Liste des transitions de $^3P_1$ dans Ruczkowski 2016 :

λ_{air} [Å]	σ [cm^{-1}]	Energy levels [cm^{-1}] Upper level		J	Lower level		J'	log gf this work	NIST		Kurucz [30]
3307.5351	30225.293	44729.627	4d^2 ^{3}P	2	14504.334	5s 5p ^{3}P	1	-0.347			-0.407
3322.2321	30091.586	44595.920	4d^2 ^{3}P	1	14504.334	5s 5p ^{3}P	1	-0.566			-0.654
3329.9877	30021.504	44525.838	4d^2 ^{3}P	0	14504.334	5s 5p ^{3}P	1	-0.589			-0.546
4175.9882	23939.679	38444.013	5s 7s ^{1}S	0	14504.334	5s 5p ^{3}P	1	-2.342			-3.239
4361.7108	22920.341	37424.675	5s 7s ^{3}S	1	14504.334	5s 5p ^{3}P	1	-1.105	−1.08	B+[20]	-1.225
4412.6218	22655.900	37160.234	5p^2 ^{1}S	0	14504.334	5s 5p ^{3}P	1	-1.692			-2.285
4451.8023	22456.508	36960.842	5p^2 ^{1}D	2	14504.334	5s 5p ^{3}P	1	-1.978			-2.292
4722.2767	21170.303	35674.637	5p^2 ^{3}P	2	14504.334	5s 5p ^{3}P	1	-0.293	−0.22	B+[20]	-0.180
4784.3196	20895.771	35400.105	5p^2 ^{3}P	1	14504.334	5s 5p ^{3}P	1	-0.510	−0.51	B+[20]	-0.397
4832.1108	20689.108	35193.442	5p^2 ^{3}P	0	14504.334	5s 5p ^{3}P	1	-0.412			-0.274
4872.4902	20517.655	35021.989	5s 5d ^{3}D	2	14504.334	5s 5p ^{3}P	1	-0.062	−0.07	A [20]	-0.144
4876.0743	20502.574	35006.908	5s 5d ^{3}D	1	14504.334	5s 5p ^{3}P	1	-0.542	−0.551	B+[20]	-0.621
4943.4572	20223.113	34727.447	5s 5d ^{1}D	2	14504.334	5s 5p ^{3}P	1	-2.966			-2.676
6214.2902	16087.491	30591.825	5s 6s ^{1}S	0	14504.334	5s 5p ^{3}P	1	-3.730			-3.184
6878.3125	14534.439	29038.773	5s 6s ^{3}S	1	14504.334	5s 5p ^{3}P	1	-0.254	−0.24	B+[20]	-0.245
6892.5891	14504.334	14504.334	5s 5p ^{3}P	1	0.000	5s^2 ^{1}S	0	-2.848	−2.999	A+[26]	-2.693
17708.8535	5645.351	20149.685	5s 4d ^{1}D	2	14504.334	5s 5p ^{3}P	1	-4.467			-3.721

Total de 17

Liste de nos transitions :

	conf_i	term_i	J_i	E_i (cm-1)	conf_k	term_k	J_k	E_k (cm-1)	D (a.u.)	source
23	5s5p	3P	1	14504	5s4d	3D	1	18159	2.3220	Cooper2018
24	5s5p	3P	1	14504	5s4d	3D	2	18218	4.0190	Cooper2018
25	5s5p	3P	1	14504	5s4d	1D	2	20149	0.1900	Cooper2018
26	5s5p	3P	1	14504	5s6s	3S	1	29038	3.4250	Cooper2018
27	5s5p	3P	1	14504	5s6s	1S	0	30591	0.0450	Cooper2018
28	5s5p	3P	1	14504	5s5d	1D	2	34727	0.0610	Cooper2018
29	5s5p	3P	1	14504	5s5d	3D	1	35007	2.0090	Cooper2018
30	5s5p	3P	1	14504	5s5d	3D	2	35022	3.6730	Cooper2018
31	5s5p	3P	1	14504	5p2	3P	0	35193	2.6570	Cooper2018
32	5s5p	3P	1	14504	5p2	3P	1	35400	2.3620	Cooper2018
33	5s5p	3P	1	14504	5p2	3P	2	35674	2.8650	Cooper2018
34	5s5p	3P	1	14504	5p2	1D	2	36961	0.2280	Cooper2018
35	5s5p	3P	1	14504	5p2	1S	0	37160	0.2910	Cooper2018
36	5s5p	3P	1	14504	5s7s	3S	1	37424	0.9210	Cooper2018

+ la transition avec le fondamental

Total : 14+1 = 15

Bilan il nous manque $4d^2$ $^3P_{0,1,2}$ et $5s7s$ $^1S_{0,1}$ par rapport à Ruczkowski.

Pour $^1S_0$:

λ_{air} [Å]	σ [cm^{-1}]	Energy levels [cm^{-1}] Upper level		J	Lower level		J'	log gf this work	NIST		Kurucz [30]
2193.9812	45565.000	45565.000	5s 20p ^{1}P	1	0.000	5s^2 ^{1}S	0	-3.260	−3.256	A [25]	
2196.2160	45518.640	45518.640	5s 19p ^{1}P	1	0.000	5s^2 ^{1}S	0	-3.161	−3.16	B [19]	
2198.9032	45463.020	45463.020	5s 18p ^{1}P	1	0.000	5s^2 ^{1}S	0	-3.041	−3.04	B [19]	
2202.1818	45395.340	45395.340	5s 17p ^{1}P	1	0.000	5s^2 ^{1}S	0	-2.959	−2.96	B [19]	
2206.2331	45311.990	45311.990	5s 16p ^{1}P	1	0.000	5s^2 ^{1}S	0	-2.851	−2.85	B [19]	
2211.3168	45207.830	45207.830	5s 15p ^{1}P	1	0.000	5s^2 ^{1}S	0	-2.730	−2.73	B [19]	
2217.8197	45075.290	45075.290	5s 14p ^{1}P	1	0.000	5s^2 ^{1}S	0	-2.590	−2.59	B [19]	-2.001
2226.3054	44903.500	44903.500	5s 13p ^{1}P	1	0.000	5s^2 ^{1}S	0	-2.456	−2.456	B [19]	-1.185
2237.6565	44675.737	44675.737	5s 12p ^{1}P	1	0.000	5s^2 ^{1}S	0	-2.270	−2.27	B [19]	-1.666
2253.2587	44366.420	44366.420	5s 11p ^{1}P	1	0.000	5s^2 ^{1}S	0	-2.070	−2.07	B [19]	-1.758
2258.4463	44264.520	44264.520	5s 11p ^{3}P	1	0.000	5s^2 ^{1}S	0	-4.925			-4.889
2275.2208	43938.201	43938.201	5s 10p ^{1}P	1	0.000	5s^2 ^{1}S	0	-1.810	−1.81	B [18]	-1.753
2284.4102	43761.470	43761.470	5s 10p ^{3}P	1	0.000	5s^2 ^{1}S	0	-4.684			-4.794
2307.2642	43328.040	43328.040	5s 9p ^{1}P	1	0.000	5s^2 ^{1}S	0	-1.560	−1.56	B [18]	-1.714
2325.3943	42990.260	42990.260	5s 9p ^{3}P	1	0.000	5s^2 ^{1}S	0	-4.399			-4.657
2354.3189	42462.136	42462.136	5s 8p ^{1}P	1	0.000	5s^2 ^{1}S	0	-1.350	−1.35	C+[18]	-1.694
2396.2187	41719.710	41719.710	5s 8p ^{3}P	1	0.000	5s^2 ^{1}S	0	-3.859			-4.286
2428.0948	41172.054	41172.054	4d 5p ^{1}P	1	0.000	5s^2 ^{1}S	0	-0.649	−1.35	C+[18]	-1.602
2535.6068	39426.442	39426.442	5s 7p ^{3}P	1	0.000	5s^2 ^{1}S	0	-3.481			-4.096
2569.4710	38906.858	38906.858	5s 7p ^{1}P	1	0.000	5s^2 ^{1}S	0	-1.800	−1.80	B [18]	-1.688
2679.9726	37302.731	37302.731	4d 5p ^{3}P	1	0.000	5s^2 ^{1}S	0	-3.680			-3.607
2756.7294	36264.151	36264.151	4d 5p ^{3}D	1	0.000	5s^2 ^{1}S	0	-3.026			-3.347
2931.8307	34098.404	34098.404	5s 6p ^{1}P	1	0.000	5s^2 ^{1}S	0	-2.130	−2.13	C+[18]	-3.889
2951.7493	33868.317	33868.317	5s 6p ^{3}P	1	0.000	5s^2 ^{1}S	0	-2.919			-4.654
4607.3328	21698.452	21698.452	5s 5p ^{1}P	1	0.000	5s^2 ^{1}S	0	0.283	0.283	AA[18]	0.389
6892.5891	14504.334	14504.334	5s 5p ^{3}P	1	0.000	5s^2 ^{1}S	0	-2.848	−2.999	A+[26]	-2.693

26 transitions

NIST + Cooper :

	conf_i	term_i	J_i	E_i (cm-1)	conf_k	term_k	J_k	E_k (cm-1)	D (a.u.)	source
0	5s2	1S	0	0	5s5p	3P	1	14504	0.151000	NIST
1	5s2	1S	0	0	5s5p	1P	1	21698	5.394400	NIST
2	5s2	1S	0	0	5s6p	1P	1	34098	0.266460	NIST
3	5s2	1S	0	0	5s7p	1P	1	38907	0.360560	NIST
4	5s2	1S	0	0	4d5p	1P	1	41172	0.600000	NIST
5	5s2	1S	0	0	5s8p	1P	1	42462	0.591610	NIST
6	5s2	1S	0	0	5s9p	1P	1	43328	0.457170	NIST
7	5s2	1S	0	0	5s10p	1P	1	43938	0.346410	NIST
8	5s2	1S	0	0	5s11p	1P	1	44366	0.251000	NIST
9	5s2	1S	0	0	5s12p	1P	1	44676	0.200000	NIST
10	5s2	1S	0	0	5s13p	1P	1	44904	0.160310	NIST
11	5s2	1S	0	0	5s14p	1P	1	45075	0.137480	NIST
12	5s2	1S	0	0	5s15p	1P	1	45208	0.118320	NIST
13	5s2	1S	0	0	5s16p	1P	1	45312	0.100000	NIST
14	5s2	1S	0	0	5s17p	1P	1	45395	0.088882	NIST
15	5s2	1S	0	0	5s18p	1P	1	45463	0.081240	NIST
16	5s2	1S	0	0	5s19p	1P	1	45519	0.070711	NIST
17	5s2	1S	0	0	5s20p	1P	1	45565	0.063325	NIST

18 transitions

Il ne manque que des transitions singulet vers triplet, probablement des effets très faibles.