ [\ ½]$ (9)
2541. 49	B	6	29. 94	34. 80	2−2	$4s\ [1½]^\circ - 4p'\ [1½]$ (10)
2634. 17	B	6	30. 11	34. 80	1−2	
2924. 33	B	8	30. 58	34. 80	1−2	$4s'\ [\ ½]^\circ - 4p'\ [1½]$ (11)
2813. 88	B	7	30. 32	34. 71	0−1	
2989. 30	B	6	30. 58	34. 71	1−1	
2866. 57	B	7	30. 58	34. 88	1−1	$4s'\ [\ ½]^\circ - 4p'\ [\ ½]$ (12)
2704. 87	B	6	30. 32	34. 88	0−1	
Vac						
1943. 12	A	6	33. 60	39. 95	1−2	$4p\ [\ ½] - 4d\ [1½]^\circ$ (13)
Air						
2152. 47	A	6	34. 53	40. 27	2−3	$4p\ [1½] - 4d\ [3½]^\circ$ (14)
2129. 20	A	6	34. 71	40. 50	1−2	$4p'\ [1½] - 4d\ [2½]^\circ$ (15)
2140. 39	A	6	34. 80	40. 56	2−1	$4p'\ [1½] - 5s\ [1½]^\circ$ (16)

SCANDIUM

Sc I

I P 6.53 Anal A List A Nov. 1948

REFERENCE

A H. N. Russell and W. F. Meggers, Sci. Papers Bur. Std. **22**, No. 558, 340 (1927). W L, I, T

Sc I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2711. 36	A	2	0. 02	4. 57	2½—2½	$a\ ^2D-w\ ^2D°$
2706. 78	A	2	0. 00	4. 56	1½—1½	(1)
2707. 95	A	1	0. 02	4. 58	2½—1½	$a\ ^2D-w\ ^2P°$
2692. 78	A	1	0. 00	4. 58	1½— ½	(2)

Sc II

I P 12.8 Anal A List C June 1948

REFERENCES

A H. N. Russell and W. F. Meggers, Sci. Papers Bur. Std. **22**, No. 558, 331 (1927). W L, I, T
B W. F. Meggers and H. N. Russell, Bur. Std. J. Research **2**, 761, RP55 (1929). W L, I, T

Sc II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2552. 38	A	10e	0. 02	4. 86	3—2	$a\ ^3D-y\ ^3P°$†
2560. 26	A	9e	0. 01	4. 83	2—1	(1)
2563. 23	A	8e	0. 00	4. 81	1—0	
2545. 24	A	5e	0. 01	4. 86	2—2	
2555. 84	A	6e	0. 00	4. 83	1—1	
2273. 10	B	3	1. 45	6. 88	0—1	$a\ ^1S-y\ ^1P°$ (2)

Sc II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
2611. 23	A	3e	3. 22	7. 95	2—2	$z\ ^1D°-f\ ^1D$ (3)
2801. 35	A	6e	3. 44	7. 84	4—4	$z\ ^3F°-e\ ^3F$†
2789. 20	A	5e	3. 41	7. 83	3—3	(4)
2782. 34	A	3e	3. 39	7. 82	2—2	
2826. 69	A	10e	3. 48	7. 84	3—4	$z\ ^3D°-e\ ^3F$†
2822. 17	A	7e	3. 46	7. 83	2—3	(5)
2819. 56	A	5e	3. 45	7. 82	1—2	

Sc III

I P 24.65 Anal C List A Nov. 1948

REFERENCES

A S. Smith, Proc. Nat. Acad. Sci. **13**, 65 (1927). W L, I, T

B R. C. Gibbs and H. E. White, Proc. Nat. Acad. Sci. **12**, 598 (1926). W L, (I), T

C H. N. Russell and R. J. Lang, Mt. Wilson Contr. No. 337; Astroph. J. **66**, 19 (1927). W L, (I), T

Sc III

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1603. 12	A	10	0. 02	7. 72	2½—1½	$3d\ ^2D-4p\ ^2P^\circ$
1610. 25	A	8	0. 00	7. 67	1½— ½	(1)
1598. 06	A	5	0. 00	7. 72	1½—1½	
731. 66	A	1	0. 02	16. 90	2½—3½	$3d\ ^2D-4f\ ^2F^\circ$
730. 60	A	0	0. 00	16. 90	1½—2½	(2)
Air						
2699. 01	B	(3)	3. 15	7. 72	½—1½	$4s\ ^2S-4p\ ^2P^\circ$
2734. 02	B	(2)	3. 15	7. 67	½— ½	(3)
2010. 48	A	6	7. 72	13. 86	1½—2½	$4p\ ^2P^\circ-4d\ ^2D$
Vac						(4)
1993. 96	A	4	7. 67	13. 86	½—1½	
Air						
2012. 30	A	1	7. 72	13. 86	1½—1½	
Vac						
1912, 48	C	(2)	7. 72	14. 18	1½— ½	$4p\ ^2P^\circ-5s\ ^2S$
1895. 33	C	(2)	7. 67	14. 18	½— ½	(5)

Sc IV

I P 73.6 Anal E List A Nov. 1948

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Sc IV

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
298. 428	A	8	0. 00	4. 14	0—1	$3p^6\ ^1S-4s\ [1½]^\circ$ (1)
293. 248	A	8	0. 00	4. 21	0—1	$3p^6\ ^1S-4s'\ [\ ½]^\circ$ (2)
217. 189	A	0	0. 00	5. 68	0—1	$3p^6\ ^1S-5s\ [1½]^\circ$ (3)
215. 522	A	2	0. 00	5. 73	0—1	$3p^6\ ^1S-5s'\ [\ ½]^\circ$ (4)

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TITANIUM

Ti I

I P 6.81 Anal A List B Sept. 1948

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P Predicted wavelength. W L

Ti I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2956. 133	A	70R	0. 05	4. 22	4—4	$a\ ^3F - v\ ^3F^\circ$ (1)
2948. 255	A	60r	0. 02	4. 21	3—3	
*2941. 995§	A	60r	0. 00	4. 19	2—2	
2967. 220	F	25	0. 05	4. 21	4—3	
2956. 796	F	25	0. 02	4. 19	3—2	
2937. 301	F	25	0. 02	4. 22	3—4	
2933. 526	F	25	0. 00	4. 21	2—3	
2679. 949	G	20	0. 05	4. 65	4—5	$a\ ^3F - v\ ^3G^\circ$ (2)
2669. 610	G	15	0. 02	4. 64	3—4	
2661. 966	L	10	0. 00	4. 64	2—3	
2685. 14	H	(3)	0. 05	4. 64	4—4	
2669. 274	G	2	0. 02	4. 64	3—3	$a\ ^3F - x\ ^1F^\circ$ (3)
2657. 186	G	10	0. 00	4. 64	2—3	
2668. 36	H	(1)	0. 05	4. 67	4—4	$a\ ^3F - u\ ^3F^\circ$ (4)
2660. 66	H	(1)	0. 02	4. 66	3—3	
2654. 928	G	5	0. 00	4. 65	2—2	
2676. 09	H	(1)	0. 05	4. 66	4—3	
2653. 02	H	(2)	0. 02	4. 67	3—4	
2648. 65	H	(1)	0. 00	4. 66	2—3	
2646. 650	G	40	0. 05	4. 71	4—3	$a\ ^3F - u\ ^3D^\circ$ (5)
2644. 275	G	40	0. 02	4. 69	3—2	
2641. 116	G	40	0. 00	4. 67	2—1	
2631. 55	J	(1)	0. 02	4. 71	3—3	
2632. 424	G	15	0. 00	4. 69	2—2	
2611. 287	G	25	0. 05	4. 77	4—4	$a\ ^3F - t\ ^3F^\circ$ (6)
2605. 163	G	25	0. 02	4. 76	3—3	
2599. 910	G	25	0. 00	4. 75	2—2	
2619. 942	G	10	0. 05	4. 76	4—3	
2611. 468	G	8	0. 02	4. 75	3—2	
2596. 596	G	10	0. 02	4. 77	3—4	
2593. 647	L	(3)	0. 00	4. 76	2—3	
2604. 88	H	(3)	0. 05	4. 79	4—3	$a\ ^3F - t\ ^3D^\circ$ (7)
2594. 63	H	(2)	0. 02	4. 78	3—2	
2586. 26	H	(3)	0. 00	4. 77	2—1	
2590. 265	G	5	0. 02	4. 79	3—3	
2583. 224	G	2	0. 00	4. 78	2—2	
2578. 91	H	(2)	0. 00	4. 79	2—3	

Ti I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2541. 917	G	20	0. 05	4. 90	4—3	$a\ ^3F - s\ ^3D^\circ$ (8)
2529. 866	L	(4)	0. 02	4. 90	3—2	
2520. 543	G	10	0. 00	4. 90	2—1	
2527. 991	G	5	0. 02	4. 90	3—3	
2519. 01	K	(4)	0. 00	4. 90	2—2	
2517. 14	H	(1)	0. 00	4. 90	2—3	
2470. 93	H	(3)	0. 05	5. 04	4—3	$a\ ^3F - r\ ^3D^\circ$ (9)
2468. 360	G	2	0. 02	5. 02	3—2	
2464. 966	G	2	0. 00	5. 01	2—1	
2457. 80	H	(2)	0. 02	5. 04	3—3	
2458. 00	H	(2)	0. 00	5. 02	2—2	
2440. 98	G	10	0. 05	5. 10	4—5	$a\ ^3F - u\ ^3G^\circ$ (10)
2433. 23	G	6	0. 02	5. 09	3—4	
2428. 24	G	2	0. 00	5. 08	2—3	
2446. 12	H	(2)	0. 05	5. 09	4—4	
2438. 28	H	(2)	0. 02	5. 08	3—3	
2424. 26	G	10	0. 05	5. 14	4—4	$a\ ^3F - s\ ^3F^\circ$ (11)
2421. 31	G	10	0. 02	5. 12	3—3	
2418. 37	G	10	0. 00	5. 10	2—2	
2434. 09	G	3	0. 05	5. 12	4—3	
2428. 36	K	(2)	0. 02	5. 10	3—2	
2411. 58	K	(3)	0. 02	5. 14	3—4	
2411. 37	G	2	0. 00	5. 12	2—3	
2384. 52	G	4	0. 05	5. 22	4—3	$a\ ^3F - q\ ^3D^\circ$ (12)
2378. 15	G	3	0. 02	5. 21	3—2	
2371. 95	K	(2)	0. 00	5. 20	2—1	
2372. 23	K	(1)	0. 02	5. 22	3—3	
*2368. 57	K	(2)	0. 00	5. 21	2—2	
2380. 80	K	(4)	0. 05	5. 23	4—3	$a\ ^3F - p\ ^3D^\circ$ (13)
2374. 59	K	(3)	0. 02	5. 22	3—2	
2369. 29	K	(2)	0. 00	5. 21	2—1	
*2368. 57	K	(2)	0. 02	5. 23	3—3	
2365. 05	K	(1)	0. 00	5. 22	2—2	
2305. 69	G	12	0. 05	5. 40	4—4	$a\ ^3F - r\ ^3F^\circ$ (14)
2302. 75	G	10	0. 02	5. 38	3—3	
2299. 86	G	10	0. 00	5. 37	2—2	
2314. 27	K	(2)	0. 05	5. 38	4—3	
2308. 88	K	(2)	0. 02	5. 37	3—2	
2294. 24	G	3	0. 02	5. 40	3—4	
2293. 78	G	3	0. 00	5. 38	2—3	

Ti I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2280.00	G	12	0.05	5.46	4—3	$a\ ^3F - o\ ^3D°$ (15)
2276.75	G	10	0.02	5.44	3—2	
2273.33	G	8	0.00	5.43	2—1	
2268.78	K	(4)	0.02	5.46	3—3	
2267.98	K	(4)	0.00	5.44	2—2	
2260.08	K	(1)	0.00	5.46	2—3	
2272.65	G	8	0.05	5.48	4—5	$a\ ^3F - t\ ^3G°$ (16)
2272.45	K	(1)	0.02	5.45	3—4	
*2238.73	K	(8)	0.05	5.56	4—4	$a\ ^3F - q\ ^3F°$ (17)
2233.79	K	(8)	0.02	5.55	3—3	
2230.18	K	(7)	0.00	5.53	2—2	
2244.69	K	(7)	0.05	5.55	4—3?	
*2238.73	K	(8)	0.02	5.53	3—2	
2227.91	K	(1)	0.02	5.56	3—4	
2230.48	K	(7)	0.05	5.58	4—3	$a\ ^3F - n\ ^3D°$ (18)
2226.77	K	(6)	0.02	5.56	3—2	
2223.19	K	(7)	0.00	5.55	2—1	
2219.75	K	(5)	0.02	5.58	3—3	
2218.38	K	(5)	0.00	5.56	2—2	
2211.36	K	(1)	0.00	5.58	2—3	
2836.09	G	1	0.84	5.20	5—4	$a\ ^5F - v\ ^5D°$ (19)
*2836.60§	G	1	0.83	5.18	4—3	
2836.40	G	1n	0.82	5.17	3—2	
2835.63	G	2	0.81	5.17	2—1	
2834.75	G	2	0.81	5.16	1—0	
*2828.05	G	2	0.83	5.20	4—4	
2830.03	G	2n	0.82	5.18	3—3	
2831.40	G	1n	0.81	5.17	2—2	
2832.26	G	1n	0.81	5.17	1—1	
2821.51	G	1	0.82	5.20	3—4	
2825.06	G	1	0.81	5.18	2—3	
*2828.05	G	2	0.81	5.17	1—2	
2976.32	G	2	0.90	5.04	2—3	$a\ ^1D - r\ ^3D°$ (20)
2991.79	G	1	0.90	5.02	2—2	
2947.72	G	3	0.90	5.08	2—3	$a\ ^1D - u\ ^3G°$ (21)
2922.92	G	2	0.90	5.12	2—3	$a\ ^1D - s\ ^3F°$ (22)
2912.072	F	40	0.90	5.13	2—3	$a\ ^1D - v\ ^1F°$ (23)
2802.465	F	15	0.90	5.30	2—1	$a\ ^1D - w\ ^1P°$ (24)

Ti I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2742.30	J	15	0.90	5.40	2—2	$a\ ^1D - v\ ^1D°$ (25)
2735.613	G	6	0.90	5.41	2—2	$a\ ^1D - u\ ^1D°$ (26)
2965.72	G	15	1.06	5.22	2—3	$a\ ^3P - q\ ^3D°$ (27)
2965.231	L	(5)	1.05	5.21	1—2	
2965.681	F	8	1.04	5.20	0—1	
2974.926	F	4	1.06	5.21	2—2	
2970.552	F	4	1.05	5.20	1—1	
2980.28	G	tr	1.06	5.20	2—1	
2959.98	G	5	1.06	5.23	2—3	$a\ ^3P - p\ ^3D°$ (28)
2959.71	G	3	1.05	5.22	1—2	
2961.48	G	2	1.04	5.21	0—1	
2969.37	G	1	1.06	5.22	2—2	
2966.38	G	1	1.05	5.21	1—1	
2805.680	F	6	1.06	5.46	2—3	$a\ ^3P - o\ ^3D°$ (29)
2809.150	F	5	1.05	5.44	1—2	
2812.963	F	2	1.04	5.43	0—1	
*2817.83§	K	2	1.06	5.44	2—2	
2817.37	K	(3)	1.05	5.43	1—1	
2757.397	L	6	1.06	5.54	2—1	$a\ ^3P - w\ ^3S°$ (30)
2749.062	L	5	1.05	5.54	1—1	
2744.846	G	5	1.04	5.54	0—1	
2731.145	G	4	1.06	5.58	2—3	$a\ ^3P - n\ ^3D°$ (31)
m2733.56	P	Fe II	1.05	5.56	1—2	
2736.71	H	(2)	1.04	5.55	0—1	
2741.82	H	(1)	1.06	5.56	2—2	
2740.88	H	(2)	1.05	5.55	1—1	
2733.265	G	30	1.06	5.58	2—2	$a\ ^3P - t\ ^3P°$ (32)
2731.592	G	7	1.05	5.57	1—1	
2739.804	G	15	1.06	5.57	2—1	
2735.298	G	10	1.05	5.56	1—0	
2725.084	G	10	1.05	5.58	1—2	
2727.416	L	8	1.04	5.57	0—1	
2990.48	G	3	1.45	5.58	4—3	$b\ ^3F - n\ ^3D°$ (33)
2990.98	G	3	1.44	5.56	3—2	
2990.03	G	3	1.42	5.55	2—1	
2928.320	F	30	1.50	5.71	4—4	$a\ ^1G - u\ G°$ (34)
2758.061	G	20	1.50	5.97	4—3	$a\ ^1G - u\ ^1F°$ (35)

Strongest Unclassified Lines of Ti I

2905.649	F	5	IVA			
2892.77	H	[3]	[IVA]			
2688.820	G	10				
2684.812	G	5				
2656.920	G	4				
2656.376	G	4				
2649.597	G	3				
2649.306	G	4				
2580.809	G	5				
2504.522	G	3				
2264.07	G	5				
2246.14	G	4				
2238.20	K	(6)				
2229.67	K	(7)				
2225.11	K	(8)				
2143.52	K	(6)				
2142.05	K	(5)				
2139.41	K	(5)				
2126.89	K	(5)				
2123.50	K	(7)				
2121.90	K	(6)				
2117.01	K	(6)				

Ti II

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H R. J. Lang, unpublished material. W L, (I)
I C. E. Moore, unpublished material. W L, I
J K. Behner, Zeit. Wiss. Ptg. **23**, 325 (1925). W L
P Predicted wavelength. W L

Ti II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2909. 912	D	7	0. 05	4. 29	4½—4½	$a\ ^4F - z\ ^2G°$†
2913. 08	I	1	0. 03	4. 26	3½—3½	(1)
2474. 22	F	(2)	0. 05	5. 04	4½—3½	$a\ ^4F - y\ ^4D°$†
2477. 21	F	(2)	0. 03	5. 01	3½—2½	(2)
2478. 64	F	(5)	0. 01	4. 99	2½—1½	
Vac						
1914. 32	P		0. 05	6. 50	4½—3½	$a\ ^4F - x\ ^4D°$
1914. 11	H	(00)	0. 03	6. 48	3½—2½	(3)
1909. 74	H	(2)	0. 01	6. 48	2½—1½	
1911. 01	H	(0)	0. 00	6. 46	1½— ½	
1908. 29	H	(3)	0. 03	6. 50	3½—3½	
1909. 33	H	(2)	0. 01	6. 48	2½—2½	
1906. 30	H	(3)	0. 00	6. 48	1½—1½	
Air						
2525. 619	J	30	0. 15	5. 04	4½—3½	$b\ ^4F - y\ ^4D°$
2531. 266	J	20	0. 13	5. 01	3½—2½	(4)
2534. 640	J	20	0. 12	4. 99	2½—1½	
2535. 881	J	10	0. 11	4. 98	1½— ½	
2517. 448	J	2	0. 13	5. 04	3½—3½	
2524. 655	J	8	0. 12	5. 01	2½—2½	
2529. 74	P		0. 11	4. 99	1½—1½	
2510. 90	F	2	0. 12	5. 04	2½—3½	
2519. 79	F	0	0. 11	5. 01	1½—2½	
2891. 050	D	15	0. 60	4. 87	3½—2½	$a\ ^2F - y\ ^2D°$
2888. 923	D	15	0. 57	4. 84	2½—1½	(5)
2868. 732	D	15	0. 57	4. 87	2½—2½	
2858. 399	D	8	0. 57	4. 89	2½—1½	$a\ ^2F - z\ ^2P°$
						(6)
2841. 914	D	30	0. 60	4. 95	3½—3½	$a\ ^2F - y\ ^2F°$
2832. 158	D	20	0. 57	4. 93	2½—2½	(7)
2853. 922	D	10	0. 60	4. 93	3½—2½	
2820. 36	E	4	0. 57	4. 95	2½—3½	
2784. 648	J	3	0. 60	5. 04	3½—3½	$a\ ^2F - y\ ^4D°$
2780. 55	F	5n	0. 57	5. 01	2½—2½	(8)
2763. 90	F	(1)	0. 57	5. 04	2½—3½	
2571. 036	J	20	0. 60	5. 40	3½—4½	$a\ ^2F - y\ ^2G°$
2555. 988	J	10	0. 57	5. 40	2½—3½	(9)
2573. 72	F	0	0. 60	5. 40	3½—3½	

Ti II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2498. 94	F	(2)	0. 60	5. 54	3½—2½	$a\ ^2F - x\ ^2D°$
2481. 49	F	(1)	0. 57	5. 54	2½—1½	(10)
2054. 54	E	(3)	0. 60	6. 61	3½—2½	$a\ ^2F - w\ ^2D°$
2041. 49	E	(3)	0. 57	6. 62	2½—1½	(11)
2043. 26	E	tr	0. 57	6. 61	2½—2½	
2764. 821	J	10	1. 08	5. 54	2½—2½	$a\ ^2D - x\ ^2D°$
2761. 291	J	7	1. 08	5. 54	1½—1½	(12)
2762. 22	F	2	1. 08	5. 54	1½—2½	
2716. 20	F	4	1. 08	5. 62	2½—1½	$a\ ^2D - y\ ^2P°$
2719. 39	F	2	1. 08	5. 61	1½— ½	(13)
2713. 76	F	(1)	1. 08	5. 62	1½—1½	
2884. 099	D	70	1. 13	5. 40	4½—4½	$a\ ^2G - y\ ^2G°$
2877. 418	D	60	1. 11	5. 40	3½—3½	(14)
2887. 456	D	2	1. 13	5. 40	4½—3½	
2874. 08	E	2	1. 11	5. 40	3½—4½	
2717. 304	J	3	1. 13	5. 67	4½—5½	$a\ ^2G - z\ ^2H°$
2725. 79	F	3	1. 11	5. 64	3½—4½	(15)
2862. 34	F	30	1. 23	5. 54	1½—2½	$a\ ^2P - x\ ^2D°$
2851. 087	D	20	1. 22	5. 54	½—1½	(16)
2861. 291	D	3	1. 23	5. 54	1½—1½	
2806. 407	D	5	1. 22	5. 61	½— ½	$a\ ^2P - y\ ^2P°$
						(17)
2346. 35	F	(1)	1. 24	6. 50	2½—3½	$b\ ^4P - x\ ^4D°$
2349. 97	F	(3)	1. 23	6. 48	1½—2½	(18)
2347. 46	F	(2)	1. 22	6. 48	½—1½	
2355. 17	F	(2)	1. 24	6. 48	2½—2½	
2350. 67	F	(2)	1. 23	6. 48	1½—1½	
2354. 61	F	(1)	1. 22	6. 46	½— ½	
2355. 86	F	(1)	1. 24	6. 48	2½—1½	
2357. 82	F	(2)	1. 23	6. 46	1½— ½	

Ti II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2159.09	E	(5)	1.24	6.95	2½—2½	$b\ ^4P - y\ ^4P^\circ$ (19)
2158.29	E	(2)	1.23	6.94	1½—1½	
2156.80	E	(1)	1.22	6.94	½— ½	
2162.68	E	(4)	1.24	6.94	2½—1½	
2159.50	E	(3)	1.23	6.94	1½— ½	
2154.70	E	(4)	1.23	6.95	1½—2½	
2155.58	E	(4)	1.22	6.94	½—1½	
2880.28	E	3	1.57	5.86	2½—3½	$b\ ^2D - x\ ^2F^\circ$ (20)
2856.616	J	2	1.56	5.88	1½—2½	
2450.44	E	(6)	1.57	6.61	2½—2½	$b\ ^2D - w\ ^2D^\circ$ (21)
2440.21	F	(5)	1.56	6.62	1½—1½	
2447.92	F	(2)	1.57	6.62	2½—1½	
2442.67	F	(2)	1.56	6.61	1½—2½	
2261.23	F	(3)	1.88	7.34	4½—3½	$b\ ^2G - w\ ^2F^\circ$ (22)
2269.14	F	(3)	1.88	7.32	3½—2½	
2261.64	F	(1)	1.88	7.34	3½—3½	
2738.70	P	3n	2.05	6.56	1½—1½	$b\ ^2P - x\ ^2P^\circ$ (23)
*2730.95	F	6n?	2.04	6.56	½— ½	
2856.24	F	25	3.73	8.05	5½—5½	$z\ ^4G^\circ - e\ ^4G$ (24)
2846.09	F	15	3.70	8.04	4½—4½	
*2836.60§	G	15	3.67	8.02	3½—3½	
2828.80	P	30n*	3.65	8.01	2½—2½	
2868.30	P	0n	3.73	8.04	5½—4½	
2855.49	F	1n	3.70	8.02	4½—3½	
2844.09	F	2n	3.67	8.01	3½—2½	
2834.14	F	10	3.70	8.05	4½—5½	
2827.22	F	10	3.67	8.04	3½—4½	
2821.41	F	8	3.65	8.02	2½—3½	
2828.150	D	60	3.73	8.10	5½—6½	$z\ ^4G^\circ - e\ ^4H$ (25)
*2817.838§	D	60	3.70	8.08	4½—5½	
2810.276	D	50	3.67	8.06	3½—4½	
2805.00	F	40	3.65	8.05	2½—3½	
2839.70	E	15	3.73	8.08	5½—5½	
2828.87	P	30n*	3.70	8.06	4½—4½	
2819.99	F	8	3.67	8.05	3½—3½	

Ti II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2945.47	F	50	3.86	8.05	4½—5½	$z\ ^4F^\circ - e\ ^4G$ (26)
*2941.993§	D	50	3.84	8.04	3½—4½	
2938.69	F	30	3.82	8.02	2½—3½	
2936.17	F	30	3.81	8.01	1½—2½	
2958.30	P	2	3.86	8.04	4½—4½	
2952.10	F	4	3.84	8.02	3½—3½	
2926.75	F	10	3.86	8.08	4½—3½	$z\ ^4F^\circ - f\ ^2F$ (27)
2910.76	F	0n	3.84	8.08	3½—3½	
2800.65	F	30	3.86	8.27	4½—3½	$z\ ^4F^\circ - e\ ^4D$ (28)
2790.62	F	3n	3.84	8.26	3½—2½	
2788.00	F	8	3.82	8.25	2½—1½	
2782.30	F	2n	3.81	8.24	1½— ½	
2785.99	F	6n	3.84	8.27	3½—3½	
*2778.48	F	2n*	3.82	8.26	2½—2½	
			3.81	8.25	1½—1½	
2646.08	F	50n	3.86	8.53	4½—4½	$z\ ^4F^\circ - f\ ^4F\dagger$ (29)
2642.15	F	20n	3.84	8.51	3½—3½	
2638.70	F	10n	3.82	8.50	2½—2½	
2635.60	F	5n	3.81	8.49	1½—1½	
2943.12	F	12n	3.89	8.08	3½—3½	$z\ ^2F^\circ - f\ ^2F$ (30)
2931.27	F	40	3.85	8.06	2½—2½	
2918.77	F	2n	3.85	8.08	2½—3½	
2751.70	F	50n	3.89	8.37	3½—4½	$z\ ^2F^\circ - e\ ^2G$ (31)
2746.70	F	30n	3.85	8.35	2½—3½	
2768.20	F	tr	3.89	8.35	3½—3½	
2990.17	F	10	3.95	8.08	2½—3½	$z\ ^2D^\circ - f\ ^2F$ (32)
2979.20	F	10	3.92	8.06	1½—2½	
2752.85	F	4n	4.05	8.53	3½—4½	$z\ ^4D^\circ - f\ ^4F$ (33)
2757.62	E	3n	4.04	8.51	2½—3½	
2758.35	F	2n	4.02	8.50	1½—2½	
2758.93	P	1n	4.02	8.49	½—1½	
2762.92	E	(0n)	4.05	8.51	3½—3½	
2765.65	F	0n	4.04	8.50	2½—2½	
2764.28	P	(1)	4.02	8.49	1½—1½	
2954.76	F	60	4.29	8.47	4½—5½	$z\ ^2G^\circ - e\ ^2H$ (34)
2958.98	P	50	4.26	8.44	3½—4½	

Strongest Unclassified Lines of Ti II

2977.80	F	7	2875.8	F	10n	
2941.4	F	8n	2875.39	F	15n	
2916.09	F	10	2870.04	F	25n	
2914.89	F	10	2862.0	F	20n	
2913.34	F	10	2860.8	F	4n	
2908.14	F	4n	2857.8	F	15	
2906.7	F	20	2698.52	F	30	
2890.6	F	8n	2572.648	J	5	
2888.62	F	10n				

Ti III

I P 28.02 Anal C List C Sept. 1948

REFERENCE

A H. N. Russell and R. J. Lang, Mt. Wilson Contr. No. 337; Astroph. J. **66**, 13 (1927). W L, I, T

Ti III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
*1298. 67	A	50	0. 05	9. 56	4—3	$a\ ^3F - z\ ^3D^\circ$ (1)
1298. 95	A	40	0. 02	9. 53	3—2	
*1298. 67	A	50	0. 00	9. 51	2—1	
*1294. 67	A	50	0. 02	9. 56	3—3	
1295. 91	A	30	0. 00	9. 53	2—2	
1286. 38	A	40	0. 05	9. 65	4—4	$a\ ^3F - z\ ^3F^\circ$ (2)
1289. 32	A	30	0. 02	9. 60	3—3	
1291. 64	A	20	0. 00	9. 56	2—2	
1293. 26	A	30	0. 05	9. 60	4—3	
*1294. 67	A	50	0. 02	9. 56	3—2	
1282. 49	A	3	0. 02	9. 65	3—4	
1498. 65	A	30	1. 05	9. 28	2—2	$a\ ^1D - z\ ^1D^\circ$ (3)
1327. 60	A	15	1. 05	10. 34	2—1	$a\ ^1D - z\ ^1P^\circ$ (4)
1455. 22	A	40	1. 78	10. 26	4—3	$a\ ^1G - z\ ^1F^\circ$ (5)

Ti III

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2563. 42	A	15	4. 74	9. 56	3—3	$a\ ^3D - z\ ^3D^\circ$† (6)
2565. 42	A	8	4. 72	9. 53	2—2	
2567. 53	A	8	4. 70	9. 51	1—1	
2580. 43	A	5	4. 74	9. 53	3—2	
2576. 43	A	5	4. 72	9. 51	2—1	
2516. 01	A	20	4. 74	9. 65	3—4	$a\ ^3D - z\ ^3F^\circ$† (7)
2527. 80	A	15	4. 72	9. 60	2—3	
2540. 02	A	15	4. 70	9. 56	1—2	
2984. 76	A	10	5. 15	9. 28	2—2	$b\ ^1D - z\ ^1D^\circ$ (8)
2413. 97	A	15	5. 15	10. 26	2—3	$b\ ^1D - z\ ^1F^\circ$ (9)
2375. 02	A	6	5. 15	10. 34	2—1	$b\ ^1D - z\ ^1P^\circ$ (10)

Ti IV

I P 43.06 Anal C List D Sept. 1948

REFERENCE

A H. N. Russell and R. J. Lang, Mt. Wilson Contr. No. 337; Astroph. J. **66**, 18 (1927). W L, I, T

Ti IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
779. 14	A	20	0. 05	15. 89	2½—1½	$3d\ ^2D - 4p\ ^2P^\circ$ (1)
781. 78	A	20	0. 00	15. 79	1½— ½	
776. 82	A	10	0. 00	15. 89	1½—1½	
Air						
2067. 50	A	15	9. 92	15. 89	½—1½	$4s\ ^2S - 4p\ ^2P^\circ$ (2)
2103. 08	A	10	9. 92	15. 79	½— ½	
Vac						
1467. 25	A	30	15. 89	24. 30	1½—2½	$4p\ ^2P^\circ - 4d\ ^2D$ (3)
1451. 75	A	30	15. 79	24. 29	½—1½	
1469. 21	A	15	15. 89	24. 29	1½—1½	
Air						
2546. 85	A	12	24. 30	29. 15	2½—3½	$4d\ ^2D - 4f\ ^2F^\circ$† (4)
2541. 75	A	8	24. 29	29. 15	1½—2½	

VANADIUM

V I

I P 6.71 Anal A List B Sept. 1948

REFERENCES

A W. F. Meggers, see W. F. Meggers and H. N. Russell, J. Research Nat. Bur. Std. **17**, 125, RP906 (1936). W L, I, T

D W. Ludwig, Zeit. Wiss. Ptg. **16**, 157 (1917). W L

F A. S. King, Mt. Wilson Contr. No. 283; Astroph. J. **60**, 282 (1924). W L, I

G F. Exner and E. Haschek, see H. Kayser, *Handbuch der Spectroscopie* **6**, 750 (1912). W L

H C. E. Moore, Phys. Rev. **55**, 710 (1939) and Ref. A. W L, (I), T

V I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2977. 550	D	25r	0. 07	1. 35	4½—3½	$a\ ^4F - w\ ^4D°$† (1)
2962. 784	D	30r	0. 04	1. 30	3½—2½	
2954. 33	G	20	0. 02	0. 80	2½—1½	
2943. 197	D	30r	0. 00	0. 09	1½— ½	
2957. 30	G	10?	0. 04	1. 35	3½—3½	
2946. 54	G	15	0. 02	1. 30	2½—2½	
2942. 354	D	10	0. 00	0. 80	1½—1½	
2938. 67	G	6	0. 00	4. 20	1½—	$a\ ^4F$ — 1° (2)
2942. 33	G	10	0. 07	4. 26	4½—4½	$a\ ^4F - v\ ^4F°$ (3)
2935. 880	D	15	0. 04	4. 24	3½—3½	
*2937. 696	D	15	0. 02	4. 22	2½—2½	
			0. 00	4. 20	1½—1½	
2955. 806	D	15	0. 07	4. 24	4½—3½	
m2953. 84	P	Fe I	0. 04	4. 22	3½—2½	
2949. 62	G	25	0. 02	4. 20	2½—1½	
2922. 582	D	4	0. 04	4. 26	3½—4½	
2919. 931	H	6	0. 02	4. 24	2½—3½	
2925. 880	D	4	0. 00	4. 22	1½—2½	
2926. 258	H	12	0. 04	4. 26	3½—2½	$a\ ^4F - y\ ^2D°$ (4)
2915. 33	G	10	0. 02	4. 25	2½—1½	
*2910. 435§	H	5?	0. 02	4. 26	~½—2½	
2903. 700	D	12	0. 00	4. 25	1½—1½	
2898. 822	D	5	0. 00	4. 26	1½—2½	
2923. 627	D	70Ra	0. 07	4. 29	4½—3½	$a\ ^4F - v\ ^4D°$† (5)
2914. 924	D	50Ra	0. 04	4. 27	3½—2½	
2906. 134	D	40r	0. 02	4. 26	2½—1½	
2899. 602	D	30	0. 00	4. 26	1½— ½	
2904. 126	D	20	0. 04	4. 29	3½—3½	
2899. 207	D	20	0. 02	4. 27	2½—2½	
2894. 583	D	8	0. 00	4. 26	1½—1½	

V I

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2870. 575	D	35r	0. 07	4. 37	4½—3½	$a\ ^4F - u\ ^4D°$ (6)
2864. 386	D	30r	0. 04	4. 35	3½—2½	
2859. 997	D	25	0. 02	4. 33	2½—1½	
2855. 252	D	20	0. 00	4. 32	1½— ½	
2851. 784	D	20	0. 04	4. 37	3½—3½	
2849. 197	H	15	0. 02	4. 35	2½—2½	
2848. 807	D	15	0. 00	4. 33	1½—1½	
2836. 714	D	3	0. 02	4. 37	2½—3½	
2838. 06	G	5	0. 00	4. 35	1½—2½	
*2778. 058	H	4	0. 07	4. 51	4½—4½?	$a\ ^4F - x\ ^2G°$ (7)
*2747. 534§	A	(6)	0. 07	4. 56	4½—5½	$a\ ^4F - w\ ^4G°$ (8)
2733. 334	A	(8)	0. 04	4. 56	3½—4½	
2725. 062	A	4	0. 02	4. 55	2½—3½	
2717. 433	A	3	0. 02	4. 56	2½—3½	$a\ ^4F - x\ ^2F°$ (9)
2707. 589	A	3	0. 07	4. 63	4½—3½	$a\ ^4F - w\ ^2F°$† (10)
2677. 117	A	(4)	0. 00	4. 61	1½—2½	
2670. 918	A	(7)	0. 04	4. 66	3½—2½	$a\ ^4F - w\ ^2D°$ (11)
2657. 708	A	5	0. 02	4. 66	2½—2½	
2668. 894	A	3	0. 00	4. 62	1½—1½	
2686. 512	A	(10)	0. 07	4. 66	4½—5½	$a\ ^4F - v\ ^4G°$ (12)
2678. 674	A	(5)	0. 04	4. 65	3½—4½	
2671. 669	A	(10)	0. 02	4. 64	2½—3½	
2665. 958	A	(20)	0. 00	4. 63	1½—2½	
2695. 235	A	4	0. 07	4. 65	4½—4½	
2685. 018	A	5	0. 04	4. 64	3½—3½	
*2675. 753	A	(8)	0. 02	4. 63	2½—2½	

V I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2661. 424	A	(70R)	0. 07	4. 71	4½−3½	$a\ ^4F - t\ ^4D°$† (13)
2656. 224	A	(60R)	0. 04	4. 69	3½−2½	
2651. 896	A	(50R)	0. 02	4. 67	2½−1½	
2647. 710	A	(40R)	0. 00	4. 66	1½− ½	
2645. 256	A	(10)	0. 04	4. 71	3½−3½	
2643. 14	A	(5)	0. 02	4. 69	2½−2½	
2642. 289	A	(4)	0. 00	4. 67	1½−1½	
2633. 588	A	4	0. 00	4. 69	1½−2½	
2556. 815	A	(6)	0. 04	4. 87	3½−2½	$a\ ^4F - w\ ^4P°$† (14)
2556. 016	A	(9)	0. 02	4. 85	2½−1½	
2547. 073	A	6	0. 00	4. 85	1½−1½	
2574. 020	A	(50R)	0. 07	4. 86	4½−4½	$a\ ^4F - u\ ^4F°$ (15)
2562. 125	A	(60R)	0. 04	4. 86	3½−3½	
2552. 648	A	(50r)	0. 02	4. 85	2½−2½	
2545. 981	A	(30r?)	0. 00	4. 85	1½−1½	
2577. 292	A	(20r?)	0. 07	4. 86	4½−3½	
*2564. 817	A	(40r?)	0. 04	4. 85	3½−2½	
2554. 856	A	(15)	0. 02	4. 85	2½−1½	
2558. 893	A	(15)	0. 04	4. 86	3½−4½	
2549. 965	A	12	0. 02	4. 86	2½−3½	
2543. 723	A	(20)	0. 00	4. 85	1½−2½	
2517. 500	A	8	0. 02	4. 92	2½−1½	$a\ ^4F - x\ ^4S°$ (16)
2508. 822	A	5	0. 00	4. 92	1½−1½	
2526. 213	A	(100R)	0. 07	4. 95	4½−3½	$a\ ^4F - s\ ^4D°$ (17)
2519. 622	A	(100R)	0. 04	4. 94	3½−2½	
2511. 940	A	(100r)	0. 02	4. 93	2½−1½	
2506. 902	A	150R	0. 00	4. 92	1½− ½	
2511. 642	A	(80r)	0. 04	4. 95	3½−3½	
*2507. 777	A	(100R)	0. 02	4. 94	2½−2½	
2503. 300	A	(50r)	0. 00	4. 93	1½−1½	
2499. 959	A	8	0. 02	4. 95	2½−3½	
2499. 244	A	(12)	0. 00	4. 94	1½−2½	
2515. 145	A	(30r)	0. 02	4. 92	2½−1½	$a\ ^4F - v\ ^2D°$† (18)
2500. 382	A	5	0. 02	4. 95	2½−2½	
2506. 482	A	6	0. 00	4. 92	1½−1½	
2530. 174	A	(80R)	0. 07	4. 95	4½−5½	$a\ ^4F - u\ ^4G°$† (19)
2517. 142	A	(80R)	0. 04	4. 94	3½−4½	
*2507. 777	A	(100R)	0. 02	4. 94	2½−3½	
2501. 608	A	(60R)	0. 00	4. 93	1½−2½	
m2519. 55	P	V I	0. 04	4. 94	3½−3½	
2510. 242	A	(8)	0. 02	4. 93	2½−2½	
2534. 206	A	3	0. 07	4. 94	4½−3½?	
2498. 232	A	(20h)	0. 02	4. 96	2½−2½	$a\ ^4F - v\ ^2F°$† (20)
2471. 443	A	10	0. 02	5. 01	2½−3½	
2499. 094	A	15	0. 04	4. 98	3½−2½	$a\ ^4F - u\ ^2D°$ (21)
2487. 528	A	10	0. 02	4. 98	2½−2½	
2505. 540	A	(15)	0. 07	4. 99	4½−5½	$a\ ^4F - w\ ^4H°$† (22)
2495. 787	A	20	0. 04	4. 98	3½−4½	
2488. 203	A	5	0. 02	4. 98	2½−3½	
2435. 518	A	(100R)	0. 07	5. 14	4½−4½	$a\ ^4F - t\ ^4F°$ (23)
2428. 269	A	(100R)	0. 04	5. 12	3½−3½	
2421. 058	A	(120R)	0. 02	5. 11	2½−2½	
2415. 326	A	(110R)	0. 00	5. 11	1½−1½	
2441. 892	A	(30)	0. 07	5. 12	4½−3½	
2432. 014	A	(25r?)	0. 04	5. 11	3½−2½	
2423. 370	A	40r?	0. 02	5. 11	2½−1½	
2421. 976	A	(140R)	0. 04	5. 14	3½−4½	
2417. 351	A	(100R)	0. 02	5. 12	2½−3½	
2413. 031	A	(60R)	0. 00	5. 11	1½−2½	

V I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2439. 102	A	(50r)	0. 07	5. 13	4½−4½	$a\ ^4F - t\ ^2G°$ (24)
2431. 568	A	10	0. 04	5. 12	3½−3½	
2445. 224	A	3	0. 07	5. 12	4½−3½	
2420. 614	A	3	0. 02	5. 12	2½−3½	
2431. 940	A	20r?	0. 07	5. 14	4½−5½	$a\ ^4F - v\ ^2H°$ (25)
2427. 735	A	20	0. 04	5. 12	3½−4½	
2441. 352	A	(15)	0. 07	5. 12	4½−4½	
2416. 748	A	(150R)	0. 07	5. 17	4½−5½	$a\ ^4F - t\ ^4G°$ (26)
2406. 748	A	(50R)	0. 04	5. 17	3½−4½	
2401. 901	A	(60R)	0. 02	5. 16	2½−3½	
2399. 954	A	(50R)	0. 00	5. 14	1½−2½	
2420. 115	A	(100R)	0. 07	5. 17	4½−4½	
2412. 686	A	(80R)	0. 04	5. 16	3½−3½	
2407. 900	A	(40R)	0. 02	5. 14	2½−2½	
2426. 126	A	15	0. 07	5. 16	4½−3½	
2418. 738	A	15	0. 04	5. 14	3½−2½	
2398. 134	A	20	0. 04	5. 19	3½−2½	$a\ ^4F - v\ ^4P°$ (27)
2396. 706	A	8	0. 02	5. 17	2½−1½	
2387. 475	A	5	0. 02	5. 19	2½−2½	
*2397. 775	A	40h	0. 07	5. 22	4½−3½	$a\ ^4F - r\ ^4D°$† (28)
2390. 774	A	30	0. 04	5. 20	3½−2½	
2388. 084	A	35	0. 02	5. 18	2½−1½	
2384. 286	A	20	0. 00	5. 18	1½− ½	
2384. 64	A	5	0. 04	5. 22	3½−3½	
2380. 178	A	5	0. 02	5. 20	2½−2½	
2380. 266	A	8	0. 00	5. 18	1½−1½	
2397. 496	A	4	0. 04	5. 19	3½−3½	$a\ ^4F - u\ ^2F°$† (29)
2390. 868	A	4	0. 02	5. 18	2½−2½	
2383. 038	A	3	0. 00	5. 18	1½−2½	
2398. 277	A	20h	0. 07	5. 21	4½−3½	$a\ ^4F -\ ^2°$† (30)
2340. 479	A	(50r)	0. 07	5. 34	4½−4½	$a\ ^4F - s\ ^4F°$ (31)
2334. 434	A	40r	0. 04	5. 33	3½−3½	
2329. 529	A	30	0. 02	5. 31	2½−2½	
2325. 873	A	30	0. 00	5. 31	1½−1½	
2347. 026	A	10	0. 07	5. 33	4½−3½	
2339. 673	A	20	0. 04	5. 31	3½−2½	
2333. 33	A	20	0. 02	5. 31	2½−1½	
2327. 970	A	10	0. 04	5. 34	3½−4½	
2324. 347	A	6	0. 02	5. 33	2½−3½	
2322. 096	A	15	0. 00	5. 31	1½−2½	
2324. 748	A	40	0. 07	5. 38	4½−3½	$a\ ^4F - q\ ^4D°$† (32)
2320. 156	A	25	0. 04	5. 36	3½−2½	
2315. 634	A	30	0. 02	5. 35	2½−1½	
2311. 465	A	30	0. 00	5. 34	1½− ½	
2312. 410	A	8	0. 04	5. 38	3½−3½	
2310. 180	A	20	0. 02	5. 36	2½−2½	
2308. 287	A	15	0. 00	5. 35	1½−1½	
2302. 531	A	4	0. 02	5. 38	2½−3½?	
*2295. 414	A	4	0. 04	5. 42	3½−2½	$a\ ^4F - t\ ^2F°$† (33)
2299. 544	A	3	0. 07	5. 44	4½−3½?	$a\ ^4F - x\ ^6F°$† (34)
2291. 527	A	10	0. 07	5. 45	4½−5½	$a\ ^4F - s\ ^4G°$ (35)
2283. 382	A	10	0. 04	5. 44	3½−4½	
2276. 889	A	6	0. 02	5. 44	2½−3½	
2272. 048	A	4	0. 00	5. 43	1½−2½	
*2295. 414	A	4	0. 07	5. 44	4½−4½?	
2286. 581	A	8	0. 04	5. 44	3½−3½	
2279. 152	A	4	0. 02	5. 43	2½−2½	

V I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2276. 661	A	3	0. 07	5. 49	4½—4½	$a\ ^4F - s\ ^2G°$† (36)
2264. 39	A	30 Fe?	0. 07	5. 52	4½—3½	$a\ ^4F - p\ ^4D°$ (37)
*2256. 968§	A	50r	0. 04	5. 51	3½—2½	
2250. 672	A	30r?	0. 02	5. 50	2½—1½	
2245. 756	A	30	0. 00	5. 50	1½— ½	
2252. 681	A	5	0. 04	5. 52	3½—3½	
2247. 520	A	9	0. 02	5. 51	2½—2½	
2243. 742	A	8h	0. 00	5. 50	1½—1½	
2241. 846	A	40r	0. 07	5. 57	4½—4½	$a\ ^4F - r\ ^4F°$† (38)
2234. 680	A	10	0. 04	5. 56	3½—3½	
*2225. 787	A	10	0. 02	5. 56	2½—2½	
2222. 834	A	15	0. 00	5. 55	1½—1½	
2230. 362	A	20	0. 04	5. 57	3½—4½	
2225. 422	A	30	0. 02	5. 56	2½—3½	
2237. 228	A	50r	0. 07	5. 58	4½—4½	$a\ ^4F - q\ ^4F°$ (39)
*2229. 734§	A	25r?	0. 04	5. 57	3½—3½	
2223. 014	A	20	0. 02	5. 57	2½—2½	
2218. 238	A	25r	0. 00	5. 56	1½—1½	
2241. 213	A	7	0. 07	5. 57	4½—3½	
2232. 252	A	8	0. 04	5. 57	3½—2½	
2225. 029	A	8	0. 02	5. 56	2½—1½	
*2225. 787	A	10	0. 04	5. 58	3½—4½	
2216. 245	A	4	0. 00	5. 57	1½—2½	
2220. 450	A	3	0. 02	5. 57	2½—1½	$a\ ^4F - u\ ^2P°$ (40)
2213. 692	A	10	0. 00	5. 57	1½—1½	
2228. 835	A	15	0. 04	5. 58	3½—3½	$a\ ^4F - r\ ^2G°$† (41)
2219. 652	A	3	0. 04	5. 60	3½—4½	
2231. 412	A	30	0. 07	5. 60	4½—5½	$a\ ^4F -$ (42) $2a°$
2158. 12	A	(15)	0. 00	5. 72	1½—	4°†
2164. 88	A	(15)	0. 04	5. 74	3½—2½	5°
*2146. 64	A	(10)	0. 02	5. 77	2½—1½	6°†
2125. 84	H	(20)	0. 04	5. 85	3½—3½	7°†
*2117. 48§	H	(20)	0. 02	5. 85	2½—3½	7°
2124. 15	H	(12)	0. 07	5. 88	4½—3½	8°
2102. 58	H	(15)	0. 02	5. 89	2½—	9°†
2204. 930	A	12	0. 07	5. 67	4½—4½	$a\ ^4F - p\ ^4F°$† (43)
2200. 174	A	15	0. 04	5. 65	3½—3½	
2194. 65	A	10	0. 02	5. 64	2½—2½	
2189. 95	A	6	0. 00	5. 64	1½—1½	
2211. 350	A	3	0. 07	5. 65	4½—3½	
2203. 658	A	4	0. 04	5. 64	3½—2½	
2193. 82	A	5	0. 04	5. 67	3½—4½	
m2191. 21	P	V I	0. 02	5. 65	2½—3½	
2188. 06	A	3?	0. 00	5. 64	1½—2½	
2196. 29	A	5	0. 02	5. 64	2½—1½	$a\ ^4F - t\ ^2P°$† (44)
2202. 724	A	60r	0. 07	5. 67	4½—3½	$a\ ^4F - o\ ^4D°$† (45)
2196. 40	A	40r?	0. 04	5. 66	3½—2½	
2191. 10	A	30	0. 02	5. 65	2½—1½	
2187. 39	A	10	0. 00	5. 64	1½— ½	
2191. 65	A	3	0. 04	5. 67	3½—3½	
2182. 22	A	120R	0. 07	5. 72	4½—5½	$a\ ^4F - r\ ^4G°$ (46)
2177. 00	A	100R	0. 04	5. 71	3½—4½	
2173. 15	A	80R	0. 02	5. 70	2½—3½	
2170. 74	A	60R	0. 00	5. 69	1½—2½	
2187. 95	A	15	0. 07	5. 71	4½—4½	
2181. 97	A	20	0. 04	5. 70	3½—3½	
2177. 24	A	10	0. 02	5. 69	2½—2½	

V I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2098. 50	H	(40)	0. 07	5. 95	4½—5½	$a\ ^4F - q\ ^4G°$† (47)
*2096. 19	H	(20)	0. 04	5. 93	3½—4½	
*2096. 37§	H	(20)	0. 02	5. 90	2½—3½	
*2096. 19	H	(20)	0. 00	5. 89	1½—2½	
2106. 33	H	(15)	0. 07	5. 93	4½—4½	
2104. 57	H	(15)	0. 04	5. 90	3½—3½	
2102. 23	H	(15)	0. 02	5. 89	2½—2½	
2092. 44	A	60r	0. 07	5. 97	4½—4½	$a\ ^4F - o\ ^4F°$ (48)
2090. 64	A	20r	0. 04	5. 94	3½—3½	
*2092. 30	A	10r	0. 02	5. 92	2½—2½	
2091. 29	A	20r	0. 00	5. 90	1½—1½	
2100. 75	A	6	0. 07	5. 94	4½—3½	
2100. 51	A	8	0. 04	5. 92	3½—2½	
2097. 34	A	7	0. 02	5. 90	2½—1½	
*2082. 49	A	20r?	{0. 04	5. 97	3½—4½	
			{0. 02	5. 94	2½—3½	
2086. 31	A	8	0. 00	5. 92	1½—2½	
2090. 96	H	(10)	0. 00	5. 90	1½—2½	$a\ ^4F -$ (49) 10°†
2085. 91	H	(20)	0. 00	5. 92	1½—2½	11°†
2096. 72	H	(15)	0. 04	5. 93	3½—	12°
2088. 56	H	(40)	0. 02	5. 93	2½—	12°
2095. 77	H	(25)	0. 04	5. 93	3½—3½	13°
2087. 62	H	(10)	0. 02	5. 93	2½—3½	13°
2104. 84	H	(20)	0. 07	5. 93	4½—3½	14°
2094. 71	H	(40)	0. 04	5. 93	3½—3½	14°
*2086. 57	H	15nr	0. 02	5. 93	2½—3½	14°
2085. 56	H	(10)	0. 02	5. 93	2½—2½	15°†
2084. 12	H	(10nv)	0. 04	5. 96	3½—	17°†
2038. 85	H	(90)	0. 07	6. 12	4½—3½	$a\ ^4F - n\ ^4D°$† (50)
2035. 30	H	(80)	0. 04	6. 10	3½—2½	
2034. 06	H	(90)	0. 02	6. 08	2½—1½	
2032. 27	H	(60)	0. 00	6. 07	1½— ½	
2029. 36	H	(50)	0. 04	6. 12	3½—3½	
2027. 62	H	(40)	0. 02	6. 10	2½—2½	
2028. 42	H	(40)	0. 00	6. 08	1½—1½	
2041. 00	H	(60)	0. 04	6. 09	3½—2½	$a\ ^4F -$ (51) 21°†
2008. 70	H	(10)	0. 04	6. 18	3½—	23°†
2010. 48	H	(20)	0. 00	6. 14	1½—1½?	$a\ ^4F - t\ ^2D°$† (52)
Vac						
1984. 91	H	(50)	0. 07	6. 29	4½—5½	$a\ ^4F - p\ ^4G°$† (53)
1983. 37	H	(50)	0. 04	6. 26	3½—4½	
1982. 45	H	(40)	0. 02	6. 24	2½—3½	
1982. 06	H	(40)	0. 00	6. 23	1½—2½	
1989. 82	H	(12)	0. 04	6. 24	3½—3½	
1967. 98	H	(80r?)	0. 07	6. 34	4½—4½	$a\ ^4F - n\ ^4F°$ (54)
1966. 52	H	(60)	0. 04	6. 32	3½—3½	
1965. 26	H	(60)	0. 02	6. 30	2½—2½	
1964. 27	H	(60)	0. 00	6. 28	1½—1½	
1975. 42	H	(10)	0. 07	6. 32	4½—3½	
1972. 48	H	(15)	0. 04	6. 30	3½—2½	
1969. 57	H	(15)	0. 02	6. 28	2½—1½	
1959. 12	H	(30)	0. 04	6. 34	3½—4½	
1959. 36	H	(30)	0. 02	6. 32	2½—3½	
1959. 97	H	(40)	0. 00	6. 30	1½—2½	
1966. 76	H	(60)	0. 07	6. 35	4½—3½	$a\ ^4F - m\ ^4D°$ (55)
1965. 07	H	(60)	0. 04	6. 32	3½—2½	
1963. 47	H	(70)	0. 02	6. 30	2½—1½	
1961. 69	H	(50)	0. 00	6. 29	1½— ½	
*1957. 90	H	(50)	{0. 04	6. 35	3½—3½	
			{0. 02	6. 32	2½—2½	
1958. 18	H	(12)	0. 00	6. 30	1½—1½	

V I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2835. 660	D	5	0. 27	4. 63	2½−3½?	$a\ ^6D - w\ ^2F°$ (56)
2618. 908	A	5	0. 27	4. 98	1½−2½	$a\ ^6D - u\ ^2D°$ (57)
2497. 655	A	6h	0. 27	5. 22	2½−3½	$a\ ^6D - r\ ^4D°$† (58)
2480. 606	A	(30h)	0. 30	5. 27	4½−4½?	$a\ ^6D - w\ ^6D°$ (59)
2482. 115	A	(20h)	0. 29	5. 26	3½−3½?	
2489. 13	A	4h	0. 30	5. 26	4½−3½?	
2488. 737	A	4h	0. 29	5. 24	3½−2½?	
2473. 652	A	5h	0. 29	5. 27	3½−4½?	
2476. 510	A	7h	0. 27	5. 26	2½−3½?	
2478. 97	A	5h	0. 27	5. 24	1½−2½?	
2392. 898	A	40h	0. 30	5. 46	4½−5½	$a\ ^6D - x\ ^6F°$ (60)
2386. 409	A	20h	0. 29	5. 46	3½−4½?	
*2391. 268	A	30h	0. 27 0. 27	5. 44 5. 43	2½−3½? 1½−2½?	
2395. 429	A	10h	0. 26	5. 41	½−1½?	
2396. 492	A	15h	0. 29	5. 44	3½−3½?	
2395. 104	A	30h	0. 27	5. 43	2½−2½?	
*2397. 775	A	40h	0. 27	5. 41	1½−1½?	
2403. 362	A	5h	0. 26	5. 40	½− ½?	
2403. 029	A	10h	0. 30	5. 44	4½−3½?	
2405. 733	A	6	0. 27	5. 40	1½− ½?	
2405. 245	A	10h	0. 30	5. 43	4½−3½?	$a\ ^6D - x\ ^6P°$
2398. 697	A	10h	0. 29	5. 43	3½−3½?	(61)
2394. 270	A	10	0. 30	5. 45	4½−5½	$a\ ^6D - s\ ^4G°$† (62)
*2146. 64	A	(10)	0. 29	6. 03	3½−2½	$a\ ^6D -$ 18°†
2138. 62	H	(10)	0. 27	6. 04	2½−2½	(63) 19°†
*2092. 30	H	(10r)	0. 29	6. 18	3½−	23°
*2086. 57	H	(15nr)	0. 27	6. 19	2½−2½	24°†
2077. 16	H	(15)	0. 29	6. 23	3½−	28°†
2012. 35	H	(20)	0. 27	6. 40	1½−1½	32°†
2011. 54	H	(15)	0. 29	6. 42	3½−	33°†
3002. 65	G	8	1. 08	5. 19	3½−2½	$a\ ^4D - v\ ^4P°$† (64)
3004. 82	G	10	1. 06	5. 17	2½−1½	
3004. 33	G	4	1. 05	5. 15	1½− ½	
2995. 617	D	4	1. 05	5. 17	1½−1½	
2998. 62	G	4	1. 04	5. 15	½− ½	
2981. 537	H	0	1. 08	5. 22	3½−3½	$a\ ^4D - r\ ^4D°$†
2978. 936	D	4	1. 06	5. 20	2½−2½	(65)
2893. 47	G	4h	1. 08	5. 34	3½−4½	$a\ ^4D - s\ ^4F°$† (66)
2869. 484	D	3	1. 08	5. 38	3½−3½	$a\ ^4D - q\ ^4D°$ (67)
*2870. 04	G	5	1. 06 1. 05	5. 36 5. 35	2½−2½ 1½−1½	
2866. 971	D	10	1. 08	5. 38	3½−2½	$a\ ^4D - u\ ^4P°$† (68)
2862. 418	D	10	1. 06	5. 37	2½−1½	
2859. 001	D	4h	1. 05	5. 36	1½− ½	
*2854. 057	D	4h	1. 05	5. 37	1½−1½	
2853. 82	G	3h	1. 04	5. 36	½− ½	

V I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
*2778. 058	H	4	1. 08	5. 52	3½−3½?	$a\ ^4D - p\ ^4D°$†
*2774. 01	G	3	1. 06	5. 51	2½−2½	(69)
*2774. 01	G	3	1. 05	5. 50	1½− ½	
2689. 114	A	3	1. 08	5. 67	3½−4½	$a\ ^4D - p\ ^4F°$†
m2688. 71	P	V II	1. 06	5. 65	2½−3½	(70)
m2686. 49	P	V I	1. 05	5. 64	1½−2½	
m2698. 67	P	V I	1. 08	5. 65	3½−3½	
2693. 918	A	6	1. 06	5. 64	2½−2½	
2696. 760	A	(6)	1. 06	5. 64	2½−1½	
2688. 942	A	4	1. 05	5. 64	1½−1½	$a\ ^4D - t\ ^2P°$† (71)
2685. 843	A	4	1. 08	5. 67	3½−3½	$a\ ^4D - o\ ^4D°$†
m2683. 08	P	V II	1. 06	5. 66	2½−2½	(72)
*2685. 515	A	4	1. 05	5. 64	1½− ½	
2675. 977	A	4	1. 06	5. 67	2½−3½	
*2675. 753	A	(8)	1. 05	5. 66	1½−2½	
2676. 636	A	3	1. 04	5. 65	½−1½	
2620. 284	A	(20)	1. 08	5. 79	3½−2½	$a\ ^4D - t\ ^4P°$†
2611. 255	A	8	1. 06	5. 79	2½−1½	(73)
2605. 084	A	4	1. 05	5. 78	1½− ½	
2610. 891	A	6	1. 06	5. 79	2½−2½	
2604. 294	A	5	1. 05	5. 79	1½−1½	
2600. 798	A	5	1. 04	5. 78	½− ½	
3016. 17	G	20	1. 21	5. 30	2½−1½	$a\ ^4P - w\ ^4S°$ (74)
2999. 20	G	12	1. 19	5. 30	1½−1½	
2990. 93	G	8	1. 18	5. 30	½−1½	
2963. 818	D	6	1. 21	5. 38	2½−3½	$a\ ^4P - q\ ^4D°$†
*2976. 527§	D	8	1. 21	5. 36	2½−2½	(75)
2968. 981	D	3	1. 19	5. 35	1½−1½	
2974. 217	H	8	1. 19	5. 34	1½− ½	
2961. 127	D	10	1. 21	5. 38	2½−2½	$a\ ^4P - u\ ^4P°$†
2968. 29	G	5	1. 21	5. 37	2½−1½	(76)
2957. 176	H	8h	1. 19	5. 36	1½− ½	
2944. 76	G	10h	1. 19	5. 38	1½−2½	
2943. 84	G	12h	1. 18	5. 37	½−1½	
2866. 447	D	20	1. 21	5. 52	2½−3½	$a\ ^4P - p\ ^4D°$†
2857. 972	D	20	1. 19	5. 51	1½−2½	(77)
2855. 518	D	6	1. 18	5. 50	½−1½	
2863. 076	D	12	1. 19	5. 50	1½−1½	
2858. 787	D	10	1. 18	5. 50	½− ½	
2768. 30	G	3	1. 21	5. 67	2½−3½	$a\ ^4P - o\ ^4D°$† (78)
2698. 724	A	(40)	1. 21	5. 79	2½−2½	$a\ ^4P - t\ ^4P°$
*2685. 515	A	4	1. 19	5. 79	1½−1½	(79)
2679. 707	A	5	1. 18	5. 78	½− ½	
2699. 12	A	(20)	1. 21	5. 79	2½−1½	
2686. 356	A	9	1. 19	5. 78	1½− ½	
*2685. 14§	A	(15)	1. 19	5. 79	1½−2½	
2678. 878	A	10	1. 18	5. 79	½−1½	
2514. 41	A	10h	1. 21	6. 12	2½−3½?	$a\ ^4P - n\ ^4D°$† (80)

V I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
*2482. 711	A	(15h)	1. 21	6. 18	2½—	$a\,^4P$ — 23° (81)
2996. 48	G	6	1. 37	5. 49	4½—4½	$a\,^2G$ —s $^2G°$
2975. 077	D	8	1. 34	5. 49	3½—3½	(82)
2917. 94	G	8	1. 37	5. 60	4½—4½	$a\,^2G$ —r $^2G°$
2916. 00	G	8	1. 34	5. 58	3½—3½	(83)
2773. 66	G	8	1. 37	5. 82	4½—3½	$a\,^2G$ —s $^2F°$†
2768. 93	G	6	1. 34	5. 80	3½—2½	(84)
2731. 347	A	(80r?)	1. 37	5. 89	4½—5½	$a\,^2G$ —s $^2H°$
2722. 560	A	(60r)	1. 34	5. 88	3½—4½	(85)
2738. 075	A	5	1. 37	5. 88	4½—4½	
2697. 744	A	(50r?)	1. 37	5. 95	4½—4½	$a\,^2G$ —q $^2G°$†
2696. 996	A	(40r?)	1. 34	5. 92	3½—3½	(86)
2712. 217	A	4	1. 37	5. 92	4½—3½	
2534. 825	A	15h	1. 37	6. 24	4½—3½	$a\,^2G$ —r $^2F°$† (87)
*2482. 711	A	(15h)	1. 37	6. 34	4½—4½	$a\,^2G$ —n $^4F°$ (88)
2388. 910	A	40	1. 37	6. 54	4½—4½	$a\,^2G$ —p $^2G°$
2386. 956	A	40	1. 34	6. 51	3½—3½	(89)
2398. 877	A	4	1. 37	6. 51	4½—3½	
2377. 083	A	3	1. 34	6. 54	3½—4½	
2316. 751	A	25	1. 37	6. 70	4½—5½	$a\,^2G$ —r $^2H°$
2314. 691	A	20	1. 34	6. 68	3½—4½	(90)
2852. 899	D	25	1. 70	6. 03	1½— ½	$a\,^2P$ —v $^2S°$† (91)
2785. 66	G	10	1. 70	6. 13	1½—2½	$a\,^2P$ —t $^2D°$
2783. 76	G	7	1. 70	6. 14	½—1½	(92)

V I—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2275. 475	A	3	1. 70	7. 13	½— ½?	$a\,^2P$ —s $^2P°$
2284. 494	A	20	1. 70	7. 13	1½— ½?	(93)
2284. 982	A	3	1. 70	7. 11	½—1½?	
2839. 43	G	4	1. 79	6. 14	1½—1½	$a\,^2D$ —t $^2D°$† (94)
2324. 189	A	10	1. 80	7. 11	2½—1½?	$a\,^2D$ —s $^2P°$
2312. 531	A	10	1. 79	7. 13	1½— ½?	(95)
*2854. 057	D	4h	1. 85	6. 17	4½—5½?	$a\,^4H$ —x $^2I°$ (96)
2481. 11	A	10h	1. 84	6. 81	3½—2½	$a\,^4H$ — 34° (97)
2868. 130	D	20	1. 88	6. 19	5½—6½	$a\,^2H$ —x $^2I°$
2866. 620	D	15	1. 86	6. 17	4½—5½	(98)
2652. 919	A	(20)	1. 88	6. 54	5½—4½	$a\,^2H$ —p $^2G°$
2653. 824	A	(25)	1. 86	6. 51	4½—3½	(99)
2564. 228	A	(20h)	1. 88	6. 70	5½—5½	$a\,^2H$ —r $^2H°$
*2564. 817	A	(40r?)	1. 86	6. 68	4½—4½	(100)
2934. 72	G	20h	2. 12	6. 32	6½—6½	$z\,^6G°$—h ^6G†
2930. 89	G	15h	2. 09	6. 30	5½—5½	(101)
2927. 646	D	10h	2. 07	6. 28	4½—4½	
2924. 92	G	5h	2. 05	6. 26	3½—3½	
2922. 715	H	5h	2. 03	6. 25	2½—2½	
2921. 18	G	6h	2. 02	6. 24	1½—1½	
2949. 91	G	2h	2. 12	6. 30	6½—5½?	
m2943. 88	P	V I	2. 09	6. 28	5½—4½	
2938. 30	F	5h	2. 07	6. 26	4½—3½	
2933. 234	H	3h	2. 05	6. 25	3½—2½	

Strongest Unclassified Lines of V I

2846. 600	D	20	IV			
2755. 653	A	(10)	V			
2731. 518	A	(20h?)	IV			
2656. 55	A	10				
*2637. 222§	A	(20H)	III			
2607. 752	A	(10)	III			
2568. 376	A	30h				
2533. 800	A	10h				
2520. 31	A	10h				
2514. 322	A	15h				
2511. 182	A	20h				
2498. 024	A	(10h)	III			
2475. 178	A	10				
2465. 664	A	10h				
2216. 666	A	10				
2089. 94	H	(20)				
2079. 56	H	(15dr?)				
2072. 75	H	(10)				
2043. 13	H	(20)				
2041. 74	H	(10N)				

V II

I P 14.1 Anal A List B Oct. 1948

REFERENCE

A W. F. Meggers and C. E. Moore, J. Research Nat. Bur. Std. **25**, 83, RP1317 (1940). W **L, I, T**
* and §§=Blend Fe III?

V II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2700. 944	A	300r	0. 04	4. 61	4—5	$a\ ^5D - z\ ^5F°$ (1)
2706. 17	A	200rs	0. 03	4. 59	3—4	
*2715. 676	A	180rs	0. 01	4. 56	2—3	
2728. 644	A	150	0. 00	4. 53	1—2	
2739. 715	A	100	0. 00	4. 50	0—1	
*2715. 676	A	180rs	0. 04	4. 59	4—4	
2723. 218	A	20	0. 03	4. 56	3—3	
2733. 906	A	25	0. 01	4. 53	2—2	
2742. 43	A	25	0. 00	4. 50	1—1	
2732. 92	A	5	0. 04	4. 56	4—3	
2741. 563	A	4	0. 03	4. 53	3—2	
2711. 740	A	100	0. 04	4. 59	4—3	$a\ ^5D - z\ ^3D°$ (2)
2714. 205	A	50	0. 03	4. 57	3—2	
2713. 050	A	40	0. 01	4. 56	2—1	
2702. 185	A	200r	0. 03	4. 59	3—3	
2706. 70	A	150r	0. 01	4. 57	2—2	
2707. 86	A	100	0. 00	4. 56	1—1	
2694. 74	A	20H	0. 01	4. 59	2—3	
2701. 535	A	10	0. 00	4. 57	1—2	
2705. 220	A	40	0. 00	4. 56	0—1	
2687. 960	A	300r	0. 04	4. 63	4—4	$a\ ^5D - z\ ^5D°$ (3)
2679. 327	A	200r	0. 03	4. 63	3—3	
2682. 875	A	100	0. 01	4. 61	2—2	
2685. 689	A	30	0. 00	4. 60	1—1	
2688. 717	A	100	0. 04	4. 63	4—3	
2690. 252	A	150	0. 03	4. 61	3—2	
2690. 792	A	200	0. 01	4. 60	2—1	
2689. 883	A	100	0. 00	4. 59	1—0	
2678. 572	A	100r	0. 03	4. 63	3—4	
2672. 005	A	150r	0. 01	4. 63	2—3	
2677. 804	A	150r	0. 00	4. 61	1—2	
2683. 09	A	100	0. 00	4. 60	0—1	
2545. 460	A	**15**	0. 04	4. 89	4—5	$a\ ^5D - z\ ^3G°$† (4)
2493. 576	A	**15**	0. 04	4. 99	4—4	$a\ ^5D - z\ ^3F°$†
2500. 076	A	4	0. 03	4. 96	3—3	(5)
2148. 42	A	40	0. 03	5. 77	3—2	$a\ ^5D - z\ ^3P°$ (6)
2145. 990	A	40	0. 01	5. 76	2—1	
2147. 52	A	20	0. 00	5. 75	1—0	
2143. 706	A	5	0. 01	5. 77	2—2	
2142. 74	A	4	0. 00	5. 76	1—1	

V II

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2140. 064	A	150	0. 04	5. 81	4—3	$a\ ^5D - z\ ^5P°$ (7)
2141. 973	A	100	0. 03	5. 79	3—2	
2143. 038	A	60	0. 01	5. 77	2—1	
2134. 12	A	200	0. 03	5. 81	3—3	
2137. 31	A	100	0. 01	5. 79	2—2	
2139. 798	A	100	0. 00	5. 77	1—1	
2129. 477	A	40	0. 01	5. 81	2—3	
m2134. 07	P	V II	0. 00	5. 79	1—2	
2138. 17	A	60	0. 00	5. 77	0—1	
2123. 340	A	60	0. 04	5. 85	4—4	$a\ ^5D - y\ ^5D°$ (8)
2128. 241	A	7	0. 03	5. 82	3—3	
m2134. 16	P	V III	0. 04	5. 82	4—3	
2131. 85	A	80	0. 03	5. 81	3—2	
2126. 932	A	20	0. 01	5. 82	2—1	
2127. 34	A	5	0. 00	5. 81	1—0	
*2117. 482§	A	12	0. 03	5. 85	3—4	
2123. 62	A	10	0. 01	5. 82	2—3	
2124. 00	A	5d?	0. 00	5. 81	1—2	
2122. 11	A	1	0. 00	5. 82	0—1	
Vac						
1920. 36	A	**12**	0. 01	6. 44	2—1?	$a\ ^5D - z\ ^3S°$ (9)
Air						
2924. 017	A	300R	0. 39	4. 61	5—5	$a\ ^5F - z\ ^5F°$ (10)
2924. 633	A	250R	0. 37	4. 59	4—4	
2930. 798	A	150r	0. 35	4. 56	3—3	
2941. 485	A	100	0. 33	4. 53	2—2	
2950. 344	A	80	0. 32	4. 50	1—1	
2941. 372	A	200	0. 39	4. 59	5—4	
2944. 568	A	250r	0. 37	4. 56	4—3	
2952. 07	A	150r	0. 35	4. 53	3—2	
2957. 520	A	100	0. 33	4. 50	2—1	
2907. 457	A	120	0. 37	4. 61	4—5	
2911. 050	A	160r	0. 35	4. 59	3—4	
*2920. 377	A	100	0. 33	4. 56	2—3	
2934. 394	A	60	0. 32	4. 53	1—2	
2919. 989	A	50	0. 37	4. 59	4—3	$a\ ^5F - z\ ^3D°$ (11)
*2920. 377	A	100	0. 35	4. 57	3—2	
2917. 365	A	50	0. 33	4. 56	2—1	
2906. 448	A	150r	0. 35	4. 59	3—3	
2910. 007	A	140r	0. 33	4. 57	2—2	
*2910. 380§	A	150r	0. 32	4. 56	1—1	
2896. 198	A	100	0. 33	4. 59	2—3	
2903. 068	A	100	0. 32	4. 57	1—2	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2908. 810	A	300R	0. 39	4. 63	5—4	$a\ ^5F - z\ ^5D^\circ$
2893. 314	A	250r	0. 37	4. 63	4—3	(12)
2892. 650	A	200r	0. 35	4. 61	3—2	
2891. 636	A	150r	0. 33	4. 60	2—1	
2889. 614	A	100	0. 32	4. 59	1—0	
2892. 434	A	150r	0. 37	4. 63	4—4	
2880. 026	A	150	0. 35	4. 63	3—3	
2882. 493	A	120	0. 33	4. 61	2—2	
*2884. 776	A	150	0. 32	4. 60	1—1	
2879. 158	A	40	0. 35	4. 63	3—4	
2869. 957	A	10	0. 33	4. 63	2—3	
2875. 687	A	30	0. 32	4. 61	1—2	
2742. 670	A	30	0. 39	4. 89	5—5	$a\ ^5F - z\ ^3G^\circ$
2743. 768	A	20	0. 37	4. 86	4—4	(13)
2744. 54	A	4	0. 35	4. 84	3—3	
*2758. 53	A	9Hl	0. 39	4. 86	5—4	
2682. 535	A	6	0. 39	4. 99	5—4	$a\ ^5F - z\ ^3F^\circ$
*2685. 41	A	1?	0. 37	4. 96	4—3	(14)
2668. 595	A	4	0. 37	4. 99	4—4	
2673. 955	A	4	0. 35	4. 96	3—3	
m2657. 26	P	V II	0. 35	4. 99	3—4	
2665. 277	A	3	0. 33	4. 96	2—3	
2275. 586	A	7	0. 35	5. 77	3—2	$a\ ^5F - z\ ^3P^\circ$
2271. 848	A	10	0. 33	5. 76	2—1	(15)
*2273. 024	A	40h	0. 32	5. 75	1—0	
2269. 293	A	3	0. 33	5. 77	2—2	
2267. 612	A	5	0. 32	5. 76	1—1	
*2258. 814§	A	50	0. 39	5. 85	5—4	$a\ ^5F - y\ ^5D^\circ$
2261. 084	A	30	0. 37	5. 82	4—3	(16)
*2256. 984§	A	20	0. 35	5. 81	3—2	
2250. 490	A	5	0. 33	5. 82	2—1	
2250. 382	A	3	0. 32	5. 81	1—0	
2248. 913	A	4	0. 37	5. 85	4—4	
2252. 953	A	7	0. 35	5. 82	3—3	
2250. 800	A	5	0. 33	5. 81	2—2	
2246. 332	A	3	0. 32	5. 82	1—1	
*2246. 65	A	1?	0. 32	5. 81	1—2	
Vac						
1677. 88	A	3	0. 39	7. 75	5—4	$a\ ^5F - \quad 1^\circ$
1672. 44	A	15	0. 37	7. 75	4—4	(17)
1636. 02	A	40	0. 39	7. 94	5—5	$a\ ^5F - y\ ^5F^\circ$
1637. 77	A	50	0. 37	7. 90	4—4	(18)
1639. 13	A	40	0. 35	7. 88	3—3	
1640. 15	A	35	0. 33	7. 86	2—2	
1640. 86	A	30	0. 32	7. 85	1—1	
*1643. 02	A	30	0. 39	7. 90	5—4	
*1643. 43	A	30	0. 37	7. 88	4—3	
			0. 35	7. 86	3—2	
*1643. 02	A	30	0. 33	7. 85	2—1	
1630. 82	A	20	0. 37	7. 94	4—5	
1633. 51	A	25	0. 35	7. 90	3—4	
1635. 86	A	20	0. 33	7. 88	2—3	
1637. 93	A	10	0. 32	7. 86	1—2	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1587. 40	A	50	0. 39	8. 17	5—4	$a\ ^5F - x\ ^5D^\circ$
1586. 58	A	40	0. 37	8. 15	4—3	(19)
1585. 361	A	30	0. 35	8. 13	3—2	
1584. 06	A	15	0. 33	8. 13	2—1	
1582. 80	A	8	0. 32	8. 12	1—0	
*1582. 57	A	15	0. 37	8. 17	4—4	
			0. 35	8. 15	3—3	
1582. 32	A	8	0. 33	8. 13	2—2	
1581. 99	A	8	0. 32	8. 13	1—1	
1547. 20	A	15	0. 39	8. 37	5—6?	$a\ ^5F - y\ ^5G^\circ$
1553. 09	A	15	0. 37	8. 32	4—5?	(20)
1558. 76	A	15	0. 35	8. 27	3—4?	
1562. 98	A	10	0. 33	8. 23	2—3?	
1571. 74	A	2	0. 32	8. 18	1—2?	
1565. 98	A	8	0. 35	8. 23	3—3?	
1573. 78	A	0	0. 33	8. 18	2—2?	
Air						
2514. 633	A	200	1. 12	6. 03	4—5	$a\ ^3F - y\ ^3G^\circ$
2506. 215	A	200	1. 09	6. 02	3—4	(21)
2503. 018	A	180	1. 07	6. 00	2—3	
2522. 392	A	6	1. 12	6. 02	4—4	
2515. 722	A	9	1. 09	6. 00	3—3	
2488. 616	A	6	1. 12	6. 08	4—4	$a\ ^3F - y\ ^3F^\circ$
2646. 65	A	1	1. 07	6. 07	2—2	(22)
2476. 963	A	1	1. 09	6. 07	3—2	
2472. 870	A	5	1. 09	6. 08	3—4	
2464. 094	A	15	1. 07	6. 08	2—3	
2468. 654	A	8	1. 12	6. 12	4—5	$a\ ^3F - z\ ^1H^\circ$
						(23)
2434. 94	A	5?	1. 09	6. 16	3—2	$a\ ^3F - z\ ^1D^\circ$
2423. 030	A	6	1. 07	6. 16	2—2	(24)
2380. 910	A	120	1. 12	6. 31	4—3	$a\ ^3F - y\ ^3D^\circ$
2383. 995	A	80	1. 09	6. 27	3—2	(25)
2389. 696	A	100	1. 07	6. 23	2—1	
2366. 490	A	25	1. 09	6. 31	3—3	
2372. 584	A	20	1. 07	6. 27	2—2	
2355. 232	A	4	1. 07	6. 31	2—3	
2294. 992	A	40	1. 12	6. 50	4—4	$a\ ^3F - x\ ^3F^\circ$
2295. 504	A	20	1. 09	6. 47	3—3	(26)
*2292. 588	A	30	1. 07	6. 45	2—2	
2309. 072	A	10	1. 12	6. 47	4—3	
2303. 238	A	10	1. 09	6. 45	3—2	
*2281. 601	A	60	1. 09	6. 50	3—4	
2284. 920	A	15	1. 07	6. 47	2—3	
2289. 219	A	70	1. 12	6. 51	4—3	$a\ ^3F - x\ ^3D^\circ$
2279. 376	A	15	1. 09	6. 51	3—2	(27)
2273. 89	A	2	1. 07	6. 49	2—1	
2275. 883	A	7	1. 09	6. 51	3—3	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2229. 985	A	80	1. 12	6. 66	4—3	$a\ ^3F - w\ ^3D^\circ$ (28)
2220. 214	A	100	1. 09	6. 65	3—2	
m2216. 05	P	V III	1. 07	6. 64	2—1	
*2217. 32	A	8	1. 09	6. 66	3—3	
2210. 305	A	8	1. 07	6. 65	2—2	
2168. 08	A	10	1. 12	6. 82	4—5	$a\ ^3F - x\ ^3G^\circ$ (29)
Vac						
1883. 98	A	20	1. 12	7. 68	4—4	$a\ ^3F - w\ ^3F^\circ$†
1876. 47	A	10	1. 09	7. 67	3—3	(30)
1871. 08	A	12	1. 07	7. 66	2—2	
1813. 87	A	8	1. 12	7. 93	4—5	$a\ ^3F - w\ ^3G^\circ$† (31)
1748. 99	A	5	1. 07	8. 13	2—1	$a\ ^3F - x\ ^5D^\circ$ (32)
1693. 49	A	12	1. 12	8. 41	4—4	$a\ ^3F - v\ ^3F^\circ$†
1693. 09	A	10	1. 09	8. 38	3—3	(33)
1692. 11	A	10	1. 07	8. 36	2—2	
1670. 90	A	5	1. 12	8. 51	4—3	$a\ ^3F - u\ ^3D^\circ$†
1667. 88	A	5	1. 09	8. 49	3—2	(34)
1663. 34	A	3	1. 07	8. 49	2—1	
Air						
2870. 111	A	9	1. 47	5. 77	2—2	$a\ ^3P - z\ ^3P^\circ$ (35)
2842. 043	A	2	1. 42	5. 76	1—1	
2874. 205	A	5	1. 47	5. 76	2—1	
2850. 477	A	1	1. 42	5. 75	1—0	
2838. 053	A	10	1. 42	5. 77	1—2	
2824. 444	A	4	1. 39	5. 76	0—1	
*2809. 184	A	1	1. 42	5. 81	1—2	$a\ ^3P - y\ ^5D^\circ$ (36)
2791. 50	A	7	1. 39	5. 82	0—1	
2840. 593	A	6	1. 47	5. 81	2—2	
2808. 701	A	4	1. 42	5. 82	1—1	
2804. 10	A	10	1. 47	5. 82	2—1	
2815. 032	A	5	1. 42	5. 81	1—0	
2551. 724	A	15	1. 47	6. 31	2—3	$a\ ^3P - y\ ^3D^\circ$ (37)
2546. 311	A	5	1. 42	6. 27	1—2	
2572. 096	A	2	1. 47	6. 27	2—2	
2566. 033	A	7	1. 42	6. 23	1—1	
2592. 215	A	4	1. 47	6. 23	2—1	
2549. 272	A	120	1. 47	6. 31	2—2	$a\ ^3P - y\ ^3P^\circ$ (38)
2548. 685	A	60	1. 42	6. 26	1—1	
2574. 520	A	60	1. 47	6. 26	2—1	
2553. 668	A	40	1. 42	6. 25	1—0	
*2523. 953	A	100	1. 42	6. 31	1—2	
2534. 519	A	80	1. 39	6. 26	0—1	
2482. 307	A	150	1. 47	6. 44	2—1	$a\ ^3P - z\ ^3S^\circ$ (39)
2458. 288	A	50	1. 42	6. 44	1—1	
2445. 107	A	6	1. 39	6. 44	0—1	
2469. 388	A	5	1. 47	6. 47	2—3	$a\ ^3P - x\ ^3F^\circ$ (40)
2478. 340	A	1	1. 47	6. 45	2—2	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2446. 697	A	30	1. 47	6. 51	2—3	$a\ ^3P - x\ ^3D^\circ$ (41)
2427. 316	A	20	1. 42	6. 51	1—2	
m2420. 07	P	V I	1. 39	6. 49	0—1	
2450. 734	A	20	1. 47	6. 51	2—2	
2432. 976	A	20	1. 42	6. 49	1—1	
2456. 508	A	3	1. 47	6. 49	2—1	
2408. 430	A	15	1. 39	6. 52	0—1	$a\ ^3P - z\ ^1P^\circ$ (42)
2379. 149	A	100	1. 47	6. 66	2—3	$a\ ^3P - w\ ^3D^\circ$ (43)
2360. 334	A	50	1. 42	6. 65	1—2	
2354. 656	A	20	1. 39	6. 64	0—1	
m2382. 48	P	V III	1. 47	6. 65	2—2	
2366. 883	A	20	1. 42	6. 64	1—1	
2389. 144	A	2	1. 47	6. 64	2—1	
2335. 326	A	10	1. 47	6. 75	2—2	$a\ ^3P - x\ ^3P^\circ$ (44)
2313. 939	A	9	1. 42	6. 75	1—1	
2335. 204	A	2	1. 47	6. 75	2—1	
2308. 831	A	5	1. 42	6. 77	1—0	
2314. 055	A	3	1. 42	6. 75	1—2	
2302. 256	A	5	1. 39	6. 75	0—1	
2248. 748	A	10	1. 47	6. 87	2—1	$a\ ^3P - y\ ^3S^\circ$ (45)
*2765. 676	A	150+Hl	1. 57	6. 03	6—5	$a\ ^3H - y\ ^3G^\circ$ (46)
2768. 566	A	100	1. 56	6. 02	5—4	
2774. 28	A	100	1. 55	6. 00	4—3	
2759. 22	A	1	1. 56	6. 03	5—5	
2762. 714	A	3	1. 55	6. 02	4—4	
2727. 929	A	6	1. 56	6. 08	5—4	$a\ ^3H - y\ ^3F^\circ$ (47)
2726. 544	A	40	1. 55	6. 08	4—3	
2722. 258	A	3	1. 55	6. 08	4—4	
2710. 17	A	15	1. 57	6. 12	6—5	$a\ ^3H - z\ ^1H^\circ$ (48)
2694. 47	A	5	1. 56	6. 14	5—4	$a\ ^3H - z\ ^1G^\circ$ (49)
2527. 903	A	250	1. 57	6. 45	6—6	$a\ ^3H - y\ ^3H^\circ$ (50)
2528. 833	A	220	1. 56	6. 44	5—5	
2528. 466	A	200	1. 55	6. 43	4—4	
2534. 263	A	9	1. 57	6. 44	6—5	
2533. 365	A	15	1. 56	6. 43	5—4	
2522. 513	A	20	1. 56	6. 45	5—6	
*2523. 953	A	100	1. 55	6. 44	4—5	
2497. 002	A	4	1. 56	6. 50	5—4	$a\ ^3H - x\ ^3F^\circ$ (51)
2508. 854	A	4	1. 55	6. 47	4—3	
2461. 495	A	40	1. 57	6. 58	6—7	$a\ ^3H - z\ ^3I^\circ$ (52)
2471. 119	A	25	1. 56	6. 55	5—6	
2478. 621	A	20	1. 55	6. 53	4—5	
2476. 295	A	5h	1. 57	6. 55	6—6	
2407. 592	A	5	1. 56	6. 68	5—4	$a\ ^3H - y\ ^1G^\circ$ (53)

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2346. 868	A	25	1. 55	6. 81	4—3	$a\ ^3H - y\ ^1F°$ (54)
2352. 177	A	100	1. 57	6. 82	6—5	$a\ ^3H - x\ ^3G°$ (55)
2342. 142	A	60+h	1. 56	6. 83	5—4	
2335. 480	A	40	1. 55	6. 83	4—3	
2347. 507	A	8	1. 56	6. 82	5—5	
2337. 956	A	4	1. 55	6. 83	4—4	
2341. 358	A	4	1. 57	6. 84	6—6	$a\ ^3H - z\ ^1I°$ (56)
2336. 098	A	30	1. 57	6. 85	6—5	$a\ ^3H - y\ ^1H°$ (57)
Vac						
1938. 70	A	8	1. 57	7. 94	6—5	$a\ ^3H - y\ ^5F°$ (58)
*1945. 35§§	A	30	1. 56	7. 90	5—4	
1940. 86	A	40	1. 57	7. 93	6—5	$a\ ^3H - w\ ^3G°$ (59)
1941. 40	A	30	1. 56	7. 92	5—4	
1941. 27	A	30	1. 55	7. 91	4—3	
1937. 68	A	7	1. 56	7. 93	5—5	
1938. 50	A	10	1. 55	7. 92	4—4	
Air						
2967. 545		5	1. 68	5. 84	4—5	$b\ ^3F - z\ ^3H°$ (60)
*2983. 009	A	10	1. 67	5. 81	3—4	
	A					
2836. 527		80	1. 68	6. 03	4—5	$b\ ^3F - y\ ^3G°$ (61)
2841. 039	A	50	1. 67	6. 02	3—4	
2849. 055	A	40	1. 67	6. 00	2—3	
	A					
2803. 469		150	1. 68	6. 08	4—4	$b\ ^3F - y\ ^3F°$ (62)
2802. 796	A	100	1. 67	6. 08	3—3	
2799. 451	A	100	1. 67	6. 07	2—2	
2808. 023	A	4	1. 68	6. 08	4—3	
	A					
2780. 09		5+H	1. 68	6. 12	4—3	$b\ ^3F - z\ ^1F°$ (63)
2774. 976	A	30	1. 67	6. 12	3—3	
2770. 99	A	4	1. 67	6. 12	2—3	
	A					
2768. 150		15	1. 68	6. 14	4—4	$b\ ^3F - z\ ^1G°$ (64)
	A					
*2758. 53	A	9Hl	1. 67	6. 14	2—2	$b\ ^3F - z\ ^5S°$ (65)
2745. 893	A	6	1. 67	6. 16	2—2	$b\ ^3F - z\ ^1D°$ (66)
2667. 532	A	4	1. 68	6. 31	4—3	$b\ ^3F - y\ ^3D°$†
2703. 15	A	3	1. 67	6. 23	2—1	(67)
*2560. 149	A	4	1. 68	6. 50	4—4	$b\ ^3F - x\ ^3F°$
2577. 682	A	40	1. 68	6. 47	4—3	(68)
2583. 007	A	20	1. 67	6. 45	3—2	
2552. 960	A	60	1. 68	6. 51	4—3	$b\ ^3F - x\ ^3D°$
2553. 028	A	40	1. 67	6. 51	3—2	(69)
2555. 905	A	40	1. 67	6. 49	2—1	
m2548. 65	P	V II	1. 67	6. 51	3—3	
2549. 653	A	10	1. 67	6. 51	2—2	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2542. 935	A	15	1. 67	6. 52	2—1	$b\ ^3F - z\ ^1P°$ (70)
2479. 518	A	180	1. 68	6. 66	4—3	$b\ ^3F - w\ ^3D°$
2479. 043	A	200	1. 67	6. 65	3—2	(71)
2483. 064	A	120	1. 67	6. 64	2—1	
2475. 451	A	20	1. 67	6. 66	3—3	
2475. 865	A	30	1. 67	6. 65	2—2	
2406. 989	A	5	1. 68	6. 81	4—3	$b\ ^3F - y\ ^1F°$
2400. 166	A	4	1. 67	6. 81	2—3	(72)
2403. 240	A	9	1. 68	6. 82	4—5	$b\ ^3F - x\ ^3G°$
2393. 814	A	8	1. 67	6. 83	3—4	(73)
2388. 260	A	5	1. 67	6. 83	2—3	
2397. 622	A	6	1. 68	6. 83	4—4	
2391. 226	A	10h	1. 67	6. 83	3—3	
2058. 34	A	40	1. 68	7. 68	4—4	$b\ ^3F - w\ ^3F°$
2057. 36	A	25	1. 67	7. 67	3—3	(74)
2057. 20	A	15	1. 67	7. 66	2—2	
2055. 55	A	8	1. 67	7. 68	3—4	
2055. 15	A	5	1. 67	7. 67	2—3	
Vac						
1833. 58	A	10	1. 68	8. 41	4—4	$b\ ^3F - v\ ^3F°$†
1839. 54	A	20	1. 67	8. 38	3—3	(75)
1843. 43	A	5	1. 67	8. 36	2—2	
1807. 15	A	1	1. 68	8. 51	4—3	$b\ ^3F - u\ ^3D°$
*1809. 81	A	8d?	1. 67	8. 49	3—2	(76)
1809. 36	A	10e	1. 67	8. 49	2—1	
Air						
2777. 748	A	80	1. 70	6. 14	3—2	$a\ ^5P - z\ ^5S°$
2766. 460	A	60	1. 68	6. 14	2—2	(77)
2760. 122	A	40	1. 67	6. 14	1—2	
2544. 29	A	10H	1. 67	6. 52	1—1	$a\ ^5P - z\ ^1P°$ (78)
2039. 29	A	60	1. 70	7. 75	3—4	$a\ ^5P - \ ^1°$ (79)
Vac						
1907. 79	A	50	1. 70	8. 17	3—4	$a\ ^5P - x\ ^5D°$
1908. 32	A	40h	1. 68	8. 15	2—3	(80)
1909. 36	A	40	1. 67	8. 13	1—2	
1913. 70	A	50	1. 70	8. 15	3—3	
1912. 39	A	40	1. 68	8. 13	2—2	
1911. 88	A	40	1. 67	8. 13	1—1	
1917. 79	A	15	1. 70	8. 13	3—2	
1914. 91	A	15	1. 68	8. 13	2—1	
1913. 10	A	20	1. 67	8. 12	1—0	
Air						
2923. 340	A	20	1. 81	6. 03	5—5	$a\ ^3G - y\ ^3G°$
2925. 288	A	15	1. 80	6. 02	4—4	(81)
2930. 132	A	25	1. 79	6. 00	3—3	
2933. 833	A	15	1. 81	6. 02	5—4	
2938. 259	A	20	1. 80	6. 00	4—3	
*2914. 87 §	A	10	1. 80	6. 03	4—5	
2917. 230	A	7	1. 79	6. 02	3—4	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2888. 244	A	80	1. 81	6. 08	5—4	$a\ ^3G - y\ ^3F°$
*2884. 776	A	150	1. 80	6. 08	4—3	(82)
2877. 689	A	60	1. 79	6. 07	3—2	
m2879. 97	P	V II	1. 80	6. 08	4—4	
2876. 939	A	9	1. 79	6. 08	3—3	
2855. 298	A	40	1. 80	6. 12	4—3	$a\ ^3G - z\ ^1F°$ (83)
2861. 401	A	5	1. 81	6. 12	5—5	$a\ ^3G - z\ ^1H°$ (84)
2850. 765	A	20	1. 81	6. 14	5—4	$a\ ^3G - z\ ^1G°$
2842. 699	A	4	1. 80	6. 14	4—4	(85)
2821. 124	A	15	1. 79	6. 16	3—2	$a\ ^3G - z\ ^1D°$ (86)
2736. 69	A	10	1. 80	6. 31	4—3	$a\ ^3G - y\ ^3D°$† (87)
*2658. 97	A	30	1. 81	6. 45	5—6	$a\ ^3G - y\ ^3H°$
			1. 80	6. 44	4—5	(88)
2657. 295	A	10	1. 79	6. 43	3—4	
2630. 665	A	150	1. 81	6. 50	5—4	$a\ ^3G - x\ ^3F°$
2642. 212	A	80	1. 80	6. 47	4—3	(89)
2645. 840	A	80	1. 79	6. 45	3—2	
2623. 792	A	15+H	1. 80	6. 50	4—4	
2635. 640	A	10	1. 79	6. 47	3—3	
2616. 24	A	40	1. 80	6. 51	4—3	$a\ ^3G - x\ ^3D°$
2614. 395	A	10	1. 79	6. 51	3—2	(90)
*2609. 80	A	5	1. 79	6. 51	3—3	
2463. 157	A	3	1. 80	6. 81	4—3	$a\ ^3G - y\ ^1F°$
2457. 446	A	30	1. 79	6. 81	3—3	(91)
2465. 270	A	150	1. 81	6. 82	5—5	$a\ ^3G - x\ ^3G°$
2453. 346	A	80	1. 80	6. 83	4—4	(92)
2444. 967	A	60	1. 79	6. 83	3—3	
2459. 358	A	15	1. 81	6. 83	5—4	
2450. 619	A	9	1. 80	6. 83	4—3	
2459. 233	A	5	1. 80	6. 82	4—5	
2447. 608	A	20	1. 81	6. 85	5—5	$a\ ^3G - y\ ^1H°$
2441. 664	A	4h	1. 80	6. 85	4—5	(93)
2103. 70	A	80	1. 81	7. 68	5—4	$a\ ^3G - w\ ^3F°$†
2101. 17	A	50	1. 80	7. 67	4—3	(94)
2099. 16	A	30	1. 79	7. 66	3—2	
*2014. 18	A	90	1. 81	7. 94	5—5	$a\ ^3G - y\ ^5F°$
2025. 47	A	15	1. 79	7. 88	3—3	(95)
2024. 84	A	0??	1. 81	7. 90	5—4?	
2010. 15	A	5h	1. 80	7. 94	4—5	
*2016. 53	A	60	1. 81	7. 93	5—5	$a\ ^3G - w\ ^3G°$
			1. 80	7. 92	4—4	(96)
*2015. 74	A	20	1. 79	7. 91	3—3	
2020. 54	A	10	1. 81	7. 92	5—4	
2019. 47	A	10	1. 80	7. 91	4—3	
*2012. 64	A	10	1. 79	7. 92	3—4	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
*1869. 47	A	50	1. 81	8. 41	5—4	$a\ ^3G - v\ ^3F°$
1874. 45	A	12	1. 80	8. 38	4—3	(97)
1877. 00	A	10	1. 79	8. 36	3—2	
1865. 99	A	3	1. 80	8. 41	4—4	
1799. 47	A	12	1. 81	8. 67	5—5	$a\ ^3G - v\ ^3G°$†
1806. 49	A	8h	1. 80	8. 63	4—4	(98)
*1809. 81	A	8d?	1. 81	8. 63	5—4?	
1613. 20	A	15	1. 81	9. 46	5—4	$a\ ^3G - u\ ^3F°$
1617. 35	A	10	1. 80	9. 43	4—3	(99)
1619. 18	A	10	1. 79	9. 41	3—2	
Air						
2798. 755	A	80	2. 04	6. 45	5—6	$b\ ^3G - y\ ^3H°$
2797. 795	A	70	2. 03	6. 44	4—5	(100)
2797. 017	A	60	2. 02	6. 43	3—4	
2806. 544	A	4	2. 04	6. 44	5—5	
2581. 839	A	4	2. 03	6. 81	4—3	$b\ ^3G - y\ ^1F°$
2576. 478	A	20	2. 02	6. 81	3—3	(101)
2584. 951	A	80	2. 04	6. 82	5—5	$b\ ^3G - x\ ^3G°$†
2571. 059	A	50	2. 03	6. 83	4—4	(102)
2562. 760	A	30	2. 02	6. 83	3—3	
2578. 451	A	8	2. 04	6. 83	5—4	
2568. 065	A	3	2. 03	6. 83	4—3	
2565. 543	A	15	2. 04	6. 85	5—5	$b\ ^3G - y\ ^1H$ (103)
2190. 22	A	30	2. 04	7. 68	5—4	$b\ ^3G - w\ ^3F°$†
2186. 94	A	20	2. 03	7. 67	4—3	(104)
*2185. 39	A	50	2. 02	7. 66	3—2	
2095. 94	A	25	2. 04	7. 93	5—5	$b\ ^3G - w\ ^3G°$†
2095. 37	A	15	2. 03	7. 92	4—4	(105)
2095. 05	A	15	2. 02	7. 91	3—3	
Vac						
1937. 44	A	60	2. 04	8. 41	5—4	$b\ ^3G - v\ ^3F°$
1942. 35	A	40	2. 03	8. 38	4—3	(106)
1945. 64	A	30	2. 02	8. 36	3—2	
1933. 28	A	10	2. 03	8. 41	4—4	
1939. 32	A	8	2. 02	8. 38	3—3	
1903. 86	A	5?	2. 03	8. 51	4—3?	$b\ ^3G - u\ ^3D°$ (107)
1862. 37	A	30	2. 04	8. 67	5—5	$b\ ^3G - v\ ^3G°$
*1869. 47	A	50	2. 03	8. 63	4—4	(108)
1876. 06	A	20	2. 02	8. 60	3—3	
1873. 39	A	10	2. 04	8. 63	5—4	
1878. 90	A	10	2. 03	8. 60	4—3	
1858. 50	A	2	2. 03	8. 67	4—5	
1866. 68	A	5	2. 02	8. 63	3—4	
1663. 60	A	15	2. 04	9. 46	5—4	$b\ ^3G - u\ ^3F°$
1667. 66	A	10	2. 03	9. 43	4—3	(109)
1670. 01	A	10	2. 02	9. 41	3—2	
1660. 53	A	8	2. 03	9. 46	4—4	
1665. 42	A	8e	2. 02	9. 43	3—3	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
*2685. 138§	A	20	2. 21	6. 81	4—3	$a\ ^1G - y\ ^1F^\circ$ (110)
2680. 470	A	8	2. 21	6. 82	4—5	$a\ ^1G - x\ ^3G^\circ$
2670. 237	A	40	2. 21	6. 83	4—3	(111)
2659. 60	A	25	2. 21	6. 85	4—5	$a\ ^1G - y\ ^1H^\circ$ (112)
2155. 61	A	15	2. 21	7. 94	4—5	$a\ ^1G - y\ ^5F^\circ$ (113)
2087. 92	A	20	2. 21	8. 12	4—4	$a\ ^1G - x\ ^1G^\circ$ (114)
2065. 76	A	40	2. 21	8. 19	4—3	$a\ ^1G - x\ ^1F^\circ$ (115)
Vac						
1885. 90	A	10	2. 21	8. 76	4—5	$a\ ^1G - x\ ^1H^\circ$ (116)
1838. 86	A	25	2. 21	8. 92	4—4	$a\ ^1G - w\ ^1G^\circ$ (117)
*2914. 298§	A	40	2. 27	6. 50	3—4	$a\ ^3D - x\ ^3F^\circ$
2931. 859	A	10	2. 26	6. 47	2—3	(118)
2942. 37	A	15	2. 26	6. 45	1—2	
2937. 030	A	15	2. 27	6. 47	3—3	
m2944. 49	P	V II	2. 26	6. 45	2—2	
2904. 985	A	15	2. 27	6. 51	3—3	$a\ ^3D - x\ ^3D^\circ$
2905. 609	A	15	2. 26	6. 51	2—2	(119)
2911. 654	A	7	2. 26	6. 49	1—1	
2913. 716	A	2	2. 26	6. 49	2—1	
2899. 936	A	4	2. 26	6. 51	2—3	
2903. 548	A	3	2. 26	6. 51	1—2	
2810. 272	A	100	2. 27	6. 66	3—3	$a\ ^3D - w\ ^3D^\circ$
2810. 158	A	60	2. 26	6. 65	2—2	(120)
2817. 506	A	60	2. 26	6. 64	1—1	
2814. 903	A	15	2. 27	6. 65	3—2	
2819. 444	A	20	2. 26	6. 64	2—1	
2805. 544	A	30	2. 26	6. 66	2—3	
2808. 237	A	25	2. 26	6. 65	1—2	
2717. 464	A	5	2. 27	6. 81	3—3	$a\ ^3D - y\ ^1F^\circ$ (121)
*2560. 149	A	4	2. 26	7. 08	2—2	$a\ ^3D - y\ ^1D^\circ$ (122)
2281. 235	A	60	2. 27	7. 68	3—4	$a\ ^3D - w\ ^3F^\circ$
2280. 338	A	60	2. 26	7. 67	2—3	(123)
*2281. 601	A	60	2. 26	7. 66	1—2	
2283. 469	A	7	2. 27	7. 67	3—3	
2282. 863	A	6	2. 26	7. 66	2—2	
2161. 48	A	20	2. 27	7. 98	3—3	$a\ ^3D - v\ ^3D^\circ$
2149. 386	A	8	2. 26	8. 00	2—2	(124)
2142. 40	A	3	2. 26	8. 02	1—1	
2107. 40	A	10h	2. 27	8. 12	3—4	$a\ ^3D - x\ ^1G^\circ$ (125)

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2007. 66	A	25	2. 27	8. 41	3—4	$a\ ^3D - v\ ^3F^\circ$
*2015. 02§	A	15	2. 26	8. 38	2—3	(126)
2020. 83	A	15	2. 26	8. 36	1—2	
2017. 46	A	2	2. 27	8. 38	3—3	
2021. 83	A	5	2. 26	8. 36	2—2	
Vac						
1976. 62	A	60	2. 27	8. 51	3—3	$a\ ^3D - u\ ^3D^\circ$
1980. 04	A	40	2. 26	8. 49	2—2	(127)
1980. 59	A	25	2. 26	8. 49	1—1	
1982. 41	A	8	2. 27	8. 49	3—2	
1981. 53	A	8	2. 26	8. 49	2—1	
1739. 33	A	10l	2. 27	9. 36	3—3?	$a\ ^3D - t\ ^3D^\circ$ (128)
1722. 62	A	10e	2. 27	9. 43	3—3	$a\ ^3D - \quad 2^\circ$ (129)
Air						
2960. 777	A	6	2. 36	6. 53	4—5	$b\ ^1G - z\ ^3I^\circ$ (130)
2871. 543	A	3	2. 36	6. 66	4—3	$b\ ^1G - w\ ^3D^\circ$ (131)
2853. 761	A	4	2. 36	6. 68	4—4	$b\ ^1G - y\ ^1G^\circ$ (132)
2774. 718	A	60	2. 36	6. 81	4—3	$b\ ^1G - y\ ^1F^\circ$ (133)
2769. 731	A	20	2. 36	6. 82	4—5	$b\ ^1G - x\ ^3G^\circ$
2758. 810	A	15	2. 36	6. 83	4—3	(134)
*2747. 462§	A	80	2. 36	6. 85	4—5	$b\ ^1G - y\ ^1H^\circ$ (135)
2141. 70	A	4h?	2. 36	8. 12	4—4	$b\ ^1G - x\ ^1G^\circ$ (136)
*2118. 43	A	30h	2. 36	8. 19	4—3	$b\ ^1G - x\ ^1F^\circ$ (137)
Vac						
1978. 96	A	20	2. 36	8. 60	4—3	$b\ ^1G - v\ ^3G^\circ$ (138)
1929. 61	A	60	2. 36	8. 76	4—5	$b\ ^1G - x\ ^1H^\circ$ (139)
1880. 43	A	40e?	2. 36	8. 92	4—4	$b\ ^1G - w\ ^1G^\circ$ (140)
Air						
2971. 998	A	4	2. 37	6. 52	1—1	$b\ ^3P - z\ ^1P^\circ$
2971. 571	A	8	2. 37	6. 52	0—1	(141)
2873. 180	A	30	2. 36	6. 66	2—3	$b\ ^3P - w\ ^3D^\circ$†
2880. 802	A	15	2. 37	6. 65	1—2	(142)
2890. 144	A	7	2. 37	6. 64	0—1	
2878. 028	A	7	2. 36	6. 65	2—2	
2890. 553	A	5	2. 37	6. 64	1—1	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2809. 513	A	15	2. 36	6. 75	2—2	$b\ ^3P - x\ ^3P°$
2811. 982	A	5	2. 37	6. 75	1—1	(143)
2804. 443	A	4	2. 37	6. 77	1—0	
2812. 164	A	6	2. 37	6. 75	1—2	
2811. 597	A	7	2. 37	6. 75	0—1	
2776. 24	A	6H	2. 36	6. 81	2—3	$b\ ^3P - y\ ^1F°$ (144)
2198. 524	A	20	2. 36	7. 98	2—3	$b\ ^3P - v\ ^3D°$†
2190. 48	A	8	2. 37	8. 00	1—2	(145)
2184. 17	A	5	2. 37	8. 02	0—1	
*2049. 67	A	5h	2. 36	8. 38	2—3?	$b\ ^3P - v\ ^3F°$ (146)
2006. 88	A	80	2. 36	8. 51	2—3	$b\ ^3P - u\ ^3D°$
*2014. 18	A	90	2. 37	8. 49	1—2	(147)
2015. 56	A	20	2. 37	8. 49	0—1	
2012. 84	A	20	2. 36	8. 49	2—2	
*2015. 74	A	20	2. 37	8. 49	1—1	
2775. 770	A	70	2. 37	6. 82	6—5	$a\ ^1I - x\ ^3G°$ (148)
2760. 710	A	60	2. 37	6. 84	6—6	$a\ ^1I - z\ ^1I°$ (149)
2753. 407	A	150	2. 37	6. 85	6—5	$a\ ^1I - y\ ^1H°$ (150)
2871. 463	A	4	2. 46	6. 75	0—1	$a\ ^1S - x\ ^3P°$ (151)
2756. 38	A	4h	2. 46	6. 93	0—1	$a\ ^1S - y\ ^1P°$ (152)
2976. 72	P		2. 51	6. 66	2—3	$c\ ^3P - w\ ^3D°$
2959. 55	A	1	2. 48	6. 65	1—2	(153)
2981. 924	A	15	2. 51	6. 65	2—2	
2969. 846	A	5	2. 48	6. 64	1—1	
2992. 378	A	2	2. 51	6. 64	2—1	
2908. 44	A	20	2. 51	6. 75	2—2	$c\ ^3P - x\ ^3P°$
2886. 967	A	10	2. 48	6. 75	1—1	(154)
2879. 013	A	2	2. 48	6. 77	1—0	
2887. 158	A	8	2. 48	6. 75	1—2	
m2892. 57	P	V II	2. 49	6. 75	0—1	
2830. 402	A	40	2. 51	6. 87	2—1	$c\ ^3P - y\ ^3S°$
m2810. 24	P	V II	2. 48	6. 87	1—1	(155)
2815. 547	A	3	2. 49	6. 87	0—1	
2101. 86	A	20	2. 51	8. 38	2—3	$c\ ^3P - v\ ^3F°$
2098. 00	A	5d?	2. 48	8. 36	1—2?	(156)
2109. 27	A	8	2. 51	8. 36	2—2	
*2056. 89	A	15	2. 51	8. 51	2—3	$c\ ^3P - u\ ^3D°$†
2052. 38	A	10	2. 48	8. 49	1—2	(157)
*2056. 89	A	15	2. 49	8. 49	0—1	
2063. 12	A	20	2. 51	8. 49	2—2	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2864. 517	A	30	2. 50	6. 81	4—3	$b\ ^3H - y\ ^1F°$ (158)
2869. 131	A	150	2. 51	6. 82	6—5	$b\ ^3H - x\ ^3G°$
2854. 335	A	120	2. 50	6. 83	5—4	(159)
2847. 573	A	100	2. 50	6. 83	4—3	
2862. 310	A	20	2. 50	6. 82	5—5	
2851. 260	A	15	2. 50	6. 83	4—4	
2845. 241	A	50	2. 51	6. 85	6—5	$b\ ^3H - y\ ^1H°$
2838. 531	A	4	2. 50	6. 85	5—5	(160)
2835. 47	A	4	2. 50	6. 85	4—5	
2278. 972	A	40	2. 51	7. 93	6—5	$b\ ^3H - w\ ^3G°$†
2279. 762	A	20	2. 50	7. 92	5—4	(161)
*2281. 601	A	60	2. 50	7. 91	4—3	
2004. 77	A	90	2. 51	8. 67	6—5	$b\ ^3H - v\ ^3G°$
*2014. 18	A	90	2. 50	8. 63	5—4	(162)
2023. 56	A	50	2. 50	8. 60	4—3	
2001. 43	A	10	2. 50	8. 67	5—5	
*2012. 64	A	10	2. 50	8. 63	4—4	
Vac						
1972. 62	A	20	2. 50	8. 76	4—5	$b\ ^3H - x\ ^1H°$ (163)
1921. 24	A	15hc?	2. 50	8. 92	4—4	$b\ ^3H - w\ ^1G°$ (164)
*1780. 52	A	5h	2. 50	9. 43	4—3	$b\ ^3H - \quad 2°$ (165)
Air						
2932. 323	A	60	2. 55	6. 75	3—2	$b\ ^3D - x\ ^3P°$
2931. 624	A	20	2. 55	6. 75	2—1	(166)
2915. 330	A	30	2. 53	6. 77	1—0	
2895. 609	A	4	2. 55	6. 81	2—3	$b\ ^3D - y\ ^1F°$ (167)
2878. 299	A	3	2. 55	6. 83	2—3	$b\ ^3D - x\ ^3G°$ (168)
2852. 540	A	30	2. 55	6. 87	2—1	$b\ ^3D - y\ ^3S°$
2844. 833	A	3	2. 53	6. 87	1—1	(169)
2273. 616	A	9	2. 55	7. 97	2—2	$b\ ^3D - x\ ^1D°$ (170)
*2273. 024	A	40h	2. 55	7. 98	3—3	$b\ ^3D - v\ ^3D°$†
2262. 404	A	9h	2. 55	8. 00	2—2	(171)
2251. 114	A	6	2. 53	8. 02	1—1	
2103. 53	A	30	2. 55	8. 41	3—4	$b\ ^3D - v\ ^3F°$
2114. 03	A	30	2. 55	8. 38	2—3	(172)
2117. 293	A	25	2. 53	8. 36	1—2	
2114. 30	A	15	2. 55	8. 38	3—3	
2121. 54	A	10	2. 55	8. 36	2—2	
2068. 80	A	60	2. 55	8. 51	3—3	$b\ ^3D - u\ ^3D°$
2074. 87	A	25	2. 55	8. 49	2—2	(173)
2072. 43	A	30	2. 53	8. 49	1—1	
2075. 13	A	15	2. 55	8. 49	3—2	
2076. 52	A	0??	2. 55	8. 49	2—1	
2068. 54	A	15	2. 55	8. 51	2—3	
2070. 79	A	15	2. 53	8. 49	1—2	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1814. 93	A	5	2. 55	9. 35	2—1	$b\ ^3D - t\ ^3D°$† (174)
1785. 07	A	5	2. 55	9. 46	3—4	$b\ ^3D - u\ ^3F°$† (175)
1793. 13	A	3	2. 55	9. 43	2—3	
1792. 49	A	5	2. 55	9. 43	2—3	$b\ ^3D -$ 2° (176)
Air						
2926. 442	A	40	2. 59	6. 81	2—3	$a\ ^1D - y\ ^1F°$ (177)
2840. 825	A	3	2. 59	6. 93	2—1	$a\ ^1D - y\ ^1P°$ (178)
*2292. 588	A	30	2. 59	7. 97	2—2	$a\ ^1D - x\ ^1D°$ (179)
2130. 42	A	5	2. 59	8. 38	2—3	$a\ ^1D - v\ ^3F°$ (180)
Vac						
1862. 76	A	25	2. 59	9. 22	2—3	$a\ ^1D - w\ ^1F°$ (181)
1729. 78	A	10e	2. 59	9. 73	2—2	$a\ ^1D - w\ ^1D°$ (182)
Air						
2949. 172	A	40	2. 75	6. 93	1—1	$a\ ^1P - y\ ^1P°$ (183)
2850. 685	A	25	2. 75	7. 08	1—2	$a\ ^1P - y\ ^1D°$ (184)
2362. 632	A	20	2. 75	7. 97	1—2	$a\ ^1P - x\ ^1D°$ (185)
2539. 20	A	20Hl	2. 89	7. 75	5—4	$a\ ^1H - 1°$ (186)
2357. 810	A	60	2. 89	8. 12	5—4	$a\ ^1H - x\ ^1G°$ (187)
*2044. 28§	A	5	2. 89	8. 92	5—4	$a\ ^1H - w\ ^1G°$ (188)
2537. 619	A	20	3. 11	7. 97	2—2	$b\ ^1D - x\ ^1D°$ (189)
2431. 59	A	4	3. 11	8. 19	2—3	$b\ ^1D - x\ ^1F°$ (190)
*2782. 95	A	6H	3. 31	7. 75	3—4	$a\ ^1F - 1°$ (191)
2648. 475	A	30	3. 31	7. 97	3—2	$a\ ^1F - x\ ^1D°$ (192)

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2566. 602	A	15	3. 31	8. 12	3—4	$a\ ^1F - x\ ^1G°$ (193)
2090. 33	A	25	3. 31	9. 22	3—3	$a\ ^1F - w\ ^1F°$ (194)
Vac						
1924. 87	A	30	3. 31	9. 73	3—2	$a\ ^1F - w\ ^1D°$ (195)
Air						
2948. 076	A	60	3. 74	7. 93	4—5	$c\ ^3F - w\ ^3G°$ (196)
2955. 584	A	30	3. 74	7. 92	3—4	
2958. 61	A	20	3. 74	7. 91	2—3	
2956. 645	A	2	3. 74	7. 92	4—4	
2962. 014	A	5	3. 74	7. 91	3—3	
2915. 875	A	40	3. 74	7. 98	4—3	$c\ ^3F - v\ ^3D°$ (197)
2897. 899	A	20	3. 74	8. 00	3—2	
2884. 064	A	6	3. 74	8. 02	2—1	
*2750. 29	A	8Hl	3. 74	8. 23	4—3?	$c\ ^3F - y\ ^5G°$ (198)
*2782. 95	A	6H	3. 74	8. 18	3—2?	
2642. 72	A	6	3. 74	8. 41	4—4	$c\ ^3F - v\ ^3F°$ (199)
2668. 01	A	10H	3. 74	8. 36	2—2	
2588. 128	A	3	3. 74	8. 51	4—3	$c\ ^3F - u\ ^3D°$ (200)
*2597. 21	A	6h	3. 74	8. 49	3—2	
			3. 74	8. 49	2—1	
2195. 69	A	15	3. 74	9. 36	4—3	$c\ ^3F - t\ ^3D°$† (201)
2199. 443	A	10	3. 74	9. 35	3—2	
2199. 660	A	7	3. 74	9. 35	2—1?	
2170. 05	A	10H	3. 74	9. 43	4—3	$c\ ^3F - u\ ^3F°$ (202)
2167. 69	A	8	3. 74	9. 43	2—3	
2051. 79	A	30h	3. 74	9. 76	4—3	$c\ ^3F -$ 3° (203)
2051. 27	A	5h	3. 74	9. 76	3—3	
*2049. 67	A	5h	3. 74	9. 76	2—3	
m2941. 22	P	V II	3. 78	7. 98	4—3	$d\ ^3F - v\ ^3D°$ (204)
2926. 35	A	10h	3. 78	8. 00	3—2	
2918. 21	A	15h	3. 79	8. 02	2—1	
2943. 631	A	3	3. 78	7. 98	3—3	
2929. 017	A	4	3. 79	8. 00	2—2	
*2844. 22	A	4Hl	3. 78	8. 12	3—4	$d\ ^3F - x\ ^1G°$ (205)
*2750. 29	A	8Hl	3. 78	8. 27	4—4?	$d\ ^3F - y\ ^5G°$† (206)
2663. 526	A	4h	3. 78	8. 41	4—4	$d\ ^3F - v\ ^3F°$† (207)
m2682. 81	P	V II	3. 78	8. 38	3—3	
2697. 201	A	10	3. 79	8. 36	2—2	
2210. 029	A	10	3. 78	9. 36	4—3	$d\ ^3F - t\ ^3D°$ (208)
2215. 786	A	9h	3. 78	9. 35	3—2	
2219. 408	A	3	3. 79	9. 35	2—1?	
2211. 38	A	2h?	3. 78	9. 36	3—3	
*2217. 32	A	8	3. 79	9. 35	2—2	
2171. 840	A	25	3. 78	9. 46	4—4	$d\ ^3F - u\ ^3F°$† (209)
*2185. 39	A	50	3. 78	9. 43	3—3	
2194. 84	A	8	3. 79	9. 41	2—2	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
2185. 96	A	40	3. 79	9. 43	2—3	$d\ ^3F - 2°$ (210)
2077. 58	A	15H	3. 79	9. 73	2—2	$d\ ^3F - w\ ^1D°$ (211)
2066. 83	A	8h	3. 79	9. 76	2—3	$d\ ^3F - 3°$ (212)
2663. 25	A	250H	4. 38	9. 01	6—7	$z\ ^5G° - e\ ^5H$ (213)
2655. 68	A	200H	4. 34	8. 99	5—6	
2649. 37	A	150H	4. 31	8. 97	4—5	
2644. 363	A	100Hl	4. 29	8. 96	3—4	
2640. 86	A	80H	4. 27	8. 94	2—3	
2676. 33	A	7H	4. 38	8. 99	6—6	
2666. 79	A	10H	4. 34	8. 97	5—5	
2658. 49	A	7Hl	4. 31	8. 96	4—4	
2651. 57	A	5H	4. 29	8. 94	3—3	
2676. 05	A	9H	4. 34	8. 96	5—4	
2636. 00	A	5H	4. 27	8. 95	2—1?	$z\ ^5G° - e\ ^5P$ (214)
2616. 66	A	10H	4. 29	9. 01	3—4?	$z\ ^5G° - e\ ^5D$ (215)
2629. 72	A	60H	4. 38	9. 07	6—6	$z\ ^5G° - e\ ^5G$ (216)
2615. 40	A	40H	4. 34	9. 06	5—5	
2608. 00	A	20H	4. 31	9. 05	4—4	
2603. 40	A	15H	4. 29	9. 03	3—3	
2601. 08	A	25H	4. 27	9. 02	2—2	
2635. 43	A	7H	4. 38	9. 06	6—5	
2624. 860	A	15H	4. 34	9. 05	5—4	
2617. 10	A	9H	4. 31	9. 03	4—3	
2611. 51	A	7H	4. 29	9. 02	3—2	
*2609. 80	A	5	4. 34	9. 07	5—6	
2598. 65	A	2H	4. 31	9. 06	4—5	
2594. 43	A	3h	4. 29	9. 05	3—4	
m2593. 05	P	V III	4. 27	9. 03	2—3	

V II—Continued

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Air						
*2795. 39	A	3H	4. 56	8. 97	3—2?	$z\ ^5F° - e\ ^5D$ (217)
2792. 45	A	6Hl	4. 59	9. 01	4—4?	
*2787. 00	A	10H	4. 56	8. 99	3—3?	
*2765. 676	A	150+Hl	4. 61	9. 07	5—6	$z\ ^5F° - e\ ^5G$ (218)
2756. 58	A	20Hl	4. 59	9. 06	4—5	
2749. 48	A	8H	4. 56	9. 05	3—4	
2740. 98	A	7Hl	4. 53	9. 03	2—3	
2736. 12	A	4H	4. 50	9. 02	1—2	
2772. 01	A	60Hl	4. 61	9. 06	5—5	
2767. 10	A	30Hl	4. 59	9. 05	4—4	
2759. 60	A	15Hl	4. 56	9. 03	3—3	
2749. 97	A	7H	4. 53	9. 02	2—2	
2781. 48	A	100H	4. 61	9. 05	5—5?	$z\ ^5F° - e\ ^5F$ (219)
2771. 41	A	40Hl	4. 59	9. 04	4—4	
*2787. 00	A	10H	4. 61	9. 04	5—4	
2800. 05	A	4Hl	4. 59	9. 00	3—3	$z\ ^3D° - e\ ^5P$ (220)
2818. 52	A	5Hl	4. 59	8. 97	3—2	
2825. 86	A	50Hl	4. 63	9. 00	4—3	$z\ ^5D° - e\ ^5P$ (221)
2843. 82	A	9Hl	4. 63	8. 97	3—2	
*2844. 22	A	4Hl	4. 61	8. 95	2—1	
2825. 02	A	5Hl	4. 63	9. 00	3—3	
2831. 60	A	10H	4. 61	8. 97	2—2	
*2835. 35	A	6H	4. 60	8. 95	1—1	
2830. 70	A	3Hl	4. 59	8. 95	0—1	
2822. 44	A	80Hl	4. 63	9. 01	4—4?	$z\ ^5D° - e\ ^5D$ (222)
2834. 55	A	30Hl	4. 63	8. 99	3—3?	
2830. 97	A	3Hl	4. 61	8. 97	2—2?	
*2835. 35	A	6H	4. 63	8. 99	4—3?	
2785. 83	A	5H	4. 63	9. 06	4—5	$z\ ^5D° - e\ ^5G$ (223)
2795. 72	A	4H	4. 63	9. 05	3—4	
2794. 29	A	5H	4. 61	9. 03	2—3	
*2795. 39	A	3H	4. 63	9. 05	4—5?	$z\ ^5D° - e\ ^5F$ (224)
2800. 95	A	20Hl	4. 63	9. 04	4—4	

Strongest Unclassified Lines of V II

2912. 50	A	10Hl	2612. 26	A	15H	
2822. 15	A	20Hl	2611. 24	A	10H	
2794. 83	A	15H	2610. 61	A	30H	
2791. 63	A	10H	2602. 94	A	15H	
2787. 95	A	20h	2567. 45	A	15H	
2784. 25	A	60H	2554. 22	A	15H	
2783. 94	A	30H	2554. 06	A	10H	
2778. 60	A	80H	2542. 46	A	20Hl	
2755. 05	A	10Hl	2450. 236	A	10h	
2752. 11	A	15Hl	2438. 039	A	10h	
2751. 79	A	10Hl	2400. 892	A	40h	
2734. 27	A	15Hl	2390. 470	A	15h	
2732. 17	A	10Hl	2382. 032	A	60+Fe?	
2723. 455	A	10	2372. 168	A	15H	
2714. 42	A	10H	2330. 144	A	12	
2712. 21	A	30Hl	2283. 766	A	40	
2696. 51	A	20H	2261. 850	A	10h	
2694. 65	A	10H	2170. 38	A	15	
2684. 78	A	15H	2166. 15	A	20h	
2673. 25	A	50H	2164. 38	A	15	
2661. 47	A	30H	2163. 68	A	20h	
2652. 76	A	20H	2151. 812	A	50	
2628. 75	A	30H	2151. 032	A	50	
2622. 74	A	50H	2150. 835	A	60	
2621. 80	A	40H	2133. 04	A	60	

Strongest Unclassified Lines of V II—Continued

I A	Ref	Int	I A	Ref	Int	I A	Ref	Int	I A	Ref	Int
Air			Air			Air			Vac		
2126. 585	A	25h	2061. 56	A	15	2022. 66	A	15h	1867. 47	A	20
2119. 562	A	15	2054. 85	A	70	2021. 38	A	10h	1828. 84	A	50
2119. 15	A	40h	2048. 75	A	15	2005. 88	A	15	1823. 61	A	25
2118. 84	A	25	2037. 83	A	50	2001. 65	A	40	1816. 30	A	20h
2111. 04	A	15	2037. 50	A	25	2001. 14	A	30	1796. 80	A	20
2087. 54	A	15	2035. 78	A	15	2000. 14	A	10h	1794. 62	A	50
						Vac					
2079. 29	A	10H	2035. 06	A	60	1992. 80	A	30	1788. 30	A	25
2077. 79	A	40H	2033. 50	A	10	1984. 05	A	90	1760. 11	A	25
2076. 87	A	60h	2031. 40	A	30h	1933. 97	A	30	1757. 76	A	20
2062. 00	A	10	2028. 88	A	15	1919. 35	A	20	1661. 27	A	60

V III

I P 29.6 Anal C List C Nov. 1948

REFERENCE

A H. E. White, Phys. Rev. **33**, 672 (1929). W L, I, T

V III

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1159. 77	A	50	0. 07	10. 72	4½—5½	$a\ ^4F - z\ ^4G°$†
1163. 27	A	30	0. 04	10. 65	3½—4½	(1)
1166. 47	A	30	0. 02	10. 60	2½—3½	
1169. 28	A	20	0. 00	10. 56	1½—2½	
1166. 58	A	30	0. 07	10. 65	4½—4½	
1149. 94	A	100	0. 07	10. 81	4½—4½	$a\ ^4F - z\ ^4F°$†
1151. 04	A	90	0. 04	10. 77	3½—3½	(2)
1152. 18	A	80	0. 02	10. 73	2½—2½	
1153. 19	A	70	0. 00	10. 71	1½—1½	
1154. 24	A	70	0. 07	10. 77	4½—3½	
1125. 71	A	30	0. 07	11. 04	4½—3½	$a\ ^4F - z\ ^4D°$†
1122. 11	A	15	0. 04	11. 04	3½—2½	(3)
1123. 00	A	15	0. 02	11. 01	2½—1½	
1123. 55	A	15	0. 00	10. 99	1½— ½	
1289. 42	A	30	1. 41	10. 98	1½—2½	$a\ ^2P - z\ ^2D°$†
*1292. 77	A	20	1. 38	10. 93	½—1½	(4)
1287. 88	A	20	1. 45	11. 04	2½—3½	$a\ ^4P - z\ ^4D°$†
1284. 23	A	15	1. 43	11. 04	1½—2½	(5)
1313. 31	A	30	1. 50	10. 90	4½—3½	$a\ ^2G - z\ ^2F°$†
1317. 25	A	20	1. 48	10. 85	3½—2½	(6)
1252. 12	A	40	1. 50	11. 36	4½—4½	$a\ ^2G - z\ ^2G°$†
1253. 99	A	30	1. 48	11. 32	3½—3½	(7)
1389. 79	A	20	2. 02	10. 90	2½—3½	$a\ ^2D - z\ ^2F°$†
						(8)

V III

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
1331. 94	A	50	2. 10	11. 36	5½—4½	$a\ ^2H - z\ ^2G°$†
1335. 09	A	45	2. 08	11. 32	4½—3½	(9)
Air						
2371. 04	A	200	5. 51	10. 72	4½—5½	$b\ ^4F - z\ ^4G°$†
2382. 45	A	150	5. 47	10. 65	3½—4½	(10)
2393. 54	A	125	5. 45	10. 60	2½—3½	
2404. 16	A	100	5. 42	10. 56	1½—2½	
2399. 67	A	75	5. 51	10. 65	4½—4½	
2407. 17	A	80	5. 47	10. 60	3½—3½	
2413. 89	A	40	5. 45	10. 56	2½—2½	
2330. 37	A	100	5. 51	10. 81	4½—4½	$b\ ^4F - z\ ^4F°$
2331. 67	A	75	5. 47	10. 77	3½—3½	(11)
2334. 15	A	75	5. 45	10. 73	2½—2½	
2337. 08	A	75	5. 42	10. 71	1½—1½	
2348. 22	A	30	5. 51	10. 77	4½—3½	
2347. 06	A	30	5. 47	10. 73	3½—2½	
2346. 28	A	30	5. 45	10. 71	2½—1½	
2314. 10	A	50	5. 47	10. 81	3½—4½	
2318. 94	A	40	5. 45	10. 77	2½—3½	
2325. 07	A	40	5. 42	10. 73	1½—2½	
2232. 76	A	70	5. 51	11. 04	4½—3½	$b\ ^4F - z\ ^4D°$†
2215. 86	A	40	5. 47	11. 04	3½—2½	(12)
2217. 40	A	30	5. 45	11. 01	2½—1½	
2218. 35	A	30	5. 42	10. 99	1½— ½	
2217. 80	A	25	5. 47	11. 04	3½—3½	
2204. 31	A	20	5. 45	11. 04	2½—2½	
2595. 11	A	170	6. 15	10. 90	3½—3½	$b\ ^2F - z\ ^2F°$†
2593. 07	A	160	6. 09	10. 85	2½—2½	(13)
2554. 23	A	160	6. 15	10. 98	3½—2½	$b\ ^2F - z\ ^2D°$†
2548. 22	A	150	6. 09	10. 93	2½—1½	(14)
2366. 27	A	180	6. 15	11. 36	3½—4½	$b\ ^2F - z\ ^2G°$†
2358. 70	A	180	6. 09	11. 32	2½—3½	(15)

V IV

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V IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
*684. 38	A	80	0. 09	18. 13	4—3	$a\ ^3F - z\ ^3D°$†
684. 44	A	50	0. 04	18. 08	3—2	(1)
*684. 38	A	80	0. 00	18. 04	2—1	
677. 35	A	50	0. 09	18. 32	4—4	$a\ ^3F - z\ ^3F°$†
678. 72	A	35	0. 04	18. 23	3—3	(2)
679. 65	A	25	0. 00	18. 16	2—2	
750. 10	A	30	1. 44	17. 90	2—2	$a\ ^1D - z\ ^1D°$ (3)
737. 84	A	100	2. 36	19. 09	4—3	$a\ ^1G - z\ ^1F°$ (4)
1997. 74	A	80	11. 95	18. 13	3—3	$a\ ^3D - z\ ^3D°$
1999. 32	A	60	11. 90	18. 08	2—2	(5)
Air						
2002. 47	A	50	11. 88	18. 04	1—1	
2014. 18	A	50	11. 95	18. 08	3—2	
2011. 15	A	25	11. 90	18. 04	2—1	
Vac						
1982. 49	A	30	11. 90	18. 13	2—3	
1990. 75	A	30	11. 88	18. 08	1—2	

V IV

I A	Ref	Int	E P Low	E P High	J	Multiplet (No)
Vac						
1939. 07	A	100	11. 95	18. 32	3—4	$a\ ^3D - z\ ^3F°$†
1951. 48	A	80	11. 90	18. 23	2—3	(6)
1963. 13	A	70	11. 88	18. 16	1—2	
1825. 85	A	50	11. 95	18. 71	3—2	$a\ ^3D - z\ ^3P°$†
1817. 72	A	30	11. 90	18. 69	2—1	(7)
1809. 88	A	15	11. 88	18. 70	1—0	
Air						
2268. 30	A	100	12. 46	17. 90	2—2	$b\ ^1D - z\ ^1D°$ (8)
Vac						
1861. 56	A	60	12. 46	19. 09	2—3	$b\ ^1D - z\ ^1F°$ (9)
1806. 22	A	40	12. 46	19. 29	2—1	$b\ ^1D - z\ ^1P°$ (10)