

STARK BROADENING PARAMETER TABLES FOR Ar VIII

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SUMMARY: Using a semiclassical approach, we have calculated electron-, proton-, and He III-impact line widths and shifts for 9 Ar VIII transitions as a function of temperature and perturber density.

1. INTRODUCTION

Stark broadening data for argon in different ionization stages are of interest for a number of problems in research of astrophysical, laboratory, laser produced and fusion plasmas, like *e.g.* plasma diagnostic and modelling. Stark broadening of Ar VIII spectral lines has been considered experimentally (Hegazy *et al.* 1997) and theoretically (Purić *et al.* 1988, Hegazy *et al.* 1997, Djeniže and Srećković 1998, Konjević and Konjević 1998).

In order to continue our project (see *e.g.* Dimitrijević 1996) to provide an as much as possible large set of reliable Stark broadening data for different applications in astrophysics, physics and technology, we have calculated within the semiclassical-perturbation formalism (Sahal–Bréchet, 1969ab, see also Sahal–Bréchet, 1974, Fleurier *et al.* 1977, Dimitrijević and Sahal–Bréchet, 1984, Dimitrijević *et al.* 1991, Dimitrijević and Sahal–Bréchet, 1995) electron-, proton-, and ionized helium-impact line widths and shifts for 9 Ar VIII transitions.

2. RESULTS AND DISCUSSION

All relevant details concerning the obtained results and the calculation procedure will be published in Dimitrijević and Sahal–Bréchet, 1999. Here, we present only tables of Stark broadening parameters. Atomic energy levels needed for calculations have been taken from Bashkin and Stoner (1978). Our results for electron-, proton-, and He III-impact line widths and shifts for 9 Ar VIII transitions for perturber densities 10^{19}cm^{-3} – 10^{22}cm^{-3} , are shown in Table 1. The temperature range is $T = 200,000$ – $3,000,000$ K. Stark broadening parameters for a perturber density of 10^{18}cm^{-3} will be published in Dimitrijević and Sahal–Bréchet (1999).

We also specify a parameter C (Dimitrijević and Sahal–Bréchet 1984), which gives an estimate for the maximum perturber density for which the line may be treated as isolated when it is divided by the corresponding full width at half maximum. For each value given in Table 1, the collision volume (V) multiplied by the perturber density (N) is much less

Table 1. This table shows electron-, proton-, and He III-impact broadening parameters for Ar VIII for perturber densities $10^{19} \text{ cm}^{-3} - 10^{22} \text{ cm}^{-3}$ and temperatures from 200,000 up to 3,000,000 K. Transitions and corresponding wavelengths (in Å) are also given in the table. By dividing C by the corresponding full width at half maximum (Dimitrijević *et al.*, 1991), we obtain an estimate for the maximum perturber density for which the line may be treated as isolated and tabulated data may be used. The asterisk identifies cases for which the collision volume multiplied by the perturber density (the condition for validity of the impact approximation) lies between 0.1 and 0.5.

PERTURBER DENSITY = $1.E+19 \text{ cm}^{-3}$							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)
Ar VIII 3S 3P 714.0 Å C = 0.71E+22	200000.	0.930E-01	-0.135E-02	0.150E-02	-0.941E-03	0.291E-02	-0.178E-02
	500000.	0.614E-01	-0.154E-02	0.374E-02	-0.207E-02	0.737E-02	-0.412E-02
	1000000.	0.464E-01	-0.148E-02	0.557E-02	-0.304E-02	0.110E-01	-0.611E-02
	1500000.	0.400E-01	-0.149E-02	0.656E-02	-0.368E-02	0.131E-01	-0.743E-02
	2000000.	0.362E-01	-0.145E-02	0.701E-02	-0.403E-02	0.140E-01	-0.814E-02
	3000000.	0.317E-01	-0.141E-02	0.780E-02	-0.448E-02	0.154E-01	-0.906E-02
Ar VIII 3S 3P 700.4 Å C = 0.69E+22	200000.	0.899E-01	-0.129E-02	0.146E-02	-0.889E-03	0.283E-02	-0.168E-02
	500000.	0.593E-01	-0.146E-02	0.362E-02	-0.195E-02	0.713E-02	-0.390E-02
	1000000.	0.448E-01	-0.141E-02	0.538E-02	-0.288E-02	0.107E-01	-0.578E-02
	1500000.	0.386E-01	-0.142E-02	0.633E-02	-0.349E-02	0.126E-01	-0.704E-02
	2000000.	0.350E-01	-0.138E-02	0.675E-02	-0.382E-02	0.135E-01	-0.773E-02
	3000000.	0.307E-01	-0.134E-02	0.750E-02	-0.425E-02	0.149E-01	-0.862E-02
Ar VIII 3S 4P 159.0 Å C = 0.13E+21	200000.	0.119E-01	0.921E-04	0.701E-03	0.972E-04	0.137E-02	0.184E-03
	500000.	0.815E-02	0.144E-03	0.112E-02	0.197E-03	0.222E-02	0.394E-03
	1000000.	0.638E-02	0.124E-03	0.131E-02	0.276E-03	0.260E-02	0.555E-03
	1500000.	0.562E-02	0.118E-03	0.140E-02	0.316E-03	0.279E-02	0.639E-03
	2000000.	0.516E-02	0.119E-03	0.148E-02	0.342E-03	0.292E-02	0.690E-03
	3000000.	0.462E-02	0.113E-03	0.158E-02	0.380E-03	0.309E-02	0.769E-03
Ar VIII 4S 4P 1887.0 Å C = 0.19E+23	200000.	2.10	-0.477E-01	0.105	-0.563E-01	0.206	-0.106
	500000.	1.47	-0.540E-01	0.174	-0.950E-01	0.346	-0.189
	1000000.	1.17	-0.541E-01	0.209	-0.120	0.417	-0.242
	1500000.	1.03	-0.525E-01	0.230	-0.134	0.458	-0.270
	2000000.	0.952	-0.511E-01	0.248	-0.145	0.487	-0.291
	3000000.	0.852	-0.446E-01	0.276	-0.161	0.529	-0.323
Ar VIII 3P 4S 229.4 Å C = 0.28E+21	200000.	0.161E-01	0.104E-02	0.536E-03	0.106E-02	0.106E-02	0.198E-02
	500000.	0.112E-01	0.126E-02	0.136E-02	0.174E-02	0.270E-02	0.346E-02
	1000000.	0.880E-02	0.121E-02	0.208E-02	0.216E-02	0.415E-02	0.435E-02
	1500000.	0.773E-02	0.118E-02	0.243E-02	0.239E-02	0.486E-02	0.481E-02
	2000000.	0.708E-02	0.115E-02	0.269E-02	0.257E-02	0.538E-02	0.519E-02
	3000000.	0.628E-02	0.104E-02	0.314E-02	0.282E-02	0.614E-02	0.575E-02
Ar VIII 3P 4S 230.9 Å C = 0.28E+21	200000.	0.164E-01	0.105E-02	0.543E-03	0.107E-02	0.107E-02	0.200E-02
	500000.	0.114E-01	0.127E-02	0.137E-02	0.176E-02	0.274E-02	0.350E-02
	1000000.	0.893E-02	0.122E-02	0.211E-02	0.218E-02	0.420E-02	0.440E-02
	1500000.	0.784E-02	0.119E-02	0.245E-02	0.241E-02	0.492E-02	0.487E-02
	2000000.	0.718E-02	0.116E-02	0.272E-02	0.260E-02	0.544E-02	0.525E-02
	3000000.	0.637E-02	0.105E-02	0.318E-02	0.285E-02	0.621E-02	0.581E-02
Ar VIII 3P 3D 519.2 Å C = 0.38E+22	200000.	0.573E-01	-0.655E-03	0.148E-02	-0.347E-03	0.287E-02	-0.657E-03
	500000.	0.379E-01	-0.605E-03	0.314E-02	-0.793E-03	0.620E-02	-0.158E-02
	1000000.	0.287E-01	-0.815E-03	0.438E-02	-0.120E-02	0.870E-02	-0.242E-02
	1500000.	0.248E-01	-0.696E-03	0.482E-02	-0.146E-02	0.961E-02	-0.295E-02
	2000000.	0.225E-01	-0.710E-03	0.513E-02	-0.165E-02	0.102E-01	-0.332E-02
	3000000.	0.198E-01	-0.682E-03	0.551E-02	-0.183E-02	0.110E-01	-0.368E-02
Ar VIII 3P 3D 526.6 Å C = 0.40E+22	200000.	0.591E-01	-0.683E-03	0.153E-02	-0.367E-03	0.297E-02	-0.694E-03
	500000.	0.391E-01	-0.636E-03	0.324E-02	-0.835E-03	0.641E-02	-0.167E-02
	1000000.	0.296E-01	-0.847E-03	0.453E-02	-0.126E-02	0.899E-02	-0.255E-02
	1500000.	0.255E-01	-0.726E-03	0.498E-02	-0.154E-02	0.993E-02	-0.310E-02
	2000000.	0.232E-01	-0.741E-03	0.530E-02	-0.173E-02	0.106E-01	-0.349E-02
	3000000.	0.204E-01	-0.711E-03	0.569E-02	-0.192E-02	0.113E-01	-0.387E-02

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		He III	
		WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)
Ar VIII 3D 4P 337.6 Å C = 0.60E+21	200000.	0.547E-01	0.999E-03	0.345E-02	0.758E-03	0.674E-02	0.143E-02
	500000.	0.376E-01	0.125E-02	0.547E-02	0.140E-02	0.108E-01	0.280E-02
	1000000.	0.295E-01	0.124E-02	0.636E-02	0.193E-02	0.127E-01	0.390E-02
	1500000.	0.260E-01	0.116E-02	0.683E-02	0.214E-02	0.136E-01	0.433E-02
	2000000.	0.239E-01	0.116E-02	0.721E-02	0.233E-02	0.143E-01	0.470E-02
	3000000.	0.214E-01	0.111E-02	0.770E-02	0.258E-02	0.150E-01	0.523E-02
PERTURBER DENSITY = 1.E+20 cm ⁻³							
Ar VIII 3S 3P 714.0 Å C = 0.71E+23	200000.	0.930	-0.125E-01	0.149E-01	-0.841E-02	0.281E-01	-0.144E-01
	500000.	0.614	-0.148E-01	0.374E-01	-0.200E-01	0.733E-01	-0.382E-01
	1000000.	0.464	-0.143E-01	0.557E-01	-0.301E-01	0.110	-0.598E-01
	1500000.	0.400	-0.145E-01	0.656E-01	-0.368E-01	0.131	-0.732E-01
	2000000.	0.362	-0.143E-01	0.701E-01	-0.402E-01	0.140	-0.812E-01
	3000000.	0.317	-0.139E-01	0.780E-01	-0.447E-01	0.154	-0.904E-01
Ar VIII 3S 3P 700.4 Å C = 0.69E+23	200000.	0.899	-0.119E-01	0.144E-01	-0.794E-02	0.273E-01	-0.136E-01
	500000.	0.593	-0.140E-01	0.361E-01	-0.189E-01	0.709E-01	-0.362E-01
	1000000.	0.448	-0.136E-01	0.538E-01	-0.285E-01	0.107	-0.567E-01
	1500000.	0.386	-0.137E-01	0.633E-01	-0.349E-01	0.126	-0.695E-01
	2000000.	0.350	-0.136E-01	0.675E-01	-0.382E-01	0.135	-0.771E-01
	3000000.	0.307	-0.132E-01	0.750E-01	-0.425E-01	0.149	-0.860E-01
Ar VIII 3S 4P 159.0 Å C = 0.13E+22	200000.	0.119	0.812E-03	0.688E-02	0.866E-03		
	500000.	0.815E-01	0.137E-02	0.112E-01	0.191E-02		
	1000000.	0.638E-01	0.118E-02	0.131E-01	0.273E-02	*0.260E-01	*0.542E-02
	1500000.	0.562E-01	0.114E-02	0.140E-01	0.316E-02	*0.279E-01	*0.628E-02
	2000000.	0.516E-01	0.117E-02	0.148E-01	0.342E-02	*0.292E-01	*0.689E-02
	3000000.	0.462E-01	0.111E-02	0.158E-01	0.380E-02	*0.309E-01	*0.767E-02
Ar VIII 4S 4P 1887.0 Å C = 0.19E+24	200000.	21.0	-0.398	1.04	-0.492		
	500000.	14.7	-0.495	1.74	-0.905		
	1000000.	11.7	-0.503	2.08	-1.18	*4.16	*-2.33
	1500000.	10.3	-0.495	2.30	-1.34	*4.57	*-2.63
	2000000.	9.52	-0.494	2.48	-1.45	*4.87	*-2.90
	3000000.	8.52	-0.432	2.76	-1.60	*5.28	*-3.22
Ar VIII 3P 4S 229.4 Å C = 0.28E+22	200000.	0.161	0.892E-02	0.533E-02	0.919E-02	*0.104E-01	*0.151E-01
	500000.	0.112	0.117E-01	0.135E-01	0.165E-01	*0.270E-01	*0.305E-01
	1000000.	0.880E-01	0.114E-01	0.208E-01	0.211E-01	*0.415E-01	*0.418E-01
	1500000.	0.773E-01	0.112E-01	0.243E-01	0.238E-01	*0.486E-01	*0.467E-01
	2000000.	0.708E-01	0.112E-01	0.269E-01	0.256E-01	*0.538E-01	*0.517E-01
	3000000.	0.628E-01	0.101E-01	0.314E-01	0.281E-01	*0.614E-01	*0.572E-01
Ar VIII 3P 4S 230.9 Å C = 0.28E+22	200000.	0.164	0.901E-02	0.540E-02	0.929E-02	*0.106E-01	*0.153E-01
	500000.	0.114	0.118E-01	0.137E-01	0.167E-01	*0.273E-01	*0.308E-01
	1000000.	0.893E-01	0.115E-01	0.211E-01	0.214E-01	*0.420E-01	*0.423E-01
	1500000.	0.784E-01	0.113E-01	0.245E-01	0.241E-01	*0.492E-01	*0.473E-01
	2000000.	0.718E-01	0.113E-01	0.272E-01	0.259E-01	*0.545E-01	*0.523E-01
	3000000.	0.637E-01	0.102E-01	0.318E-01	0.285E-01	*0.621E-01	*0.579E-01
Ar VIII 3P 3D 519.2 Å C = 0.38E+23	200000.	0.573	-0.624E-02	0.146E-01	-0.311E-02	0.276E-01	-0.533E-02
	500000.	0.379	-0.585E-02	0.313E-01	-0.769E-02	0.616E-01	-0.147E-01
	1000000.	0.287	-0.793E-02	0.438E-01	-0.119E-01	0.869E-01	-0.238E-01
	1500000.	0.248	-0.679E-02	0.482E-01	-0.146E-01	0.960E-01	-0.291E-01
	2000000.	0.225	-0.702E-02	0.513E-01	-0.164E-01	0.102	-0.332E-01
	3000000.	0.198	-0.678E-02	0.551E-01	-0.183E-01	0.110	-0.368E-01
Ar VIII 3P 3D 526.6 Å C = 0.40E+23	200000.	0.591	-0.648E-02	0.151E-01	-0.328E-02	0.286E-01	-0.563E-02
	500000.	0.391	-0.615E-02	0.324E-01	-0.810E-02	0.637E-01	-0.155E-01
	1000000.	0.296	-0.825E-02	0.453E-01	-0.125E-01	0.898E-01	-0.250E-01
	1500000.	0.255	-0.709E-02	0.498E-01	-0.154E-01	0.992E-01	-0.306E-01
	2000000.	0.232	-0.732E-02	0.530E-01	-0.172E-01	0.106	-0.348E-01
	3000000.	0.204	-0.707E-02	0.569E-01	-0.192E-01	0.113	-0.386E-01
Ar VIII 3D 4P 337.6 Å C = 0.60E+22	200000.	0.547	0.912E-02	0.339E-01	0.672E-02		
	500000.	0.376	0.120E-01	0.545E-01	0.135E-01		
	1000000.	0.295	0.119E-01	0.636E-01	0.191E-01	*0.126	*0.379E-01
	1500000.	0.260	0.113E-01	0.683E-01	0.214E-01	*0.136	*0.424E-01
	2000000.	0.239	0.114E-01	0.721E-01	0.232E-01	*0.143	*0.468E-01
	3000000.	0.214	0.110E-01	0.770E-01	0.257E-01	*0.150	*0.521E-01

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)
PERTURBER DENSITY = 1.E+20 cm ⁻³							
Ar VIII 3S 3P	200000.	0.930	-0.125E-01	0.149E-01	-0.841E-02	0.281E-01	-0.144E-01
714.0 Å	500000.	0.614	-0.148E-01	0.374E-01	-0.200E-01	0.733E-01	-0.382E-01
C = 0.71E+23	1000000.	0.464	-0.143E-01	0.557E-01	-0.301E-01	0.110	-0.598E-01
	1500000.	0.400	-0.145E-01	0.656E-01	-0.368E-01	0.131	-0.732E-01
	2000000.	0.362	-0.143E-01	0.701E-01	-0.402E-01	0.140	-0.812E-01
	3000000.	0.317	-0.139E-01	0.780E-01	-0.447E-01	0.154	-0.904E-01
Ar VIII 3S 3P	200000.	0.899	-0.119E-01	0.144E-01	-0.794E-02	0.273E-01	-0.136E-01
700.4 Å	500000.	0.593	-0.140E-01	0.361E-01	-0.189E-01	0.709E-01	-0.362E-01
C = 0.69E+23	1000000.	0.448	-0.136E-01	0.538E-01	-0.285E-01	0.107	-0.567E-01
	1500000.	0.386	-0.137E-01	0.633E-01	-0.349E-01	0.126	-0.695E-01
	2000000.	0.350	-0.136E-01	0.675E-01	-0.382E-01	0.135	-0.771E-01
	3000000.	0.307	-0.132E-01	0.750E-01	-0.425E-01	0.149	-0.860E-01
Ar VIII 3S 4P	200000.	0.119	0.812E-03	0.688E-02	0.866E-03		
159.0 Å	500000.	0.815E-01	0.137E-02	0.112E-01	0.191E-02		
C = 0.13E+22	1000000.	0.638E-01	0.118E-02	0.131E-01	0.273E-02	*0.260E-01	*0.542E-02
	1500000.	0.562E-01	0.114E-02	0.140E-01	0.316E-02	*0.279E-01	*0.628E-02
	2000000.	0.516E-01	0.117E-02	0.148E-01	0.342E-02	*0.292E-01	*0.689E-02
	3000000.	0.462E-01	0.111E-02	0.158E-01	0.380E-02	*0.309E-01	*0.767E-02
Ar VIII 4S 4P	200000.	21.0	-0.398	1.04	-0.492		
1887.0 Å	500000.	14.7	-0.495	1.74	-0.905		
C = 0.19E+24	1000000.	11.7	-0.503	2.08	-1.18	*4.16	*-2.33
	1500000.	10.3	-0.495	2.30	-1.34	*4.57	*-2.63
	2000000.	9.52	-0.494	2.48	-1.45	*4.87	*-2.90
	3000000.	8.52	-0.432	2.76	-1.60	*5.28	*-3.22
Ar VIII 3P 4S	200000.	0.161	0.892E-02	0.533E-02	0.919E-02	*0.104E-01	*0.151E-01
229.4 Å	500000.	0.112	0.117E-01	0.135E-01	0.165E-01	*0.270E-01	*0.305E-01
C = 0.28E+22	1000000.	0.880E-01	0.114E-01	0.208E-01	0.211E-01	*0.415E-01	*0.418E-01
	1500000.	0.773E-01	0.112E-01	0.243E-01	0.238E-01	*0.486E-01	*0.467E-01
	2000000.	0.708E-01	0.112E-01	0.269E-01	0.256E-01	*0.538E-01	*0.517E-01
	3000000.	0.628E-01	0.101E-01	0.314E-01	0.281E-01	*0.614E-01	*0.572E-01
Ar VIII 3P 4S	200000.	0.164	0.901E-02	0.540E-02	0.929E-02	*0.106E-01	*0.153E-01
230.9 Å	500000.	0.114	0.118E-01	0.137E-01	0.167E-01	*0.273E-01	*0.308E-01
C = 0.28E+22	1000000.	0.893E-01	0.115E-01	0.211E-01	0.214E-01	*0.420E-01	*0.423E-01
	1500000.	0.784E-01	0.113E-01	0.245E-01	0.241E-01	*0.492E-01	*0.473E-01
	2000000.	0.718E-01	0.113E-01	0.272E-01	0.259E-01	*0.545E-01	*0.523E-01
	3000000.	0.637E-01	0.102E-01	0.318E-01	0.285E-01	*0.621E-01	*0.579E-01
Ar VIII 3P 3D	200000.	0.573	-0.624E-02	0.146E-01	-0.311E-02	0.276E-01	-0.533E-02
519.2 Å	500000.	0.379	-0.585E-02	0.313E-01	-0.769E-02	0.616E-01	-0.147E-01
C = 0.38E+23	1000000.	0.287	-0.793E-02	0.438E-01	-0.119E-01	0.869E-01	-0.238E-01
	1500000.	0.248	-0.679E-02	0.482E-01	-0.146E-01	0.960E-01	-0.291E-01
	2000000.	0.225	-0.702E-02	0.513E-01	-0.164E-01	0.102	-0.332E-01
	3000000.	0.198	-0.678E-02	0.551E-01	-0.183E-01	0.110	-0.368E-01
Ar VIII 3P 3D	200000.	0.591	-0.648E-02	0.151E-01	-0.328E-02	0.286E-01	-0.563E-02
526.6 Å	500000.	0.391	-0.615E-02	0.324E-01	-0.810E-02	0.637E-01	-0.155E-01
C = 0.40E+23	1000000.	0.296	-0.825E-02	0.453E-01	-0.125E-01	0.898E-01	-0.250E-01
	1500000.	0.255	-0.709E-02	0.498E-01	-0.154E-01	0.992E-01	-0.306E-01
	2000000.	0.232	-0.732E-02	0.530E-01	-0.172E-01	0.106	-0.348E-01
	3000000.	0.204	-0.707E-02	0.569E-01	-0.192E-01	0.113	-0.386E-01
Ar VIII 3D 4P	200000.	0.547	0.912E-02	0.339E-01	0.672E-02		
337.6 Å	500000.	0.376	0.120E-01	0.545E-01	0.135E-01		
C = 0.60E+22	1000000.	0.295	0.119E-01	0.636E-01	0.191E-01	*0.126	*0.379E-01
	1500000.	0.260	0.113E-01	0.683E-01	0.214E-01	*0.136	*0.424E-01
	2000000.	0.239	0.114E-01	0.721E-01	0.232E-01	*0.143	*0.468E-01
	3000000.	0.214	0.110E-01	0.770E-01	0.257E-01	*0.150	*0.521E-01
PERTURBER DENSITY = 1.E+21 cm ⁻³							
Ar VIII 3S 3P	200000.	9.30	-0.876E-01	0.134	-0.588E-01	*0.208	-0.720E-01
714.0 Å	500000.	6.14	-0.127	0.369	-0.180	*0.707	-0.312
C = 0.71E+24	1000000.	4.64	-0.128	0.555	-0.286	*1.09	-0.532
	1500000.	4.00	-0.132	0.656	-0.360	*1.30	-0.686
	2000000.	3.62	-0.131	0.700	-0.395	*1.39	-0.765
	3000000.	3.17	-0.131	0.780	-0.446	*1.54	-0.881

STARK BROADENING PARAMETER TABLES FOR Ar VIII

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		He III	
		WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)
Ar VIII 3S 3P 700.4 Å C = 0.69E+24	200000.	8.99	-0.838E-01	0.130	-0.556E-01	*0.202	-0.680E-01
	500000.	5.93	-0.120	0.357	-0.170	*0.684	-0.295
	1000000.	4.48	-0.122	0.536	-0.271	*1.05	-0.504
	1500000.	3.86	-0.125	0.633	-0.341	*1.26	-0.651
	2000000.	3.50	-0.124	0.675	-0.375	*1.34	-0.726
	3000000.	3.07	-0.124	0.749	-0.424	*1.48	-0.838
Ar VIII 3S 4P 159.0 Å C = 0.13E+23	200000.	*1.18	*0.374E-02				
	500000.	0.815	0.112E-01				
	1000000.	0.638	0.102E-01				
	1500000.	0.561	0.100E-01	*0.140	*0.307E-01		
	2000000.	0.516	0.104E-01	*0.147	*0.334E-01		
	3000000.	0.462	0.102E-01	*0.158	*0.379E-01		
Ar VIII 3P 4S 229.4 Å C = 0.28E+23	200000.	1.61	0.340E-01	*0.511E-01	*0.570E-01		
	500000.	1.12	0.851E-01	*0.135	*0.137		
	1000000.	0.879	0.913E-01	*0.209	*0.192		
	1500000.	0.772	0.935E-01	*0.243	*0.227		
	2000000.	0.707	0.946E-01	*0.269	*0.246		
	3000000.	0.627	0.895E-01	*0.314	*0.280		
Ar VIII 3P 4S 230.9 Å C = 0.28E+23	200000.	1.63	0.344E-01	*0.518E-01	*0.577E-01		
	500000.	1.14	0.860E-01	*0.137	*0.138		
	1000000.	0.892	0.923E-01	*0.212	*0.195		
	1500000.	0.783	0.945E-01	*0.246	*0.230		
	2000000.	0.717	0.957E-01	*0.272	*0.249		
	3000000.	0.636	0.904E-01	*0.318	*0.283		
Ar VIII 3P 3D 519.2 Å C = 0.38E+24	200000.	5.73	-0.479E-01	0.130	-0.218E-01		
	500000.	3.79	-0.509E-01	0.308	-0.694E-01		
	1000000.	2.87	-0.736E-01	0.437	-0.114		
	1500000.	2.48	-0.633E-01	0.481	-0.143		
	2000000.	2.25	-0.658E-01	0.512	-0.162		
	3000000.	1.98	-0.645E-01	0.551	-0.182	*1.10	-0.359
Ar VIII 3P 3D 526.6 Å C = 0.40E+24	200000.	5.91	-0.495E-01	0.135	-0.230E-01		
	500000.	3.91	-0.534E-01	0.318	-0.731E-01		
	1000000.	2.96	-0.764E-01	0.451	-0.120		
	1500000.	2.55	-0.660E-01	0.497	-0.151		
	2000000.	2.32	-0.686E-01	0.529	-0.170		
	3000000.	2.04	-0.672E-01	0.569	-0.191	*1.13	-0.378
Ar VIII 3D 4P 337.6 Å C = 0.60E+23	200000.	*5.46	*0.571E-01				
	500000.	3.76	0.100				
	1000000.	2.95	0.106				
	1500000.	2.60	0.102	*0.681	*0.207		
	2000000.	2.39	0.104	*0.719	*0.226		
	3000000.	2.14	0.102	*0.770	*0.257		
PERTURBER DENSITY = 1.E+22 cm ⁻³							
Ar VIII 3S 4P 159.0 Å C = 0.13E+24	200000.						
	500000.	*7.84	*0.179E-01				
	1000000.	*6.20	*0.405E-01				
	1500000.	*5.47	*0.490E-01				
	2000000.	5.04	0.614E-01				
	3000000.	4.52	0.655E-01				
Ar VIII 3P 4S 229.4 Å C = 0.28E+24	200000.						
	500000.	*10.4	-0.181				
	1000000.	*8.30	*0.236				
	1500000.	7.33	0.393				
	2000000.	6.73	0.474				
	3000000.	6.00	0.492				
Ar VIII 3P 4S 230.9 Å C = 0.28E+24	200000.						
	500000.	*10.5	-0.184				
	1000000.	*8.42	*0.239				
	1500000.	*7.44	*0.398				
	2000000.	6.83	0.479				
	3000000.	6.09	0.497				

than one and the impact approximation is valid (Sahal–Bréchet, 1969ab). Values for $NV > 0.5$ are not given and values for $0.1 < NV \leq 0.5$ are denoted by an asterisk. Stark broadening parameters for densities lower than tabulated, are linear with perturber density. When the impact approximation is not valid, the ion broadening contribution may be estimated by using quasistatic approach (Sahal–Bréchet 1991 or Griem 1974). In the region between where neither of these two approximations is valid, a unified type theory should be used. For example in Barnard *et al.* (1974), a simple analytical formulas for such a case are given. The accuracy of the results obtained decreases when broadening by ion interactions becomes important.

The discussion of obtained results will be published in Dimitrijević and Sahal–Bréchet (1999).

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ТАБЕЛЕ ПАРАМЕТАРА ШТАРКОВОГ ШИРЕЊА СПЕКТРАЛНИХ ЛИНИЈА Ar VIII

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Претходно саопштење

Користећи семикласичан прилаз, израчунате су ширине и помераји спектралних линија, проузроковани сударима са електронима, протонима и двоструко наелектрисаним јонима

хелијума, за 9 прелаза Ar VIII. Резултати су дати у функцији температуре и концентрације пертурбера.