Physics. — *On the structure of the spectrum of ionized Argon (Ar. II).* By T. L. DE BRUIN. (Communicated by Prof. P. ZEEMAN.)

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1. *Introduction.*

In former papers in these Proceedings [1]) I have communicated a partial analysis of the spectrum of ionized Argon (Ar. II), dealing with the main spectral terms which are in excellent accord with the theoretical expectations. It was possible to account for 180 lines of the spectrum.

The present paper deals with a further analysis, which was greatly facilitated by the investigations on the ZEEMAN-effect in this laboratory [2]). The published data of a list of unclassified lines and some unpublished data give the starting point for the detection of the other termsystems which may be expected according to the theory of the complex spectra.

2. *Wavelength measurements.*

Our spectrograms had already shown that many more Ar. II lines can be obtained than are reported by former observers. We undertook therefore a new measurement of the whole spectrum. This work was already finished for a large part. More recently ROSENTHAL [3]) has published an extensive list of lines of the "blue" Argonspectrum. Our spectrograms show the higher stages of ionisation (Ar III, IV) much more developed. Our measurements are in very good agreement with the determinations reported by ROSENTHAL. Because his dispersion is somewhat larger (we had a dispersion 8,8 Å/m.m.) we prefer his data and we have used it in the further analysis.

For the interpretation of the extreme ultra violet spectrum the measurements of COMPTON, BOYCE and RUSSELL [4]) have been used.

3. *Structure of the spectrum.*

The energy levels of the single ionized Argonatom (Ar. II) are built upon the ground levels of the double ionized atom (Ar. III). These ground levels are: ^3P, ^1D and ^1S. According to the theory of the complex

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[1]) T. L. DE BRUIN: Proceedings Amsterdam **31**, 593, 1928, **31**, 771, 1928.

[2]) C. J. BAKKER, T. L. DE BRUIN and P. ZEEMAN: Proceedings Amsterdam **31**, 780, 1928.

[3]) A. H. ROSENTHAL: Annalen der Physik. (5) 4, S. 49, 1930.

[4]) K. T. COMPTON, J. C. BOYCE and H. N. RUSSELL: Phys. Rev. **32**, 179, 1928.

spectra the following energy levels in the Ar. II atom can be expected. (Table 1).

TABLE I. Energy levels Ar II.

Electronic configuration									Symbol	Basic term: ^3P		Basic term: ^1D	Basic term: ^1S
										Terms		Terms	Terms
1s	2s	2p	3s	3p	3d	4s	4p	4d	5s	Quartet	Doublet	Doublet	Doublet
2	2	6	2	5						s^2p^5		P		
2	2	6	2	4	1					$s^2p^4.3d$	F D P	F D P	G F D P S	D
2	2	6	2	4		1				$s^2p^4.4s$	P	P	D	S
2	2	6	2	4			1			$s^2p^4.4p$	D P S	D P S	F D P	P
2	2	6	2	4				1		$s^2p^4.4d$	F D P	F D P	G F D P S	D
2	2	6	2	4					1	$s^2p^4.5s$	P	P	D	S

One expects thus three term systems:

a. (^3P) $3p$, $4p$, $5p$, $3d$, $4d$, $4s$, $5s$ ... 72 levels.

b. (^1D) $4p$, $5p$, $3d$, $4d$, $4s$, $5s$ ... 34 levels.

c. (^1S) $4p$, $5p$, $3d$, $4d$, $4s$, $5s$ ... 10 levels.

In the former paper we have reported of the first group 46 levels. This term system with limit ^3P is now extended. The 3 *d*- and 5 *p*-levels have been added in the present paper and further higher levels originating in a 6 *s*- and 5 *d*-coupling have been detected.

Table 2 (see p. 200) presents all the levels with limit ^3P.

The detection of the term group ^2F, ^2D, ^2P with limit ^1D made it possible to extend the analysis. As an example several combinations with these levels are presented in table 3. (See p. 202).

Table 4 (see p. 204) contains the term levels belonging to the second term system with limit ^1D.

Table 5 (see p. 204 presents the terms which belong to the third system with limit ^1S.

Some other terms have been detected but it was not yet possible to determ the nature of these levels f.i.

$$a\,^2P_2 = 45162{,}50$$

$$339{,}80$$

$$a\,^2P_1 = 44822{,}70$$

The interpretation of these levels should be reserved. It is quite possible that still other atom configurations play a role.

The Ar. II spectrum gives interesting data for the theory of series limits, inverted and not inverted terms, anormal coupling, etc. We will report over this subject in a later paper.

TABLE 2. Termtable Ar II (Limit ^3P).

N⁰.	Term	Termvalue	Term difference	Theory	N⁰.	Term	Termvalue	Term difference	Theory
1	$^2P_2$	224721	1431	3p	36	$^2P_2$	64515.02	−532.96	4p
2	$^2P_1$	223290			37	$^2P_1$	65047.98		
3	$^4D_4$	92427.28	153.98		38	$^4D_4$	41079.08	121.80	
4	$^4D_3$	92273.30	149.62		39	$^4D_3$	40957.28	188.61	
5	$^4D_2$	92123.68	107.03		40	$^4D_2$	40768.67	206.29	
6	$^4D_1$	92016.65			41	$^4D_1$	40562.38		
7	$^2D_3$	73667.15	−612.43		42	$^2D_3$	32197.69	155.12	
8	$^2D_2$	74279.58			43	$^2D_2$	32042.57		
9	$^4F_5$[1]	82568.08	530.59		44	$^4F_5$	39661.58	531.55	
10	$^4F_4$	82037.49	390.62		45	$^4F_4$	39130.03	449.59	
11	$^4F_3$	81646.87	263.85	3d	46	$^4F_3$	38680.44	266.33	4d
12	$^4F_2$	81383.02			47	$^4F_2$	38414.11		
13	$^4P_1$	79543.06	225.65		48	$^4P_1$	38583.18	−299.00	
14	$^4P_2$	79768.71	491.55		49	$^4P_2$	38284.18	−420.60	
15	$^4P_3$	80260.26			50	$^4P_3$	37863.58		
16	$^2F_4$	75260.70?	653.89		51	$^2F_4$	37938.38	772.50	
17	$^2F_3$	74606.87			52	$^2F_3$	37165.18		
18	$^2P_1$	80044.50	−958.91		53	$^2P_1$	34819.88	-658.00	
19	$^2P_2$	79085.59			54	$^2P_2$	34161.88		
20	$^4P_3$	90512.88	844.40		55	$^4P_3$	43160.38	627.76	
21	$^4P_2$	89668.48	515.70		56	$^4P_2$	42532.62	729.14	
22	$^4P_1$	89152.78		4s	57	$^4P_1$	41803.48		5s
23	$^2P_2$	86510.88	1014.74		58	$^2P_2$	41664.18	824.00	
24	$^2P_1$	85496.14			59	$^2P_1$	40840.18		

[1]) This term 3d ^4F is also found by ROSENTHAL.

TABLE 2 (*Continued*).

N⁰.	Term	Termvalue	Term difference	Theory	N⁰.	Term	Termvalue	Term difference	Theory
25	$^4P_3$	69711.13			60	$^4P_3$[1]	35595.29		
			307.75					251.19	
26	$^4P_2$	69403.38			61	$^4P_2$	35344.10		
			357.30					288.90	
27	$^4P_1$	69046.08			62	$^4P_1$	35055.20		
28	$^4D_4$	67520.58			63	$^4D_4$[1]	34769.50		
			439.36					383.07	
29	$^4D_3$	67081.22			64	$^4D_3$	34386.43		
			494.57					405.01	
30	$^4D_2$	66586.65			65	$^4D_2$	33981.42		
			260.32	4p				489.98	5p
31	$^4D_1$	66326.33			66	$^4D_1$	33491.44		
32	$^2D_3$	66024.28			67	$^2D_3$			
			663.09						
33	$^2D_2$	65361.19			68	$^2D_2$	34247.42		
34	$^4S_2$	63705.60			69	$^4S_2$			
35	$^2S_1$	63665.08			70	$^2S_1$	33047.50		
	$^4P_3$	25942.33			71	$^2P_2$	34648.66		
			325.75					89.96	5p
	$^4P_2$	25616.58			72	$^2P_1$	34558.70		
			972.24						
	$^4P_1$	24644.34		6s		$^2P_2$	20337.50		
								97.90	5d
	$^2P_2$	24722.85				$^2P_1$	20239.60		
			591.35						
	$^2P_1$	24131.50				$^2D_3$	20169.10		5d

Table 6 (see p. 205) contains a list of new classified lines.

From the termtables and the resonance lines it is now possible to calculate and to interprete the spectrum in the extreme ultra violet. COMPTON, BOYCE and RUSSELL have already given an interpretation of several of these lines. The present classification deviates in several points from that given by those authors.

Table 7 (see p. 210) presents the classification of the extreme ultra violet spectrum.

The following figure gives a survey of the three term systems. For

[1]) These terms 3d ^4P, 5p ^4P and 5p ^4D are given by ROSENTHAL. It seems however that a farther verification of these terms is necessary.

TABLE 3.

4p ^{1}D	$^2F_4$ 54224.21	$^2F_3$ 54353.62	$^2P_2$ 52540.70	$^2P_1$ 51938.20	$^2D_3$ 51361.07	$^2D_2$ 51406.72
		000.u	8.	5.	2.	2.
4s $^2P_2$ (^{3}P)		3108.82	2942.90	2891.61	2844.12	2847.81
86510.88	—	32157.25	33970.18	34572.70	35149.95	35104.41
			6.	6.		4.
4s $^2P_1$ (^{3}P)			3033.52	2979.05		2932.60
85496.14	—	—	32955.44	33557.99	—	34089.49
		9.	7.	8.	6.	8.
4s $^2D_2$ (^{1}D)		4589.93	4237.23	4131.73	4035.47	4042.91
76134.36	—	21780.74	23593.70	24196.13	24773.29	24727.70
	15.	6.	8.		9.	4.
4s $^2D_3$ (^{1}D)	4609.60	4637.25	4277.55		4072.01	4079.60
75912.01	21687.80	21558.49	23371.31	—	24550.99	24505.31
			4.	5.		4.
3d $^2P_1$ (^{3}P)			3634.83	3556.91		3490.89
80044.50	—	—	27503.79	28106.29	—	28637.82
		1.	5.	4.	6.	4.
3d $^2P_2$ (^{3}P)		4042.20	3766.13	3682.55	3605.89	3611.84
79085.59	—	24732.04	26544.94	27147.32	27724.53	27678.85
3d $^2F_4$ (^{3}P)			—	—		—
	6.	00.u	4.		6.	2.
3d $^2F_3$ (^{3}P)	4904.75	4936.13	4530.57		4300.66	4309.11
74606.87	20382.72	20253.15	22066.11	—	23245.73	23200.15
		6.	5.	6.	5	6.
3d $^2D_2$ (^{3}P)		5017.16	4598.77	4474.77	4362.07	4370.76
74279.58	—	19926.05	21738.88	22341.27	22918.47	22872.91
	6.	3.	5.		8.	5.
3d $^2D_3$ (^{3}P)	5141.83	5176.28	4732.08		4481.83	4490.99
73667.15	19442.89	19313.53	21126.46	—	22306.08	22260.58

TABLE 3 (*Continued*).

	7.		4.		6.	3.
3d $^2D_3$ (^1S)	3946.10		4227.02		4448.88	4448.10
28889.89	25334.33	25463.73	23650.69	—	22471.28	22515.71
		3.	2.	6.	1.	3.
3d $^2D_2$ (^1S)		3925.71	4226.65	4337.10	4448.47	4439.50
28887.82	—	25465.91	23652.76	23050.42	22473.35	22518.70
	6.					
4d $^2G_5$ (^1D)	3561.04					
26150.72	28073.69	—	—	—	—	—
	4.	9.				
4d $^2G_4$ (^1D)	3562.19	3545.84				
26159.59	28064.63	28194.03	—	—	25201.48	—
	7.	3.			6.	
4d $^2F_4$ (^1D)	3376.46	3361.73			3737.89	
24615.66	29608.34	29738.08	—	—	26745.49	—
	4.	6.	1.		4.	6.
4d $^2F_3$ (^1D)	3365.54	3350.94	3567.78		3724.51	3718.21
24519.80	29704.41	29833.83	28020.66	—	26841.56	26887.04
	3.	3.	6.		6.	4.
4d $^2D_3$ (^1D)	3429.64	3414.46	3639.85		3803.19	3796.60
25074.92	29149.25	29278.84	27465.86	—	26286.28	26331.91
		2.	6.		5.	4.
4d $^2D_2$ (^1D)		3432.64	3660.44		3825.70	3819.04
25229.54	—	29123.78	27311.37	26708.66	26131.62	26177.19
			3.	3.		5.
4d $^2P_1$ (^1D)			3671.01	3754.06		3830.43
25307.94	—	—	27232.73	26630.29	—	26099.35
		5.	2.	5.		4.
4d $^2P_2$ (^1D)		3379.48	3600.22	3680.06		3753.53
24772.54	—	29581.88	27768.19	27165.76	26588.53	26634.05
			4.	4.		
4d $^2S_1$ (^1D)			3026.75	3082.99		
19511.54	—	—	33029.15	32426.66	—	31895.18

TABLE 4. Termtable Ar II (Limit ^1D).

N⁰.	Term	Termvalue	Term difference	Theory	N⁰.	Term	Termvalue	Term difference	Theory
73	$^2G_5$				90	$^2G_5$	26150.72		
								−8.87	
74	$^2G_4$				91	$^2G_4$	26159.59		
75	$^2F_4$				92	$^2F_4$	24615.66		
								95.86	
76	$^2F_3$	53644.71			93	$^2F_3$	24519.80		
77	$^2D_3$	52419.08		3d	94	$^2D_3$	25074.92		4d
			494.55					−154.62	
78	$^2D_2$	51924.53			95	$^2D_2$	25229.54		
79	$^2P_2$	50344.60			96	$^2P_2$	24772.54		
			424.67					−535.40	
80	$^2P_1$	49919.93			97	$^2P_1$	25307.94		
81	$^2S_1$	40661.40			98	$^2S_1$	19511.54		
82	$^2D_3$	75912.01			99	$^2D_3$	38027.00		
			−222.35	4s				22.64	5s
83	$^2D_2$	76134.36			100	$^2D_2$	38004.36		
84	$^2F_4$	54224.21			101	$^2F_4$	29871.52		
			−129.41					−21.61	
85	$^2F_3$	54353.62			102	$^2F_3$	29893.13		
86	$^2P_2$	52540.70			103	$^2P_2$	28993.46		
			602.50	4p				329.00	5p
87	$^2P_1$	51938.20			104	$^2P_1$	28664.46		
88	$^2D_3$	51361.07			105	$^2D_3$	28121.46		
			−45.65					−11.32	
89	$^2D_2$	51406.72			106	$^2D_2$	28132.78		

TABLE 5. Termtable Ar II (Limit ^1S).

4s $^2S_1$ (^1S)	57446.84	
4p $^2P_1$ (^1S)	32421.41	358.93
4p $^2P_2$ (^1S)	32780.34	
3d $^2D_3$ (^1S)	28889.89	2.07
3d ^2D (^1S)	28887.82	

TABLE 6.

Classification of Ar II lines.

Int	λ I.Å	$\nu_{vac.}$	Termcombination	Int	λ I.Å	$\nu_{vac.}$	Termcombination
1	7617.86	13123.43	$4p\ ^2P_1\ (^3P) - 3d\ ^2D_2\ (^1D)$	3	6123,38	16326.34	$4p\ ^2F_3\ (^1D) - 5s\ ^2D_3\ (^1D)$
0	7440.54	13436.19	$4p\ ^2D_2\ (^3P) - 3d\ ^2D_2\ (^1D)$	00	6120.12	16335.04	$3d\ ^4F_2\ (^3P) - 4p\ ^2P_1\ (^3P)$
2	7348.11	13605.20	$4p\ ^2D_3\ (^3P) - 3d\ ^2D_3\ (^1D)$	10	6114.92	16348.93	$4p\ ^2F_3\ (^1D) - 5s\ ^2D_2\ (^1D)$
0	7284.27	13724.44	$3d\ ^2P_2\ (^3P) - 4p\ ^2D_2\ (^3P)$	4	6103.56	16379.36	$3d\ ^2P_1\ (^3P) - 4p\ ^2S_1\ (^3P)$
000	7090.55	14099.40	$4p\ ^2D_3\ (^3P) - 3d\ ^2D_2\ (^1D)$	00	6077.43	16449.78	$4s\ ^2P_1\ (^3P) - 4p\ ^4P_1\ (^3P)$
1	7077.03	14126.33	$3d\ ^4F_3\ (^3P) - 4p\ ^4D_4\ (^3P)$	00. u	6044.43	16529.58	$4p\ ^2D_2\ (^3P) - a\ ^2P_1$
2	7055.01	14170.42	$4p\ ^2P_2\ (^3P) - 3d\ ^2P_2\ (^1D)$	0	5950.91	16799.51	$4s\ ^2P_2\ (^3P) - 4p\ ^4P_3\ (^3P)$
2	6990.16	14301.89	$3d\ ^4F_2\ (^3P) - 4p\ ^4D_3\ (^3P)$	00. u	5843.80	17107.42	$4s\ ^2P_2\ (^3P) - 4p\ ^4P_2\ (^3P)$
6	6886.57	14517.02	$3d\ ^4F_4\ (^3P) - 4p\ ^4D_4\ (^3P)$	0	5812.81	17198.63	$4p\ ^2D_3\ (^1D) - 4d\ ^2P_2\ (^3P)$
6	6863.52	14565.77	$3d\ ^4F_3\ (^3P) - 4p\ ^4D_3\ (^3P)$	0. u	5724.37	17464.34	$4s\ ^2P_2\ (^3P) - 4p\ ^4D_2\ (^3P)$
4	6861.30	14570.48	$3d\ ^2P_2\ (^3P) - 4p\ ^2P_2\ (^3P)$	2	5577.76	17923.57	$3d\ ^2P_2\ (^1D) - 4p\ ^2P_2\ (^1S)$
4	6818.39	14662.18	$4p\ ^4D_2\ (^3P) - 3d\ ^2D_2\ (^1D)$	0. u	5625.74	17770.52	$3d\ ^2D_3\ (^1D) - 5p\ ^2P_2\ (^3P)$
3	6808.55	14683.37	$3d\ ^2P_1\ (^3P) - 4p\ ^2D_2\ (^3P)$	1	5691.71	17564.55	$3d\ ^2P_2\ (^1D) - 4p\ ^2P_2\ (^1S)$
2	6799.32	14703.30	$4p\ ^2P_1\ (^3P) - 3d\ ^2P_2\ (^1D)$	3	5305.77	18842.17	$4p\ ^2S_1\ (^3P) - a\ ^2P_1$
5	6756.61	14796.24	$3d\ ^4F_2\ (^3P) - 4p\ ^4D_2\ (^3P)$	3	5216.84	19163.37	$4p\ ^2D_3\ (^1D) - 4d\ ^2D_3\ (^3P)$
8	6684.36	14956.17	$3d\ ^4F_4\ (^3P) - 4p\ ^4D_3\ (^3P)$	0	5204.46	19208.96	$4p\ ^2D_2\ (^1D) - 4d\ ^2D_3\ (^3P)$
5	6666.36	14996.55	$3d\ ^2P_1\ (^3P) - 4p\ ^2P_1\ (^3P)$	3	5176.28	19313.53	$3d\ ^2D_3\ (^3P) - 4p\ ^2F_3\ (^1D)$
10	6643.79	15047.50	$3d\ ^4F_5\ (^3P) - 4p\ ^4D_4\ (^3P)$	5	5165.82	19352.64	$4p\ ^2P_2\ (^3P) - a\ ^2P_2$
7	6639.72	15056.73	$3d\ ^4F_2\ (^3P) - 4p\ ^4D_1\ (^3P)$	1	5162.80	19363.96	$4p\ ^2D_2\ (^1D) - 4d\ ^2D_2\ (^3P)$
8	6638.24	15060.08	$3d\ ^4F_3\ (^3P) - 4p\ ^4D_2\ (^3P)$	6	5141.84	19442.89	$3d\ ^2D_3\ (^3P) - 4p\ ^2F_4\ (^1D)$
00	6509.16	15358.73	$3d\ ^4F_2\ (^3P) - 4p\ ^2D_3\ (^3P)$	0	5125.84	19503.58	$3d\ ^2D_2\ (^1D) - 4p\ ^2P_1\ (^1S)$
3	6500.25	15379.79	$3d\ ^2P_2\ (^3P) - 4p\ ^4S_2\ (^3P)$	2	5017.63	19924.19	$4s\ ^2P_2\ (^3P) - 4p\ ^4D_2\ (^3P)$
6	6483.10	15420.47	$3d\ ^2P_2\ (^3P) - 4p\ ^2S_1\ (^3P)$	6	5017.16	19926.05	$3d\ ^2D_2\ (^3P) - 4p\ ^2F_3\ (^1D)$
2	6437.63	15529.38	$3d\ ^2P_1\ (^3P) - 4p\ ^2P_2\ (^3P)$	2	4949.45	20198.64	$4p\ ^2D_2\ (^3P) - a\ ^2P_2$
4	6399.23	15622.57	$3d\ ^4F_3\ (^3P) - 4p\ ^2D_3\ (^3P)$	4	4942.96	20225.16	$4p\ ^2P_1\ (^3P) - a\ ^2P_1$
0	6376.00	15679.49	$4p\ ^2D_3\ (^3P) - 3d\ ^2P_2\ (^1D)$	00. u	4936.13	20253.15	$3d\ ^2F_3\ (^3P) - 4p\ ^2F_3\ (^1D)$
6	6243.13	16013.19	$3d\ ^4F_4\ (^3P) - 4p\ ^2D_3\ (^3P)$	2	4914.32	20343.03	$4p\ ^2P_2\ (^1D) - 4d\ ^2D_3\ (^3P)$
2	6239.73	16021.19	$3d\ ^4F_2\ (^3P) - 4p\ ^2D_2\ (^3P)$	6	4904.75	20382.72	$3d\ ^2F_3\ (^3P) - 4p\ ^2F_4\ (^1D)$
7	6172.28	16197.00	$4p\ ^2F_4\ (^1D) - 5s\ ^2D_3\ (^1D)$	0	4888.29	20451.47	$3d\ ^2P_2\ (^1D) - 5p\ ^2F_3\ (^1D)$
3	6138.68	16285.68	$3d\ ^4F_3\ (^3P) - 4p\ ^2D_2\ (^3P)$ / $4p\ ^2F_4\ (^1D) - 4d\ ^2F_4\ (^3P)$	0. u	4877.08	20498.37	$4p\ ^2P_2\ (^1D) - 4d\ ^2D_2\ (^3P)$

TABLE 6 *(Continued).*

Int	λ I.Å	$\nu_{vac.}$	Termcombination	Int	λ I.Å	$\nu_{vac.}$	Termcombination
3	4867.59	20538.33	4p $^1D_2$ (^3P) — a $^2P_1$	5	4433.83	22547.56	3d $^2D_3$ (^1D) — 5p $^2F_4$ (^1D)
5	4792.12	20861.78	4p $^2D_3$ (^3P) — a $^2P_2$	1. u	4401.74	22711.93	4p $^2P_2$ (^3P) — 5s $^4P_1$ (^3P)
5	4732.08	21126.46	3d $^2D_3$ (^3P) — 4p $^2P_2$ (^1D)	2. u	4394.65	22748.57	4p $^4S_2$ (^3P) — 4d $^4D_3$ (^3P)
2	4730·69	21132.67	4p $^2S_1$ (^3P) — 5s $^4P_2$ (^3P)	4	4385.08	22798.22	4s $^2S_1$ (^1S) — 5p $^2P_2$ (^3P)
4	4703.36	21255.47	3d $^2P_1$ (^1D) — 5p $^2P_2$ (^1D)	1	4379.25	22828.56	4p $^2D_2$ (^3P) — 5s $^4P_2$ (^3P)
4	4682.29	21351.11	3d $^2P_2$ (^1D) — 5p $^2P_2$ (^1D)	0	4372.50	22863.81	4p $^2D_3$ (^3P) — 5s $^4P_3$ (^3P)
1	4681·52	21344.63	4p $^2P_2$ (^3P) — 5s $^4P_3$ (^3P)	0. u	4372·09	22865.95	4p $^4S_2$ (^3P) — 5s $^2P_1$ (^3P)
2. u	4666.28	21424.37	4p $^4D_2$ (^3P) — a $^2P_2$	6	4370.76	22872.91	3d $^2D_2$ (^3P) — 4p $^2D_2$ (^1D)
0. u	4649.06	21503.72	4p $^4D_1$ (^3P) — a $^2P_1$	5	4367.87	22888.05	4s $^2S_1$ (^1S) — 5p $^2P_1$ (^3P)
6	4637.25	21558.49	4s $^2D_3$ (^1D) — 4p $^2F_3$ (^1D)	5	4362.07	22918.47	3d $^2D_2$ (^3P) — 4p $^2D_3$ (^1D)
3	4611.25	21680.04	3d $^2P_1$ (^1D) — 5p $^2P_1$ (^1D)	2	4359.67	22931.09	3d $^2D_2$ (^1D) — 5p $^2P_2$ (^1D)
15	4609.60	21687.80	4s $^2D_3$ (^1D) — 4p $^2F_4$ (^1D)	1	4338.24	23044.37	4p $^4S_2$ (^3P) — 3d $^2S_1$ (^1D)
5	4598.77	21738.88	3d $^2D_2$ (^3P) — 4p $^2P_2$ (^1D)	6	4337.10	23050.42	4p $^2P_1$ (^1D) — 3d $^2D_2$ (^1S)
2	4593.44	21764.10	4p $^4D_2$ (^3P) — a $^2P_1$	3	4309,25	23199.39	4s $^2S_1$ (^1S) — 5p $^2D_2$ (^3P)
9	4589.93	21780.74	4s $^2D_2$ (^1D) — 4p $^2F_3$ (^1D)	2	4309.11	23200.15	3d $^2F_3$ (^3P) — 4p $^2D_2$ (^1D)
0	4588.42	21787.91	3d $^2P_1$ (^1D) — 5p $^2D_2$ (^1D)	6	4300.66	23245.73	3d $^2F_3$ (^3P) — 4p $^2D_3$ (^1D)
1	4572.92	21861.76	4p $^2S_1$ (^3P) — 5s $^4P_1$ (^3P)	5	4297.99	23260.17	3d $^2D_2$ (^1D) — 5p $^2P_1$ (^1D)
4	4561.03	21918.75	4p $^4D_3$ (^3P) — a $^2P_2$	8	4277.55	23371.31	4s $^2D_3$ (^1D) — 4p $^2P_2$ (^1D)
1. u	4538.73	22026.44	4p $^2F_4$ (^1D) — 4d $^2D_3$ (^3P)	0	4267.73	23425.09	3d $^2D_3$ (^1D) — 5p $^2P_2$ (^1D)
4	4537.67	22031.58	3d $^2D_2$ (^1D) — 5p $^2F_3$ (^1D)	2. u	4243.71	23557.68	4p $^2D_2$ (^3P) — 5s $^4P_1$ (^3P)
4	4530,57	22066.11	3d $^2F_3$ (^3P) — 4p $^2P_2$ (^1D)	7	4237.23	23593.70	4s $^2D_2$ (^1D) — 4p $^2P_2$ (^1D)
5	4498.55	22223.17	3d $^2P_2$ (^1D) — 5p $^2D_3$ (^1D)	4	4227.02	23650.69	4p $^2P_2$ (^1D) — 3d $^2D_3$ (^1S)
5	4490.99	22260.58	3d $^2D_3$ (^3P) — 4p $^2D_2$ (^1D)	2	4226.65	23652.76	4p $^2P_2$ (^1D) — 3d $^2D_2$ (^1S)
8	4481.83	22306.08	3d $^2D_3$ (^3P) — 4p $^2D_3$ (^1D)	2	4201.58	23793.88	4p $^4D_1$ (^3P) — 5s $^4P_2$ (^3P)
0. u	4480.85	22310.95	4p $^2F_3$ (^1D) — 4d $^2D_2$ (^3P)	3	4199.93	23803.24	3d $^2D_2$ (^1D) — 5p $^2D_3$ (^1D)
6	4474.77	22341.27	3d $^2D_2$ (^3P) — 4p $^2P_1$ (^1D)	1. u	4147,43	24104.54	4s $^4P_1$ (^3P) — 4p $^2P_1$ (^3P)
6	4448.88	22471.28	4p $^2D_3$ (^1D) — 3d $^2D_3$ (^1S)	8	4131.73	24196.13	4s $^2D_2$ (^1D) — 4p $^2P_1$ (^1D)
1	4448.47	22473.35	4p $^2D_3$ (^1D) — 3d $^2D_2$ (^1S)	00. u	4127.09	24223.34	4p $^4P_1$ (^3P) — a $^2P_1$
3	4440.09	22515.77	4p $^2D_2$ (^1D) — 3d $^2D_3$ (^1S)	0	4124.09	24009.64	4p $^4P_2$ (^3P) — a $^2P_2$
1	4438.12	22525.76	3d $^2D_3$ (^1D) — 5p $^2F_3$ (^1D)	4	4116.39	24286.30	3d $^2D_3$ (^1D) — 5p $^2D_2$ (^1D)
3	4439.45	22519.01	4p $^2D_2$ (^1D) — 3d $^2D_2$ (^1S)	2	4114.52	24297.34	3d $^2D_3$ (^1D) — 5p $^2D_3$ (^1D)

TABLE 6 (*Continued*)

Int	λ I.Å	$\nu_{vac.}$	Termcombination	Int	λ I.Å	$\nu_{vac.}$	Termcombination
3	4099.47	24386.54	$4p\ ^2P_1\ (^3P) - 3d\ ^2S_1\ (^1D)$	4	3753.53	26634.05	$4p\ ^2D_2\ (^1D) - 4d\ ^2P_2\ (^1D)$
3	4097.15	24400.35	$4s\ ^2S_1\ (^1S) - 5p\ ^2S_1\ (^3P)$	0	3751.06	26651.58	$4p\ ^2P_2\ (^3P) - 4d\ ^4P_3\ (^3P)$
000	4096.47	24404.40	$4p\ ^2D_2\ (^3P) - 4d\ ^4D_3\ (^3P)$	4	3746.46	26684.31	$4p\ ^2D_2\ (^1D) - 6s\ ^2P_2\ (^3P)$?
5	4079.60	24505.31	$4s\ ^2D_3\ (^1D) - 4p\ ^2D_2\ (^1D)$	0	3741.21	26721.75	$4p\ ^2D_3\ (^3P) - 4d\ ^4P_3\ (^3P)$
9	4072.01	24550.99	$4s\ ^2D_3\ (^1D) - 4p\ ^2D_3\ (^1D)$	6	3737.89	26745.49	$4p\ ^2D_3\ (^1D) - 4d\ ^2F_4\ (^1D)$
0. u	4057.72	24637.45	$4s\ ^4P_1\ (^3P) - 4p\ ^2P_2\ (^3P)$	0. u	3733.36	26777.94	$4p\ ^2D_2\ (^3P) - 4d\ ^4P_1\ (^3P)$
0	4053.56	24662.73	$4p\ ^4D_1\ (^3P) - 5s\ ^2P_2\ (^3P)$	4	3724.51	26841.56	$4p\ ^2D_3\ (^1D) - 4d\ ^2F_3\ (^1D)$
5	4052.94	24666.50	$4s\ ^2S_1\ (^1S) - 4p\ ^2P_2\ (^1S)$	6	3718.21	26887.04	$4p\ ^2D_2\ (^1D) - 4d\ ^2F_3\ (^1D)$
3	4047.51	24699.60	$4p\ ^2D_2\ (^3P) - 3d\ ^2S_1\ (^1D)$	2	3713.03	26924.55	$4p\ ^2P_2\ (^1D) - 6s\ ^4P_2\ (^3P)$?
8	4042.91	24727.70	$4s\ ^2D_2\ (^1D) - 4p\ ^2D_2\ (^1D)$	4	3706.94	26968.78	$3d\ ^4D_1\ (^3P) - 4p\ ^2P_1\ (^3P)$
1	4042.20	24732.04	$3d\ ^2P_2\ (^3P) - 4p\ ^2F_3\ (^1D)$	0. u	3692.33	27075.49	$3d\ ^4D_2\ (^3P) - 4p\ ^2P_1\ (^3P)$
6	4035.47	24773.29	$4s\ ^2D_2\ (^1D) - 4p\ ^2D_3\ (^1D)$	4	3682,56	27147.32	$3d\ ^2P_2\ (^3P) - 4p\ ^2P_1\ (^1D)$
1	4007.66	24945.19	$4p\ ^2D_3\ (^3P) - 4d\ ^4D_4\ (^3P)$	5	3680.06	27165.76	$4p\ ^2P_1\ (^1D) - 4d\ ^2P_2\ (^1D)$
5	3994.81	25025.43	$4s\ ^2S_1\ (^1S) - 4p\ ^2P_1\ (^1S)$	4	3673.26	27216.05	$4p\ ^2P_1\ (^1D) - 6s\ ^2P_2\ (^3P)$?
7	3946.10	25334.33	$4p\ ^2F_4\ (^1D) - 3d\ ^2D_3\ (^1S)$	3	3671.01	27232.73	$4p\ ^2P_2\ (^1D) - 4d\ ^2P_1\ (^1D)$
0	3933.19	25417.49	$4p\ ^4D_3\ (^3P) - 5s\ ^2P_2\ (^3P)$	6	3660.44	27311.37	$4p\ ^2P_2\ (^1D) - 4d\ ^2D_2\ (^1D)$
3	3925.71	25465.91	$4p\ ^2F_3\ (^1D) - 3d\ ^2D_2\ (^1S)$	6	3655.29	27349.85	$4p\ ^2P_2\ (^3P) - 4d\ ^2F_3\ (^3P)$
1. u	3922.54	25486.49	$4s\ ^4P_1\ (^3P) - 4p\ ^2S_1\ (^3P)$ / $4p\ ^4D_1\ (^3P) - 5s\ ^2P_1\ (^3P)$	7	3639.85	27465.86	$4p\ ^2P_2\ (^1D) - 4d\ ^2D_3\ (^1D)$
2	3895.26	25664.98	$4p\ ^4D_1\ (^3P) - 3d\ ^2S_1\ (^1D)$	00. u	3635.13	27501.52	$3d\ ^4D_1\ (^3P) - 4p\ ^2P_2\ (^3P)$
00. u	3893.14	25678.96	$4p\ ^4S_2\ (^3P) - 5s\ ^2D_3\ (^1D)$	4	3634.83	27503.79	$3d\ ^2P_1\ (^3P) - 4p\ ^2P_2\ (^1D)$
1	3856.16	25924.21	$4p\ ^4D_2\ (^3P) - 3d\ ^2S_1\ (^1D)$	0	3621.06	27608.38	$3d\ ^4D_2\ (^3P) - 4p\ ^2P_2\ (^3P)$
0	3855.18	25931.80	$4p\ ^2P_2\ (^3P) - 4d\ ^4P_1\ (^3P)$	0	3620.82	27610.21	$3d\ ^4F_2\ (^3P) - 4p\ ^2D_3\ (^3P)$
5	3830.43	26099.35	$4p\ ^2D_2\ (^1D) - 4d\ ^2P_1\ (^1D)$	4	3611.84	27678.85	$3d\ ^2P_2\ (^3P) - 4p\ ^2D_2\ (^1D)$
5	3825.70	26131.62	$4p\ ^2D_3\ (^1D) - 4d\ ^2D_2\ (^1D)$	6	3605.89	27724.53	$3d\ ^2P_2\ (^3P) - 4p\ ^2D_3\ (^1D)$
4	3819.04	26177.19	$4p\ ^2D_2\ (^1D) - 4d\ ^2D_2\ (^1D)$	4	3601.51	27758.24	$3d\ ^4D_3\ (^3P) - 4p\ ^2P_2\ (^3P)$
1	3811.22	26230.90	$4p\ ^2P_2\ (^3P) - 4d\ ^4P_2\ (^3P)$	3	3600.22	27768.19	$4p\ ^2P_2\ (^1D) - 4d\ ^2P_2\ (^1D)$
6	3803.19	26286.28	$4p\ ^2D_2\ (^1D) - 4d\ ^2D_3\ (^1D)$	00 u.	3594.41	27813.07	$3d\ ^2F_4\ (^3P) - 4p\ ^2F_4\ (^1D)$
4	3796.60	26331.91	$4p\ ^2D_3\ (^1D) - 4d\ ^2D_3\ (^1D)$	00. u	3593.76	27818.10	$4p\ ^2P_2\ (^1D) - 6s\ ^2P_2\ (^3P)$
2	3777.55	26464.70	$4p\ ^2P_1\ (^3P) - 4d\ ^4P_1\ (^3P)$	00. u	3570.77	27997.20	$4p\ ^2D_3\ (^3P) - 5s\ ^2D_3\ (^1D)$
5	3766.13	26544.94	$3d\ ^2P_2\ (^3P) - 4p\ ^2P_2\ (^1D)$	1	3569.94	28003.71	$4p\ ^4D_2\ (^3P) - 4d\ ^4P_1\ (^3P)$
3	3754.06	26630.29	$4p\ ^2P_1\ (^1D) - 4d\ ^2P_1\ (^1D)$	1 u	3567.78	28020.66	$4p\ ^2P_2\ (^1D) - 4d\ ^2F_3\ (^1D)$

TABLE 6 *Continued)*

Int	λ I.Å	$\nu_{vac.}$	Termcombination	Int	λ I.Å	$\nu_{vac.}$	Termcombination
4	3562.19	28064.63	4p $^2F_4$ (^1D) — 4d $^2G_4$ (^1D)	3	3186.19	31376.40	4p $^4P_2$ (^3P) — 5s $^2D_3$ (^1D)
6	3561.04	28073.69	4p $^2F_4$ (^1D) — 4d $^2G_5$ (^1D)	1	3163.61	31600.34	4p $^2P_1$ (^1D) — 5d $^2P_2$ (^3P)
5	3556.91	28106.29	3d $^2P_1$ (^3P) — 4p $^2P_1$ (^1D)	4	3161.38	31622.63	4p $^2S_1$ (^3P) — 4d $^2D_2$ (^3P)
4	3550.03	28160.76	4p $^2D_3$ (^3P) — 4d $^4P_3$ (^3P)	4	3153.80	31698.63	4p $^2P_1$ (^1D) — 5d $^2P_1$ (^3P)
9	3545.84	28194.03	4p $^2F_3$ (^1D) — 4d $^2G_4$ (^1D)	2	3146.47	31772.48	4p $^4P_3$ (^3P) — 4d $^2F_4$ (^3P)
2	3531.22	28310.76	3d $^4D_1$ (^3P) — 4p $^4S_2$ (^3P)	4	3137.66	31861.68	4p $^2D_3$ (^3P) — 4d $^2P_2$ (^3P)
4	3521.98	28385.04	4p $^4P_1$ (^3P) — 3d $^2S_1$ (^1D)	000.u	3108.82	32157.25	4s $^2P_2$ (^3P) — 4p $^2F_3$ (^1D)
4	3490.89	28637.82	3d $^2P_1$ (^3P) — 4p $^2D_2$ (^1D)	5	3104.38	32203.24	4p $^2P_2$ (^1D) — 5d $^2P_2$ (^3P)
3	3487.33	28667.06	4p $^4D_3$ (^3P) — 4d $^4F_2$ (^3P)	3	3094.98	32301 04	4p $^2P_2$ (^1D) — 5d $^2P_1$ (^3P)
4	3478.24	28741.97	4p $^4P_2$ (^3P) — 3d $^2S_1$ (^1D)	8	3093.41	32317.43	4p $^2P_2$ (^3P) — 4d $^2D_3$ (^3P)
2	3471.59	28797.03	4p $^4D_3$ (^3P) — 4d $^4P_2$ (^3P)	5	3088.24	32371.53	4p $^2P_2$ (^1D) — 5d $^2D_3$ (^3P)
3	3465.80	28845.14	4p $^2S_1$ (^3P) — 4d $^2P_1$ (^3P)	4	3082.99	32426.66	4p $^2P_1$ (^1D) — 4d $^2S_1$ (^1D)
6	3464.14	28858.96	4p $^2D_3$ (^3P) — 4d $^2F_3$ (^3P)	6	3033.52	32955.44	4s $^2P_1$ (^3P) — 4p $^2P_2$ (^1D)
000.u	3438.14	29077.19	4p $^4D_3$ (^3P) — 5s $^2D_2$ (^1D)	6	3028.93	33005.38	4p $^2P_1$ (^3P) — 4d $^2D_2$ (^3P)
2	3432.64	29123.78	4p $^2F_3$ (^1D) — 4d $^2D_2$ (^1D)	4	3026.75	33029.15	4p $^2P_2$ (^1D) — 4d $^2S_1$ (^1D)
3	3429.64	29149.25	4p $^2F_4$ (^1D) — 4d $^2D_3$ (^1D)	5	3014.49	33163.47	4p $^2D_2$ (^3P) — 4d $^2D_3$ (^3P)
3	3414.46	29278.84	4p $^2F_3$ (^1D) — 4d $^2D_3$ (^1D)	5	3000.45	33318.65	4p $^2D_2$ (^3P) — 4d $^2D_2$ (^3P)
4	3397 89	29421.62	4p $^4D_2$ (^3P) — 4d $^2F_3$ (^3P)	6	2979.05	33557.99	4s $^2P_1$ (^3P) — 4p $^2P_1$ (^1D)
2. u	3379.48	29581.88	4p $^2F_3$ (^1D) — 4d $^2P_2$ (^1D)	5	2955.39	33826.63	4p $^2D_3$ (^3P) — 4d $^2D_3$ (^3P)
7	3376.46	29608.34	4p $^2F_4$ (^1D) — 4d $^2F_4$ (^1D)	8	2942.90	33970.18	4s $^2P_2$ (^3P) — 4p $^2P_2$ (^1D)
2. u	3373.87	29631.07	4p $^2F_3$ (^1D) — 6s $^2P_2$ (^3P)	2	2935.57	34055.00	4p $^2F_4$ (^1D) — 5d $^2D_3$ (^3P)
4	3365.54	29704.41	4p $^2F_4$ (^1D) — 4d $^2F_3$ (^1D)	4	2932.60	34089.49	4s $^2P_1$ (^3P) — 4p $^2D_2$ (^1D)
3	3361.73	29738.08	4p $^2F_3$ (^1D) — 4d $^2F_4$ (^1D)	4	2924.66	34182.30	4p $^2F_3$ (^1D) — 5d $^2D_3$ (^3P)
6	3350.94	29833.83	4p $^2F_3$ (^1D) — 4d $^2F_3$ (^1D)	5	2891.61	34572 70	4s $^2P_2$ (^3P) — 4p $^2P_1$ (^1D)
2	3341.77	29915.69	4p $^4D_3$ (^3P) — 4d $^2F_3$ (^3P)	4	2865.85	34883.44	4p $^4P_1$ (^3P) — 4d $^2P_2$ (^3P)
2	3269.05	30581.14	4p $^4P_3$ (^3P) — 4d $^4F_4$ (^3P)	2	2847.81	35104.41	4s $^2P_2$ (^3P) — 4p $^2D_2$ (^1D)
3	3222.42	31023.65	4p $^2D_3$ (^1D) — 5d $^2P_2$ (^3P)	2	2844.12	35149.95	4s $^2P_2$ (^3P) — 4p $^2D_3$ (^1D)
3	3221.64	31031.16	4p $^4P_3$ (^3P) — 4d $^4F_3$ (^3P)	00	2836 79	35240.77	4s $^4P_3$ (^3P) — 4d $^2P_3$ (^3P)
3	3217.70	31069.16	4p $^2D_2$ (^1D) — 5d $^2P_2$ (^3P)	3	2764.66	36160 15	4s $^4P_3$ (^3P) — 4p $^2F_3$ (^1D)
4	3207.61	31166.89	4p $^2D_2$ (^1D) — 5d $^2P_1$ (^3P)	1	2754.91	36288.12	4s $^4P_2$ (^3P) — 4p $^2F_4$ (^1D)
4	3205.03	31191.97	4p $^2D_3$ (^1D) — 5d $^2D_3$ (^3P)	4	2692.62	37127.55	4s $^4P_2$ (^3P) — 4p $^2P_2$ (^1D)

TABLE 6 *(Continued)*

Int	λ I.Å	$\nu_{vac.}$	Termcombination	Int	λ I.Å	$\nu_{vac.}$	Termcombination
0. u	2649.62	37730.04	$4s\ ^2P_2\ (^3P) - 4p\ ^2P_1\ (^1D)$	2	2475.48	40384.00	$4p\ ^2P_2\ (^3P) - 6s\ ^2P_1\ (^3P)$
3	2647.29	37763.25	$4p\ ^4S_2\ (^3P) - 6s\ ^4P_3\ (^3P)$	00	2463.03	40588.12	$4p\ ^2D_2\ (^3P) - 4d\ ^2P_2\ (^1D)$
00	2636.41	37919.08	$3d\ ^4D_3\ (^3P) - 4p\ ^2F_3\ (^1D)$	2	2459.97	40638.60	$4p\ ^2D_2\ (^3P) - 6s\ ^2P_2\ (^3P)$
1	2627.41	38048.96	$3d\ ^4D_3\ (^3P) - 4p\ ^2F_4\ (D^1)$	000.u	2459.63	40644.22	$4p\ ^4D_2\ (^3P) - 6s\ ^4P_3\ (^3P)$
2	2624.63	38089.26	$4p\ ^4S_2\ (^3P) - 6s\ ^4P_2\ (^3P)$	00	2447.77	40841.13	$4p\ ^2D_2\ (^3P) - 4d\ ^2F_3\ (^1D)$
0	2616.87	38202.20	$3d\ ^4D_4\ (^3P) - 4p\ ^2F_4\ (^1D)$	00	2443.24	40916.85	$4p\ ^2P_1\ (^3P) - 6s\ ^2P_1\ (^3P)$
1	2570.01	38898.71	$4p\ ^2P_2\ (^3P) - 6s\ ^4P_2\ (^3P)$	00	2441.33	40948.86	$4p\ ^2D_3\ (^3P) - 4d\ ^2D_3\ (^1D)$
00 u	2567.15	38942.04	$4p\ ^2S_1\ (^3P) - 6s\ ^2P_2\ (^3P)$	1	2440.07	40970.00	$4p\ ^4D_2\ (^3P) - 6s\ ^4P_2\ (^3P)$
3	2564.45	38983.04	$4p\ ^4S_2\ (^3P) - 6s\ ^2P_2\ (^3P)$	2	2430.06	41138.76	$4p\ ^4D_3\ (^3P) - 6s\ ^4P_3\ (^3P)$
4	2562.12	39018.59	$3d\ ^2D_3\ (^3P) - 5p\ ^2P_2\ (^3P)$	1	2424.70	41229.69	$4p\ ^2D_2\ (^3P) - 6s\ ^2P_1\ (^3P)$
2	2559.31	39061.32	$4p\ ^4S_2\ (^3P) - 6s\ ^4P_2\ (^3P)$	3	2420.49	41301.39	$4p\ ^2D_3\ (^3P) - 6s\ ^2P_2\ (^3P)$
2	2556.63	39102.26	$4p\ ^2S_1\ (^3P) - 6s\ ^4P_1\ (^3P)$	2	2414 26	41407.96	$4p\ ^2D_3\ (^3P) - 4d\ ^2F_4\ (^1D)$?
00	2553.44	39151.12	$4s\ ^4P_3\ (^3P) - 4p\ ^2D_3\ (^1D)$	2	2410.97	41464.46	$4p\ ^4D_3\ (^3P) - 6s\ ^4P_2\ (^3P)$
4	2536.04	39419.72	$3d\ ^2D_3\ (^3P) - 5p\ ^2D_2\ (^3P)$	3	2404.40	41577.76	$4p\ ^4D_4\ (^3P) - 6s\ ^4P_3\ (^3P)$
1	2535.28	39431.53	$4p\ ^2P_1\ (^3P) - 6s\ ^4P_2\ (^3P)$	1	2398.39	41681.93	$4p\ ^4D_1\ (^3P) - 6s\ ^4P_1\ (^3P)$
2	2528.71	39533.97	$4p\ ^2S_1\ (^3P) - 6s\ ^2P_1\ (^3P)$	5	2387.96	41863.98	$4p\ ^4D_2\ (^3P) - 6s\ ^2P_2\ (^3P)$
00. u	2526.15	39574.03	$4p\ ^4S_2\ (^3P) - 6s\ ^2P_1\ (^3P)$	5	2383.50	41942.30	$4p\ ^4D_2\ (^3P) - 6s\ ^4P_1\ (^3P)$
2	2522.53	39630.82	$3d\ ^2D_2\ (^3P) - 5p\ ^2P_2\ (^3P)$	1	2369.28	42194.01	$4p\ ^4D_1\ (^3P) - 6s\ ^2P_1\ (^3P)$
4	2516.81	39720.88	$4d\ ^2D_2\ (^3P) - 5p\ ^2P_1\ (^3P)$	5	2360.07	42358.65	$4p\ ^4D_3\ (^3P) - 6s\ ^2P_2\ (^3P)$
3	2515.60	39739.99	$4p\ ^2P_1\ (^3P) - 4d\ ^2P_1\ (^1D)$	2	2354.79	42453.63	$4p\ ^4D_2\ (^3P) - 6s\ ^2P_1\ (^3P)$
0	2515.29	39744.89	$4p\ ^2D_2\ (^3P) - 6s\ ^4P_2\ (^3P)$	1	2317.77	43131.64	$4s\ ^2D_3\ (^1D) - 4p\ ^2P_2\ (^1S)$
0	2512.27	39792.66	$4p\ ^2P_2\ (^3P) - 6s\ ^2P_2\ (^3P)$	3	2300.19	43461.26	$4p\ ^4P_2\ (^3P) - 6s\ ^4P_3\ (^3P)$
0. u	2507.34	39870.89	$4p\ ^2P_2\ (^3P) - 6s\ ^4P_1\ (^3P)$	3	2284.02	43768.92	$4p\ ^4P_3\ (^3P) - 6s\ ^4P_3\ (^3P)$
0	2501.86	39958.22	$3d\ ^2F_3\ (^3P) - 5p\ ^2P_2\ (^3P)$	4	2282.64	43795.37	$3d\ ^2D_3\ (^3P) - 5p\ ^2F_4\ (^1D)$
1	2499.55	39995.15	$4p\ ^2P_2\ (^3P) - 4d\ ^2F_3\ (^1D)$	2	2252.26	44386.06	$3d\ ^2D_2\ (^3P) - 5p\ ^2F_3\ (^1D)$
0	2497.25	40031.98	$3d\ ^2D_2\ (^3P) - 5p\ ^2D_2\ (^3P)$	5	2235.77	44713.39	$3d\ ^2F_3\ (^3P) - 5p\ ^2F_3\ (^1D)$
00	2495.95	40052.83	$4p\ ^2D_2\ (^3P) - 4d\ ^2P_1\ (^1D)$	1	2229.5	44839.13	$3d\ ^2P_2\ (^3P) - 5p\ ^2D_2\ (^3P)$
2	2482.17	40275.17	$4p\ ^2P_1\ (^3P) - 4d\ ^2P_2\ (^1D)$	2. u	2182.74	45799.59	$3d\ ^2P_1\ (^3P) - 5p\ ^2D_2\ (^3P)$?
2	2479.08	40325.36	$4p\ ^2P_1\ (^3P) - 6s\ ^2P_2\ (^3P)$	6	2171 41	46038.54	$3d\ ^2P_2\ (^3P) - 5p\ ^2S_1\ (^3P)$
00	2476.99	40359.39	$3d\ ^2F_3\ (^3P) - 5p\ ^2D_2\ (^3P)$	0	2127.1	46997.46	$3d\ ^2P_1\ (^3P) - 5p\ ^2S_1\ (^3P)$

TABLE 7.

Ar II-spectrum in the extreme violet.

Int.	$\lambda_{obs.}$	ν	Termcombination	$\lambda_{calc.}$
2	762.37	131170	$3p\ ^2P_1\ (^3P) - 3d\ ^4D_2\ (^3P)$	762.39
4	754.99	132452	$3p\ ^2P_2\ (^3P) - 3d\ ^4D_3\ (^3P)$	755.01
1	748.39	133620	$3p\ ^2P_1\ (^3P) - 4s\ ^4P_2\ (^3P)$	748.38
8 d.	745.22	134189	$3p\ ^2P_2\ (^3P) - 4s\ ^4P_3\ (^3P)$ $3p\ ^2P_1\ (^3P) - 4s\ ^4P_1\ (^3P)$	745.11 745.51
5	740.45	135053	$3p\ ^2P_2\ (^3P) - 4s\ ^4P_2\ (^3P)$	740.45
3	731.10	136780	$3p\ ^2P_1\ (^3P) - 4s\ ^2P_2\ (^3P)$	731.11
5	725.73	137792	$3p\ ^2P_1\ (^3P) - 4s\ ^2P_1\ (^3P)$	725.72
6	723.54	138209	$3p\ ^2P_2\ (^3P) - 4s\ ^2P_2\ (^3P)$	723.54
4	718.29	139219	$3p\ ^2P_2\ (^3P) - 4s\ ^2P_1\ (^3P)$	718.26
3	704.72	141900	$3p\ ^2P_1\ (^3P) - 3d\ ^4F_2\ (^3P)$	704.69
4	699.00	143062	$3p\ ^2P_2\ (^3P) - 3d\ ^4F_3\ (^3P)$	698.94
2	698.19	143227	$3p\ ^2P_1\ (^3P) - 3d\ ^2P_1\ (^3P)$	698.10
1	697.82	143303	$3p\ ^2P_2\ (^3P) - 3d\ ^4F_2\ (^3P)$	697.65
4	693.55	144186	$3p\ ^2P_1\ (^3P) - 3d\ ^2P_2\ (^3P)$	693.46
1½	691.29	144657	$3p\ ^2P_2\ (^3P) - 3d\ ^2P_1\ (^3P)$	691.19
2	686.73	145618	$3p\ ^2P_2\ (^3P) - 3d\ ^2P_2\ (^3P)$	686.64
6	679.59	147148	$3p\ ^2P_1\ (^3P) - 4s\ ^2D_2\ (^1D)$	679.55
0	673.13	148560	$3p\ ^2P_2\ (^3P) - 4s\ ^2D_2\ (^1D)$	673.01
6	672.03	148803	$3p\ ^2P_2\ (^3P) - 4s\ ^2D_3\ (^1D)$	672.00
6	671.21	148985	$3p\ ^2P_1\ (^3P) - 3d\ ^2D_2\ (^3P)$	671.09
5	666.23	150098	$3p\ ^2P_2\ (^3P) - 3d\ ^2F_3\ (^3P)$	666.16
2	664.84	150412	$3p\ ^2P_2\ (^3P) - 3d\ ^2D_2\ (^3P)$	664.71
6	662.11	151032	$3p\ ^2P_2\ (^3P) - 3d\ ^2D_3\ (^3P)$	662.01
2	603.11	165817	$3p\ ^2P_1\ (^3P) - 4s\ ^2S_1\ (^1S)$	602.98
3	597.92	167246	$3p\ ^2P_2\ (^3P) - 4s\ ^2S_1\ (^1S)$	597.89
1½	584.53	171078	$3p\ ^2P_2\ (^3P) - 3d\ ^2F_3\ (^1D)$	584.53
3	583.65	171335	$3p\ ^2P_1\ (^3P) - 3d\ ^2D_2\ (^1D)$	583.55
5	580.47	172264	$3p\ ^2P_2\ (^3P) - 3d\ ^2D_3\ (^1D)$	580.38
1½	578.81	172768	$3p\ ^2P_2\ (^3P) - 3d\ ^2D_2\ (^1D)$	578.71

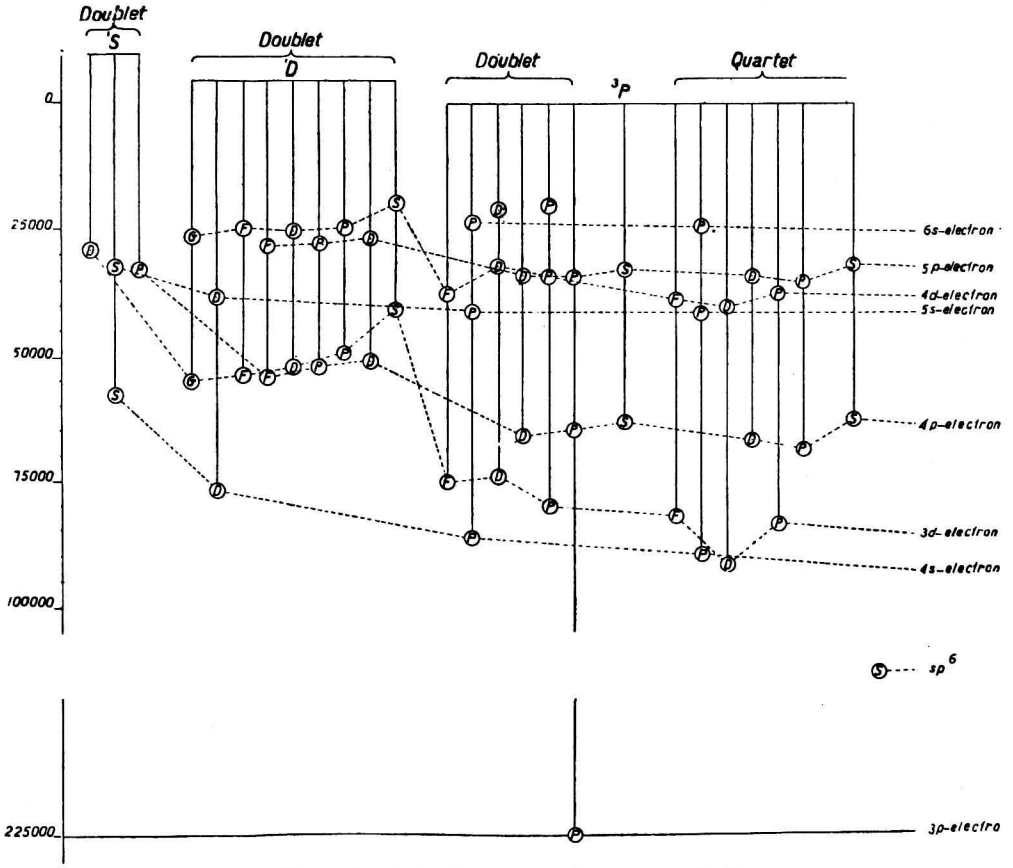
TABLE 7 (*Continued*).

Int.	$\lambda_{obs.}$	ν	Termcombination	$\lambda_{calc.}$
$1^1/_2$	578.34	172909	$3p\ ^2P_1\ (^3P) - 3d\ ^2P_2\ (^1D)$	578.22
2	576.93	173331	$3p\ ^2P_1\ (^3P) - 3d\ ^2P_1\ (^1D)$	576,91
4	573.55	174353	$3p\ ^2P_2\ (^3P) - 3d\ ^2P_2\ (^1D)$	573.47
1	572.20	174764	$3p\ ^2P_2\ (^3P) - 3d\ ^2P_1\ (^1D)$	572.08
3	560.38	178450	$3p\ ^2P_1\ (^3P) - a\ ^2P_1$	560.33
3	557.02	179530	$3p\ ^2P_2\ (^3P) - a\ ^2P_2$	556.92
1	548.92	182176	$3p\ ^2P_2\ (^3P) - 5s\ ^4P_2\ (^3P)$	548.88
4	547.54	182635	$3p\ ^2P_1\ (^3P) - 3d\ ^2S_1\ (^1D)$	547.56
2	546.36	183038	$3p\ ^2P_2\ (^3P) - 5s\ ^2P_2\ (^3P)$	546.28
1	543.96	183837	$3p\ ^2P_2\ (^3P) - 5s\ ^2P_1\ (^3P)$	543.83
5	543.33	184050	$3p\ ^2P_2\ (^3P) - 3d\ ^2S_1\ (^1D)$	543.30
1	537.18	186157	$3p\ ^2P_2\ (^3P) - 4d\ ^4P_1\ (^3P)$	537.23
1	530.65	188448	$3p\ ^2P_1\ (^3P) - 4d\ ^2P_1\ (^3P)$	530.59
0	526.54	189919	$3p\ ^2P_2\ (^3P) - 4d\ ^2P_1\ (^3P)$	526.59
3	524.83	190538	$3p\ ^2P_2\ (^3P) - 4d\ ^2P_2\ (^3P)$	524.77
2	522.93	191231	$3p\ ^2P_1\ (^3P) - 4d\ ^2D_2\ (^3P)$	522.88
4	519.47	192504	$3p\ ^2P_2\ (^3P) - 4d\ ^2D_3\ (^3P)$	519.42
1	514.43	194390	$3p\ ^2P_1\ (^3P) - 3d\ ^2D_2\ (^1S)$	514.40
3	510.68	195817	$3p\ ^2P_2\ (^3P) - 3d\ ^2D_3\ (^1S)$	510.64
0	503 78	198499	$3p\ ^2P_1\ (^3P) - 4d\ ^2P_2\ (^1D)$	503.73
0	502.20	199124	$3p\ ^2P_1\ (^3P) - 6s\ ^2P_1\ (^3P)$ $3p\ ^2P_2\ (^3P) - 6s\ ^4P_2\ (^3P)$	502.11 502.26
2	490.76	203766	$3p\ ^2P_1\ (^3P) - 4d\ ^2S_1\ (^1D)$	490.73
0	489.26	204390	$3p\ ^2P_2\ (^3P) - 5d\ ^2P_2\ (^3P)$	489.27
2. d	488.88	204549	$3p\ ^2P_2\ (^3P) - 5d\ ^2P_1\ (^3P)$ $3p\ ^2P_2\ (^3P) - 5d\ ^2D_3\ (^3P)$	489.04 488.88
2	487.27	205225	$3p\ ^2P_2\ (^3P) - 4d\ ^2S_1\ (^1D)$	487.30

Only the lines:

4	678.17	147456	
5	676.48	147824	
4	612.59	163241	of the extreme violet spectrum find no explanation.

simplicity the fine structure of the levels (splitting according the inner quantum numbers j) is not given.



Energylevels in the ionized Argonatom, Ar II.

4. *Summary.*

The analysis of the Ar. II spectrum has been extended by the detection of a large number new levels, which belong to three term systems corresponding with the ^3P, ^1D and ^1S of the ion Ar^{++}. A list of 360 new classified lines have been added to the list of 180 lines already classified. The Ar. II-spectrum shows very interesting data for the theory of the series limits and inverted and not inverted terms.

In conclusion the author wishes to express thanks to Prof. P. ZEEMAN for valuable advice and suggestions.

Laboratory "Physica" of the University of Amsterdam.

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