

STARK BROADENING PARAMETER TABLES FOR O VII AND Mg XI

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SUMMARY: By using the semiclassical-perturbation formalism, we have calculated electron-, proton-, and He III-impact line widths and shifts for 14 O VII multiplets and 18 Mg XI multiplets, of importance for research, diagnostic and modeling of various astrophysical, laser produced, fusion and laboratory plasmas. For O VII calculations were performed for temperature range from 100,000 K to 2,000,000 K. and perturber densities 10^{17} cm^{-3} - 10^{23} cm^{-3} . For Mg XI calculations were performed for temperature range from 500,000 K to 5,000,000 K. and perturber densities 10^{18} cm^{-3} - 10^{24} cm^{-3} .

1. INTRODUCTION

Due to the high cosmical abundance of magnesium and particularly oxygen, Stark broadening parameters of spectral lines for their various ionization stages are of interest for a number of astrophysical problems (see, e.g., Dimitrijević and Sahal–Bréchet 1998a).

As a continuation of our project (Dimitrijević 1996) to provide an as large as possible set of reliable Stark broadening data needed for the consideration and modeling of astrophysical and laboratory plasmas as well as for investigations of laser produced and fusion plasmas and plasmas in 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 He III-impact line widths and shifts for 14 O VII and 18 Mg XI multiplets. The theoretical formalism will not be discussed here, since it has been reviewed several times, as, e.g., briefly in Dimitrijević and Sahal–Bréchet, 1995.

2. RESULTS AND DISCUSSION

All details of the calculation procedure as well as the result analysis, will be published in Dimitrijević and Sahal–Bréchet 1998b. Here, only tables of Stark broadening parameters will be shown. Atomic energy levels needed for calculations have been taken from Isler *et al.* (1993) for O VII, and from Martin and Zalubas (1980) for Mg XI. Our results for 14 O VII multiplets are shown in Table 1, for perturber densities 10^{17} – 10^{23} cm^{-3} , and temperatures $T = 100,000$ – $2,000,000$ K. The obtained results for 18

Table 1. This table shows electron-, proton-, and He III-impact broadening parameters for O VII for perturber densities of $10^{17} - 10^{23} \text{ cm}^{-3}$ and temperatures from 100,000 up to 2,000,000 K. Stark broadening parameters for densities lower than tabulated, are linear with perturber density. Transitions and averaged wavelengths for the multiplet (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+17cm-3							
PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS WIDTH(Å) SHIFT(Å)		PROTONS WIDTH(Å) SHIFT(Å)		IONIZED HELIUM WIDTH(Å) SHIFT(Å)	
O VII 3S-3P	100000.	0.528	-0.403E-01	0.447E-01	-0.707E-01	0.876E-01	-0.143
8555.8 Å	200000.	0.405	-0.398E-01	0.834E-01	-0.979E-01	0.156	-0.200
C = 0.18E+21	500000.	0.294	-0.360E-01	0.146	-0.125	0.251	-0.256
	800000.	0.252	-0.327E-01	0.180	-0.141	0.299	-0.287
	1000000.	0.234	-0.306E-01	0.203	-0.149	0.321	-0.302
	2000000.	0.186	-0.241E-01	0.273	-0.168	0.416	-0.346
PERTURBER DENSITY = 1.E+18cm-3							
O VII 2S-2P	100000.	0.804E-01	-0.222E-02	0.252E-03	-0.162E-02	0.467E-03	-0.311E-02
2450.7 Å	200000.	0.584E-01	-0.228E-02	0.105E-02	-0.311E-02	0.199E-02	-0.620E-02
C = 0.25E+22	500000.	0.393E-01	-0.229E-02	0.383E-02	-0.559E-02	0.757E-02	-0.114E-01
	800000.	0.325E-01	-0.225E-02	0.564E-02	-0.702E-02	0.108E-02	-0.143E-01
	1000000.	0.298E-01	-0.218E-02	0.695E-02	-0.765E-02	0.132E-01	-0.156E-01
	2000000.	0.231E-01	-0.194E-02	0.105E-01	-0.919E-02	0.185E-01	-0.188E-01
O VII 2S-3P	100000.	0.848E-03	-0.447E-04	0.714E-04	-0.117E-03	0.137E-03	-0.225E-03
128.3 Å	200000.	0.643E-03	-0.429E-04	0.139E-03	-0.167E-03	0.255E-03	-0.336E-03
C = 0.42E+18	500000.	0.457E-03	-0.392E-04	0.261E-03	-0.219E-03	0.441E-03	-0.447E-03
	800000.	0.387E-03	-0.349E-04	0.331E-03	-0.247E-03	0.530E-03	-0.504E-03
	1000000.	0.359E-03	-0.323E-04	0.365E-03	-0.261E-03	0.571E-03	-0.530E-03
	2000000.	0.285E-03	-0.257E-04	0.502E-03	-0.302E-03	0.713E-03	-0.618E-03
O VII 3S-3P	100000.	5.28	-0.376	0.447	-0.682	0.876	-1.31
8555.8 Å	200000.	4.05	-0.376	0.835	-0.966	1.56	-1.95
C = 0.18E+22	500000.	2.94	-0.352	1.46	-1.24	2.51	-2.55
	800000.	2.52	-0.326	1.80	-1.41	2.99	-2.87
	1000000.	2.34	-0.304	2.03	-1.49	3.21	-3.02
	2000000.	1.86	-0.241	2.73	-1.68	4.16	-3.46
O VII 2P-3S	100000.	0.643E-03	0.528E-04	0.268E-04	0.683E-04	0.532E-04	0.131E-03
137.5 Å	200000.	0.492E-03	0.549E-04	0.641E-04	0.102E-03	0.128E-03	0.204E-03
C = 0.22E+19	500000.	0.358E-03	0.530E-04	0.132E-03	0.142E-03	0.262E-03	0.291E-03
	800000.	0.307E-03	0.512E-04	0.167E-03	0.161E-03	0.319E-03	0.331E-03
	1000000.	0.286E-03	0.484E-04	0.183E-03	0.170E-03	0.345E-03	0.351E-03
	2000000.	0.227E-03	0.389E-04	0.249E-03	0.201E-03	0.435E-03	0.407E-03
O VII 2S-2P	100000.	0.327E-01	-0.579E-03	0.733E-04	-0.441E-03	0.135E-03	-0.847E-03
1630.4 Å	200000.	0.236E-01	-0.716E-03	0.282E-03	-0.867E-03	0.533E-03	-0.173E-02
C = 0.16E+22	500000.	0.157E-01	-0.827E-03	0.111E-02	-0.169E-02	0.217E-02	-0.343E-02
	800000.	0.129E-01	-0.808E-03	0.165E-02	-0.212E-02	0.321E-02	-0.430E-02
	1000000.	0.118E-01	-0.791E-03	0.200E-02	-0.234E-02	0.385E-02	-0.477E-02
	2000000.	0.909E-02	-0.726E-03	0.315E-02	-0.288E-02	0.584E-02	-0.589E-02
O VII 2S-3P	100000.	0.670E-03	0.580E-05	0.124E-04	0.183E-04	0.235E-04	0.352E-04
120.3 Å	200000.	0.501E-03	0.582E-05	0.280E-04	0.308E-04	0.537E-04	0.619E-04
C = 0.13E+19	500000.	0.352E-03	0.521E-05	0.564E-04	0.475E-04	0.103E-03	0.967E-04
	800000.	0.297E-03	0.466E-05	0.719E-04	0.539E-04	0.126E-03	0.110E-03
	1000000.	0.275E-03	0.435E-05	0.801E-04	0.570E-04	0.135E-03	0.117E-03
	2000000.	0.219E-03	0.303E-05	0.111E-03	0.678E-04	0.169E-03	0.139E-03
O VII 3S-3P	100000.	2.31	-0.538E-01	0.315E-01	-0.475E-01	0.595E-01	-0.915E-01
5988.8 Å	200000.	1.75	-0.673E-01	0.710E-01	-0.794E-01	0.136	-0.160
C = 0.31E+22	500000.	1.26	-0.631E-01	0.147	-0.122	0.263	-0.249
	800000.	1.07	-0.635E-01	0.191	-0.138	0.319	-0.282
	1000000.	0.998	-0.615E-01	0.216	-0.146	0.347	-0.299
	2000000.	0.799	-0.504E-01	0.316	-0.176	0.438	-0.358

PERTURBERS ARE: TRANSITION		T(K)	ELECTRONS WIDTH(Å) SHIFT(Å)		PROTONS WIDTH(Å) SHIFT(Å)		IONIZED HELIUM WIDTH(Å) SHIFT(Å)	
O VII 2P-3S 132.8 Å C = 0.29E+19	100000.	0.542E-03	0.374E-04	0.157E-04	0.448E-04	0.309E-04	0.864E-04	
	200000.	0.410E-03	0.449E-04	0.425E-04	0.688E-04	0.853E-04	0.139E-03	
	500000.	0.295E-03	0.429E-04	0.905E-04	0.996E-04	0.180E-03	0.204E-03	
	800000.	0.252E-03	0.423E-04	0.113E-03	0.114E-03	0.221E-03	0.232E-03	
	1000000.	0.234E-03	0.408E-04	0.124E-03	0.120E-03	0.240E-03	0.246E-03	
	2000000.	0.187E-03	0.333E-04	0.168E-03	0.142E-03	0.303E-03	0.291E-03	
O VII 2P-4S 97.1 Å C = 0.64E+18	100000.	0.833E-03	0.101E-03	0.872E-04	0.134E-03	0.176E-03	0.255E-03	
	200000.	0.655E-03	0.997E-04	0.162E-03	0.183E-03	0.327E-03	0.369E-03	
	500000.	0.489E-03	0.960E-04	0.244E-03	0.235E-03	0.472E-03	0.481E-03	
	800000.	0.423E-03	0.865E-04	0.292E-03	0.266E-03	0.554E-03	0.539E-03	
	1000000.	0.394E-03	0.809E-04	0.314E-03	0.278E-03	0.603E-03	0.563E-03	
	2000000.	0.314E-03	0.646E-04	0.403E-03	0.319E-03	0.707E-03	0.646E-03	
O VII 2P-5S 86.5 Å C = 0.25E+18	100000.	0.169E-02	0.231E-03	0.333E-03	0.360E-03			
	200000.	0.135E-02	0.229E-03	0.452E-03	0.452E-03			
	500000.	0.102E-02	0.208E-03	0.650E-03	0.572E-03	*0.126E-02	*0.119E-02	
	800000.	0.880E-03	0.184E-03	0.767E-03	0.639E-03	*0.141E-02	*0.130E-02	
	1000000.	0.818E-03	0.170E-03	0.796E-03	0.655E-03	*0.150E-02	*0.134E-02	
	2000000.	0.648E-03	0.137E-03	0.991E-03	0.754E-03	*0.172E-02	*0.154E-02	
O VII 3P-4S 384.7 Å C = 0.10E+20	100000.	0.180E-01	0.149E-02	0.132E-02	0.200E-02	0.266E-02	0.380E-02	
	200000.	0.140E-01	0.146E-02	0.244E-02	0.274E-02	0.489E-02	0.554E-02	
	500000.	0.104E-01	0.141E-02	0.366E-02	0.354E-02	0.713E-02	0.721E-02	
	800000.	0.894E-02	0.126E-02	0.444E-02	0.397E-02	0.851E-02	0.808E-02	
	1000000.	0.833E-02	0.118E-02	0.492E-02	0.412E-02	0.928E-02	0.853E-02	
	2000000.	0.666E-02	0.942E-03	0.630E-02	0.475E-02	0.109E-01	0.964E-02	
O VII 3P-5S 258.9 Å C = 0.22E+19	100000.	0.174E-01	0.203E-02	0.295E-02	0.319E-02			
	200000.	0.138E-01	0.200E-02	0.403E-02	0.402E-02	*0.812E-02	*0.802E-02	
	500000.	0.104E-01	0.182E-02	0.582E-02	0.509E-02	*0.112E-01	*0.106E-01	
	800000.	0.892E-02	0.160E-02	0.683E-02	0.569E-02	*0.126E-01	*0.115E-01	
	1000000.	0.830E-02	0.149E-02	0.722E-02	0.580E-02	*0.133E-01	*0.118E-01	
	2000000.	0.659E-02	0.120E-02	0.896E-02	0.669E-02	*0.153E-01	*0.135E-01	
PERTURBER DENSITY = 1.E+19cm-3								
O VII 1S-2P 21.6 Å C = 0.19E+19	100000.	0.446E-04	-0.138E-05	0.114E-06	-0.264E-06	0.207E-06	-0.472E-06	
	200000.	0.318E-04	-0.401E-06	0.336E-06	-0.567E-06	0.625E-06	-0.108E-05	
	500000.	0.206E-04	-0.174E-06	0.112E-05	-0.126E-05	0.213E-05	-0.252E-05	
	800000.	0.167E-04	-0.183E-06	0.178E-05	-0.170E-05	0.339E-05	-0.345E-05	
	1000000.	0.152E-04	-0.163E-06	0.206E-05	-0.186E-05	0.384E-05	-0.379E-05	
	2000000.	0.114E-04	-0.593E-07	0.339E-05	-0.251E-05	0.600E-05	-0.514E-05	
O VII 1S-3P 18.6 Å C = 0.88E+17	100000.	0.165E-03	-0.605E-05	0.147E-04	-0.216E-04	*0.280E-04	-0.373E-04	
	200000.	0.125E-03	-0.589E-05	0.289E-04	-0.328E-04	*0.523E-04	-0.608E-04	
	500000.	0.886E-04	-0.577E-05	0.543E-04	-0.454E-04	*0.919E-04	-0.896E-04	
	800000.	0.750E-04	-0.548E-05	0.685E-04	-0.511E-04	*0.110E-03	-0.105E-03	
	1000000.	0.694E-04	-0.503E-05	0.760E-04	-0.540E-04	*0.119E-03	-0.110E-03	
	2000000.	0.549E-04	-0.423E-05	0.104E-03	-0.630E-04	*0.149E-03	-0.128E-03	
O VII 2S-2P 2450.7 Å C = 0.25E+23	100000.	0.804	-0.206E-01	0.250E-02	-0.149E-01	0.463E-02	-0.265E-01	
	200000.	0.584	-0.219E-01	0.105E-01	-0.302E-01	0.199E-01	-0.577E-01	
	500000.	0.393	-0.223E-01	0.383E-01	-0.558E-01	0.757E-01	-0.112	
	800000.	0.325	-0.222E-01	0.564E-01	-0.701E-01	0.108	-0.142	
	1000000.	0.298	-0.216E-01	0.695E-01	-0.764E-01	0.132	-0.156	
	2000000.	0.231	-0.193E-01	0.105	-0.919E-01	0.185	-0.187	
O VII 2S-3P 128.3 Å C = 0.42E+19	100000.	0.843E-02	-0.295E-03	0.713E-03	-0.104E-02	*0.136E-02	-0.180E-02	
	200000.	0.640E-02	-0.325E-03	0.139E-02	-0.158E-02	*0.254E-02	-0.294E-02	
	500000.	0.455E-02	-0.329E-03	0.261E-02	-0.218E-02	*0.442E-02	-0.431E-02	
	800000.	0.386E-02	-0.314E-03	0.331E-02	-0.246E-02	*0.530E-02	-0.502E-02	
	1000000.	0.357E-02	-0.292E-03	0.365E-02	-0.261E-02	*0.570E-02	-0.528E-02	
	2000000.	0.284E-02	-0.252E-03	0.502E-02	-0.302E-02	*0.714E-02	-0.615E-02	
O VII 2P-3S 137.5 Å C = 0.22E+20	100000.	0.642E-02	0.459E-03	0.269E-03	0.615E-03	0.530E-03	0.108E-02	
	200000.	0.492E-02	0.500E-03	0.641E-03	0.971E-03	0.128E-02	0.182E-02	
	500000.	0.359E-02	0.501E-03	0.132E-02	0.142E-02	0.262E-02	0.283E-02	
	800000.	0.307E-02	0.496E-03	0.167E-02	0.160E-02	0.319E-02	0.330E-02	
	1000000.	0.286E-02	0.469E-03	0.183E-02	0.170E-02	0.345E-02	0.350E-02	
	2000000.	0.227E-02	0.386E-03	0.249E-02	0.201E-02	0.435E-02	0.406E-02	

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		IONIZED HELIUM	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
O VII 2S-2P 1630.4 Å C = 0.16E+23	100000. 200000. 500000. 800000. 1000000. 2000000.	0.327 0.236 0.157 0.129 0.118 0.909E-01	-0.573E-02 -0.688E-02 -0.812E-02 -0.800E-02 -0.785E-02 -0.724E-02	0.728E-03 0.281E-02 0.111E-01 0.165E-01 0.200E-01 0.315E-01	-0.404E-02 -0.842E-02 -0.169E-01 -0.212E-01 -0.234E-01 -0.288E-01	0.134E-02 0.532E-02 0.217E-01 0.321E-01 0.385E-01 0.584E-01	-0.723E-02 -0.161E-01 -0.338E-01 -0.429E-01 -0.476E-01 -0.589E-01
O VII 2S-3P 120.3 Å C = 0.13E+20	100000. 200000. 500000. 800000. 1000000. 2000000.	0.670E-02 0.501E-02 0.352E-02 0.297E-02 0.275E-02 0.219E-02	0.433E-04 0.469E-04 0.449E-04 0.426E-04 0.402E-04 0.297E-04	0.124E-03 0.279E-03 0.564E-03 0.719E-03 0.801E-03 0.111E-02	0.167E-03 0.297E-03 0.474E-03 0.538E-03 0.569E-03 0.678E-03	0.231E-03 0.536E-03 0.103E-02 0.126E-02 0.135E-02 0.169E-02	0.297E-03 0.568E-03 0.947E-03 0.110E-02 0.116E-02 0.139E-02
O VII 3S-3P 5988.8 Å C = 0.31E+23	100000. 200000. 500000. 800000. 1000000. 2000000.	23.1 17.5 12.6 10.7 9.98 7.99	-0.494 -0.637 -0.614 -0.625 -0.606 -0.502	0.313 0.710 1.47 1.91 2.16 3.16	-0.433 -0.765 -1.22 -1.38 -1.46 -1.76	0.585 1.36 2.63 3.19 3.47 4.38	-0.771 -1.46 -2.44 -2.81 -2.99 -3.57
O VII 2P-3S 132.8 Å C = 0.29E+20	100000. 200000. 500000. 800000. 1000000. 2000000.	0.542E-02 0.410E-02 0.295E-02 0.252E-02 0.234E-02 0.187E-02	0.334E-03 0.416E-03 0.411E-03 0.412E-03 0.399E-03 0.331E-03	0.157E-03 0.425E-03 0.905E-03 0.113E-02 0.124E-02 0.168E-02	0.405E-03 0.659E-03 0.994E-03 0.113E-02 0.120E-02 0.142E-02	0.308E-03 0.854E-03 0.180E-02 0.221E-02 0.240E-02 0.303E-02	0.718E-03 0.125E-02 0.199E-02 0.231E-02 0.245E-02 0.291E-02
O VII 2P-4S 97.1 Å C = 0.64E+19	100000. 200000. 500000. 800000. 1000000. 2000000.	0.833E-02 0.654E-02 0.489E-02 0.423E-02 0.394E-02 0.314E-02	0.811E-03 0.856E-03 0.876E-03 0.819E-03 0.767E-03 0.638E-03	*0.873E-03 0.162E-02 0.244E-02 0.292E-02 0.314E-02 0.403E-02	*0.116E-02 0.170E-02 0.234E-02 0.264E-02 0.277E-02 0.319E-02		
O VII 2P-5S 86.5 Å C = 0.25E+19	100000. 200000. 500000. 800000. 1000000. 2000000.	0.167E-01 0.134E-01 0.101E-01 0.874E-02 0.813E-02 0.644E-02	0.145E-02 0.169E-02 0.172E-02 0.164E-02 0.153E-02 0.134E-02				
O VII 3P-4S 384.7 Å C = 0.10E+21	100000. 200000. 500000. 800000. 1000000. 2000000.	0.180 0.140 0.104 0.894E-01 0.833E-01 0.666E-01	0.119E-01 0.126E-01 0.128E-01 0.120E-01 0.112E-01 0.931E-02	0.132E-01 0.245E-01 0.366E-01 0.444E-01 0.492E-01 0.630E-01	0.173E-01 0.255E-01 0.352E-01 0.395E-01 0.410E-01 0.475E-01		*0.109 *0.960E-01
O VII 3P-5S 258.9 Å C = 0.22E+20	100000. 200000. 500000. 800000. 1000000. 2000000.	0.172 0.137 0.103 0.887E-01 0.825E-01 0.655E-01	0.126E-01 0.147E-01 0.150E-01 0.143E-01 0.133E-01 0.117E-01				
PERTURBER DENSITY = 1.E+20cm-3							
O VII 1S-2P 21.6 Å C = 0.19E+20	100000. 200000. 500000. 800000. 1000000. 2000000.	0.446E-03 0.318E-03 0.206E-03 0.167E-03 0.152E-03 0.114E-03	-0.147E-04 -0.436E-05 -0.142E-05 -0.150E-05 -0.133E-05 -0.477E-06	0.109E-05 0.334E-05 0.112E-04 0.178E-04 0.206E-04 0.339E-04	-0.205E-05 -0.516E-05 -0.122E-04 -0.168E-04 -0.185E-04 -0.251E-04	0.172E-05 0.612E-05 0.212E-04 0.338E-04 0.384E-04 0.600E-04	-0.278E-05 -0.907E-05 -0.237E-04 -0.332E-04 -0.372E-04 -0.513E-04
O VII 1S-3P 18.6 Å C = 0.88E+18	100000. 200000. 500000. 800000. 1000000. 2000000.	0.154E-02 0.118E-02 0.847E-03 0.720E-03 0.667E-03 0.530E-03	0.467E-05 -0.130E-04 -0.260E-04 -0.253E-04 -0.241E-04 -0.294E-04	*0.145E-03 *0.288E-03 *0.540E-03 *0.684E-03 *0.763E-03 *0.104E-02	-0.146E-03 -0.267E-03 -0.409E-03 -0.490E-03 -0.520E-03 -0.626E-03		

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		IONIZED HELIUM	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
O VII 2S-2P 2450.7 Å C = 0.25E+24	100000.	8.04	-0.159	0.244E-01	-0.115	0.415E-01	-0.155
	200000.	5.84	-0.189	0.105	-0.272	0.198	-0.476
	500000.	3.93	-0.202	0.382	-0.536	0.756	-1.04
	800000.	3.25	-0.203	0.564	-0.691	1.08	-1.36
	1000000.	2.98	-0.200	0.695	-0.755	1.32	-1.53
	2000000.	2.31	-0.187	1.05	-0.917	1.85	-1.87
O VII 2S-3P 128.3 Å C = 0.42E+20	100000.	0.794E-01	0.298E-03	*0.701E-02	-0.705E-02		
	200000.	0.609E-01	-0.983E-03	*0.139E-01	-0.129E-01		
	500000.	0.437E-01	-0.174E-02	*0.260E-01	-0.197E-01		
	800000.	0.371E-01	-0.170E-02	*0.331E-01	-0.236E-01		
	1000000.	0.344E-01	-0.165E-02	*0.366E-01	-0.251E-01		
	2000000.	0.275E-01	-0.189E-02	*0.502E-01	-0.300E-01		
O VII 2P-3S 137.5 Å C = 0.22E+21	100000.	0.638E-01	0.192E-02	*0.267E-02	*0.443E-02		
	200000.	0.490E-01	0.327E-02	*0.641E-02	*0.822E-02		
	500000.	0.357E-01	0.388E-02	*0.132E-01	*0.131E-01		
	800000.	0.306E-01	0.399E-02	*0.167E-01	*0.155E-01		
	1000000.	0.285E-01	0.383E-02	0.183E-01	0.165E-01		
	2000000.	0.227E-01	0.351E-02	0.249E-01	0.200E-01		
O VII 2S-2P 1630.4 Å C = 0.16E+24	100000.	3.27	-0.411E-01	0.704E-02	-0.313E-01	0.116E-01	-0.424E-01
	200000.	2.36	-0.595E-01	0.281E-01	-0.762E-01	0.527E-01	-0.134
	500000.	1.57	-0.754E-01	0.111	-0.163	0.216	-0.315
	800000.	1.29	-0.751E-01	0.165	-0.209	0.321	-0.411
	1000000.	1.18	-0.742E-01	0.200	-0.232	0.385	-0.466
	2000000.	0.909	-0.707E-01	0.315	-0.288	0.584	-0.588
O VII 2S-3P 120.3 Å C = 0.13E+21	100000.	0.666E-01	-0.236E-03	0.118E-02	0.126E-02	*0.194E-02	*0.165E-02
	200000.	0.498E-01	0.424E-04	0.277E-02	0.261E-02	*0.521E-02	*0.446E-02
	500000.	0.350E-01	0.178E-03	0.563E-02	0.448E-02	*0.103E-01	*0.844E-02
	800000.	0.296E-01	0.190E-03	0.719E-02	0.525E-02	*0.126E-01	*0.102E-01
	1000000.	0.274E-01	0.187E-03	0.802E-02	0.558E-02	*0.135E-01	*0.112E-01
	2000000.	0.218E-01	0.212E-03	0.111E-01	0.676E-02	0.169E-01	0.138E-01
O VII 2P-3S 132.8 Å C = 0.29E+21	100000.	0.541E-01	0.169E-02	0.156E-02	0.298E-02		
	200000.	0.409E-01	0.309E-02	0.424E-02	0.565E-02		
	500000.	0.294E-01	0.341E-02	0.905E-02	0.924E-02		
	800000.	0.252E-01	0.354E-02	0.113E-01	0.110E-01		
	1000000.	0.234E-01	0.347E-02	0.124E-01	0.117E-01		
	2000000.	0.187E-01	0.310E-02	0.168E-01	0.142E-01	*0.303E-01	*0.289E-01
O VII 2P-4S 97.1 Å C = 0.64E+20	100000.	0.795E-01	0.951E-03				
	200000.	0.631E-01	0.385E-02				
	500000.	0.475E-01	0.568E-02				
	800000.	0.412E-01	0.553E-02				
	1000000.	0.384E-01	0.530E-02				
	2000000.	0.307E-01	0.540E-02				
O VII 2P-5S 86.5 Å C = 0.25E+20	100000.	*0.138	-0.689E-02				
	200000.	*0.116	*0.241E-02				
	500000.	0.902E-01	0.748E-02				
	800000.	0.787E-01	0.749E-02				
	1000000.	0.735E-01	0.732E-02				
	2000000.	0.590E-01	0.959E-02				
O VII 3P-4S 384.7 Å C = 0.10E+22	100000.	*1.74	*0.147E-01				
	200000.	1.36	0.565E-01				
	500000.	1.01	0.830E-01				
	800000.	0.876	0.807E-01				
	1000000.	0.816	0.771E-01				
	2000000.	0.654	0.786E-01				
O VII 3P-5S 258.9 Å C = 0.22E+21	100000.	*1.45	-0.619E-01				
	200000.	*1.20	*0.198E-01				
	500000.	0.929	0.643E-01				
	800000.	0.808	0.643E-01				
	1000000.	0.755	0.628E-01				
	2000000.	0.606	0.831E-01				

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		IONIZED HELIUM	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
PERTURBER DENSITY = 1.E+21cm-3							
O VII 1S-2P 21.6 Å C = 0.19E+21	100000. 200000. 500000. 800000. 1000000. 2000000.	0.445E-02 0.318E-02 0.206E-02 0.167E-02 0.151E-02 0.114E-02	-0.111E-03 -0.203E-04 -0.211E-05 -0.509E-05 -0.514E-05 0.201E-05	0.754E-05 0.315E-04 0.111E-03 0.178E-03 0.206E-03 0.339E-03	-0.876E-05 -0.383E-04 -0.112E-03 -0.160E-03 -0.177E-03 -0.247E-03	0.613E-05 0.501E-04 0.209E-03 0.336E-03 0.383E-03 0.600E-03	-0.491E-05 -0.501E-04 -0.200E-03 -0.299E-03 -0.338E-03 -0.499E-03
O VII 1S-3P 18.6 Å C = 0.88E+19	100000. 200000. 500000. 800000. 1000000. 2000000.	*0.128E-01 0.101E-01 0.745E-02 0.640E-02 0.597E-02 0.481E-02	*0.579E-03 0.335E-03 0.611E-04 0.106E-04 -0.207E-05 -0.350E-04				
O VII 2S-3P 128.3 Å C = 0.42E+21	100000. 200000. 500000. 800000. 1000000. 2000000.	*0.671 *0.527 0.388 0.334 0.311 0.251	*0.324E-01 *0.146E-01 -0.736E-03 -0.341E-02 -0.410E-02 -0.582E-02				
O VII 2P-3S 137.5 Å C = 0.22E+22	100000. 200000. 500000. 800000. 1000000. 2000000.	*0.530 0.433 0.326 0.283 0.264 0.212	-0.498E-01 -0.145E-01 0.111E-01 0.179E-01 0.188E-01 0.181E-01				
O VII 2S-3P 120.3 Å C = 0.13E+22	100000. 200000. 500000. 800000. 1000000. 2000000.	*0.603 *0.464 0.332 0.282 0.262 0.209	-0.768E-02 -0.494E-02 -0.185E-02 -0.113E-02 -0.720E-03 -0.598E-03				
O VII 2P-3S 132.8 Å C = 0.29E+22	100000. 200000. 500000. 800000. 1000000. 2000000.	*0.486 0.383 0.280 0.241 0.224 0.180	-0.375E-01 -0.369E-02 0.139E-01 0.196E-01 0.206E-01 0.193E-01				
O VII 2P-4S 97.1 Å C = 0.64E+21	100000. 200000. 500000. 800000. 1000000. 2000000.	*0.498 *0.455 0.377 0.336 0.317 0.261	-0.901E-01 -0.383E-01 0.701E-02 0.154E-01 0.176E-01 0.202E-01				
O VII 2P-5S 86.5 Å C = 0.25E+21	100000. 200000. 500000. 800000. 1000000. 2000000.	*0.624 *0.586 *0.542 0.518 0.438	-0.819E-01 -0.870E-02 *0.679E-02 0.108E-01 0.242E-01				
O VII 3P-4S 384.7 Å C = 0.10E+23	100000. 200000. 500000. 800000. 1000000. 2000000.	*10.5 *8.42 7.43 6.98 5.72	-0.568 *0.965E-01 0.219 0.248 0.289				
O VII 3P-5S 258.9 Å C = 0.22E+22	100000. 200000. 500000. 800000. 1000000. 2000000.	*6.38 *5.82 *5.54 4.66	-0.843E-01 *0.503E-01 *0.847E-01 0.204				

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS WIDTH(Å)	SHIFT(Å)	PROTONS WIDTH(Å)	SHIFT(Å)	IONIZED HELIUM WIDTH(Å)	SHIFT(Å)
PERTURBER DENSITY = 1.E+22cm-3							
O VII 1S-2P 21.6 Å C = 0.19E+22	100000. 200000. 500000. 800000. 1000000. 2000000.						
		0.307E-01	0.337E-03	*0.197E-03	-0.138E-03		
		0.202E-01	0.313E-03	*0.106E-02	-0.847E-03		
		0.164E-01	0.201E-03	*0.175E-02	-0.134E-02		
		0.149E-01	0.173E-03	0.204E-02	-0.154E-02		
		0.112E-01	0.176E-03	0.338E-02	-0.231E-02		
O VII 1S-3P 18.6 Å C = 0.88E+20	100000. 200000. 500000. 800000. 1000000. 2000000.						
		*0.596E-01	*0.203E-02				
		*0.521E-01	*0.147E-02				
		0.490E-01	0.130E-02				
		0.406E-01	0.753E-03				
O VII 2S-3P 128.3 Å C = 0.42E+22	100000. 200000. 500000. 800000. 1000000. 2000000.						
		*3.13	*0.101				
		*2.74	*0.611E-01				
		*2.58	*0.487E-01				
		2.14	0.134E-01				
O VII 2P-3S 137.5 Å C = 0.22E+23	100000. 200000. 500000. 800000. 1000000. 2000000.						
		*2.59	-0.417				
		*2.25	-0.146				
		2.06	-0.453E-01				
		1.96	-0.163E-01				
		1.66	0.326E-01				
O VII 2S-3P 120.3 Å C = 0.13E+23	100000. 200000. 500000. 800000. 1000000. 2000000.						
		*2.75	*0.390E-02				
		*2.39	*0.321E-02				
		*2.23	*0.409E-02				
		1.83	-0.973E-03				
O VII 2P-3S 132.8 Å C = 0.29E+23	100000. 200000. 500000. 800000. 1000000. 2000000.						
		*2.45	-0.383				
		*2.07	-0.123				
		1.86	-0.266E-01				
		1.76	0.632E-02				
		1.47	0.502E-01				
O VII 2P-4S 97.1 Å C = 0.64E+22	100000. 200000. 500000. 800000. 1000000. 2000000.						
		*1.74	-0.543				
		*1.93	-0.194				
		*1.91	-0.888E-01				
		*1.88	-0.505E-01				
		1.71	0.178E-01				
PERTURBER DENSITY = 1.E+23cm-3							
O VII 1S-2P 21.6 Å C = 0.19E+23	100000. 200000. 500000. 800000. 1000000. 2000000.						
		*0.187	*0.413E-02				
		*0.153	*0.332E-02				
		0.139	0.310E-02				
		0.106	0.302E-02				

Table 2. This table shows electron-, proton-, and He III-impact broadening parameters for Mg XI for perturber densities of $10^{18} - 10^{24} \text{ cm}^{-3}$ and temperatures from 500,000 up to 5,000,000 K. Stark broadening parameters for densities lower than tabulated, are linear with perturber density. Transitions and averaged wavelengths for the multiplet (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+18cm-3							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
Mg XI 2S 3P 52.7 Å C=0.11E+18	500000.	0.402E-04	-0.224E-05	0.107E-04	-0.128E-04	0.174E-04	-0.258E-04
	750000.	0.341E-04	-0.207E-05	0.162E-04	-0.151E-04	0.253E-04	-0.306E-04
	1000000.	0.304E-04	-0.199E-05	0.201E-04	-0.162E-04	0.308E-04	-0.328E-04
	2000000.	0.233E-04	-0.162E-05	0.298E-04	-0.196E-04	0.421E-04	-0.396E-04
	3000000.	0.201E-04	-0.142E-05	0.361E-04	-0.215E-04	0.498E-04	-0.441E-04
	5000000.	0.167E-04	-0.115E-05	0.447E-04	-0.242E-04	0.612E-04	-0.491E-04
Mg XI 3S 3P 5065.9 Å C=0.98E+21	500000.	0.489	-0.396E-01	0.126	-0.151	0.216	-0.306
	750000.	0.420	-0.375E-01	0.189	-0.175	0.310	-0.357
	1000000.	0.377	-0.364E-01	0.226	-0.189	0.357	-0.382
	2000000.	0.294	-0.310E-01	0.334	-0.226	0.487	-0.462
	3000000.	0.255	-0.273E-01	0.406	-0.248	0.577	-0.509
	5000000.	0.214	-0.224E-01	0.506	-0.276	0.694	-0.564
Mg XI 2P 3S 55.2 Å C=0.60E+18	500000.	0.252E-04	0.260E-05	0.404E-05	0.684E-05	0.791E-05	0.138E-04
	750000.	0.218E-04	0.254E-05	0.578E-05	0.831E-05	0.111E-04	0.168E-04
	1000000.	0.198E-04	0.248E-05	0.760E-05	0.942E-05	0.143E-04	0.191E-04
	2000000.	0.156E-04	0.223E-05	0.122E-04	0.113E-04	0.218E-04	0.230E-04
	3000000.	0.135E-04	0.199E-05	0.150E-04	0.125E-04	0.254E-04	0.256E-04
	5000000.	0.113E-04	0.166E-05	0.191E-04	0.142E-04	0.306E-04	0.288E-04
Mg XI 2P 4S 40.7 Å C=0.32E+18	500000.	0.309E-04	0.458E-05	0.667E-05	0.966E-05	0.133E-04	0.195E-04
	750000.	0.270E-04	0.445E-05	0.971E-05	0.112E-04	0.191E-04	0.228E-04
	1000000.	0.246E-04	0.439E-05	0.112E-04	0.121E-04	0.220E-04	0.244E-04
	2000000.	0.197E-04	0.390E-05	0.156E-04	0.144E-04	0.291E-04	0.295E-04
	3000000.	0.173E-04	0.346E-05	0.186E-04	0.159E-04	0.338E-04	0.327E-04
	5000000.	0.147E-04	0.290E-05	0.231E-04	0.177E-04	0.397E-04	0.362E-04
Mg XI 2P 5S 36.1 Å C=0.55E+17	500000.	0.749E-04	0.133E-04	0.440E-04	0.439E-04	*0.837E-04	*0.892E-04
	750000.	0.662E-04	0.121E-04	0.530E-04	0.487E-04	0.975E-04	0.993E-04
	1000000.	0.604E-04	0.115E-04	0.601E-04	0.523E-04	0.109E-03	0.107E-03
	2000000.	0.482E-04	0.908E-05	0.793E-04	0.602E-04	0.133E-03	0.122E-03
	3000000.	0.420E-04	0.804E-05	0.928E-04	0.659E-04	0.147E-03	0.133E-03
	5000000.	0.351E-04	0.653E-05	0.113E-03	0.734E-04	0.164E-03	0.149E-03
Mg XI 3P 4S 160.3 Å C=0.98E+18	500000.	0.755E-03	0.886E-04	0.196E-03	0.227E-03	0.352E-03	0.460E-03
	750000.	0.654E-03	0.851E-04	0.266E-03	0.252E-03	0.466E-03	0.512E-03
	1000000.	0.592E-03	0.836E-04	0.315E-03	0.274E-03	0.533E-03	0.555E-03
	2000000.	0.469E-03	0.726E-04	0.446E-03	0.326E-03	0.692E-03	0.664E-03
	3000000.	0.410E-03	0.641E-04	0.545E-03	0.360E-03	0.814E-03	0.736E-03
	5000000.	0.345E-03	0.534E-04	0.664E-03	0.391E-03	0.977E-03	0.813E-03
Mg XI 3P 5S 106.7 Å C=0.43E+18	500000.	0.776E-03	0.124E-03	0.409E-03	0.400E-03	*0.774E-03	*0.811E-03
	750000.	0.682E-03	0.113E-03	0.494E-03	0.443E-03	*0.904E-03	*0.900E-03
	1000000.	0.621E-03	0.107E-03	0.560E-03	0.476E-03	0.100E-02	0.963E-03
	2000000.	0.493E-03	0.847E-04	0.757E-03	0.554E-03	0.123E-02	0.112E-02
	3000000.	0.429E-03	0.748E-04	0.895E-03	0.591E-03	0.139E-02	0.122E-02
	5000000.	0.359E-03	0.607E-04	0.110E-02	0.658E-03	0.159E-02	0.136E-02
Mg XI 3P 3D 26246.7 Å C=0.26E+23	500000.	11.9	0.757	4.04	4.34	6.31	8.77
	750000.	10.2	0.695	6.10	4.98	9.11	10.1
	1000000.	9.10	0.659	7.39	5.39	10.4	10.9
	2000000.	7.01	0.545	11.0	6.42	14.4	13.1
	3000000.	6.06	0.482	13.3	7.11	17.0	14.4
	5000000.	5.07	0.393	16.1	7.83	21.3	15.9
Mg XI 2S 3P 50.5 Å C=0.39E+18	500000.	0.337E-04	0.261E-06	0.150E-05	0.196E-05	0.277E-05	0.394E-05
	750000.	0.285E-04	0.225E-06	0.247E-05	0.254E-05	0.436E-05	0.513E-05
	1000000.	0.253E-04	0.228E-06	0.312E-05	0.288E-05	0.527E-05	0.582E-05
	2000000.	0.193E-04	0.170E-06	0.566E-05	0.386E-05	0.861E-05	0.786E-05
	3000000.	0.166E-04	0.147E-06	0.724E-05	0.430E-05	0.102E-04	0.875E-05
	5000000.	0.139E-04	0.122E-06	0.963E-05	0.487E-05	0.123E-04	0.997E-05

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		He III	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
Mg XI 3S 3P 3688.7 Å C=0.21E+22	500000.	0.236	-0.755E-02	0.966E-02	-0.140E-01	0.177E-01	-0.280E-01
	750000.	0.202	-0.750E-02	0.158E-01	-0.174E-01	0.279E-01	-0.353E-01
	1000000.	0.181	-0.732E-02	0.206E-01	-0.201E-01	0.340E-01	-0.406E-01
	2000000.	0.141	-0.705E-02	0.381E-01	-0.258E-01	0.551E-01	-0.524E-01
	3000000.	0.122	-0.631E-02	0.500E-01	-0.287E-01	0.651E-01	-0.585E-01
	5000000.	0.102	-0.526E-02	0.690E-01	-0.329E-01	0.797E-01	-0.666E-01
Mg XI 3P 3D 6605.9 Å C=0.66E+22	500000.	0.688	-0.136E-01	0.499E-01	-0.670E-01	0.931E-01	-0.135
	750000.	0.582	-0.128E-01	0.727E-01	-0.809E-01	0.129	-0.163
	1000000.	0.519	-0.130E-01	0.961E-01	-0.932E-01	0.163	-0.188
	2000000.	0.398	-0.974E-02	0.164	-0.116	0.246	-0.235
	3000000.	0.344	-0.814E-02	0.209	-0.129	0.292	-0.261
	5000000.	0.289	-0.676E-02	0.277	-0.147	0.354	-0.297
PERTURBER DENSITY = 1.E+19cm-3							
Mg XI 1S 2P 9.2 Å C=0.57E+18	500000.	0.250E-05	-0.347E-07	0.147E-07	-0.400E-07	0.278E-07	-0.784E-07
	750000.	0.205E-05	-0.163E-07	0.287E-07	-0.594E-07	0.541E-07	-0.118E-06
	1000000.	0.179E-05	-0.158E-07	0.451E-07	-0.768E-07	0.842E-07	-0.153E-06
	2000000.	0.129E-05	-0.111E-07	0.116E-06	-0.129E-06	0.204E-06	-0.260E-06
	3000000.	0.108E-05	-0.931E-08	0.171E-06	-0.158E-06	0.288E-06	-0.319E-06
	5000000.	0.862E-06	-0.427E-08	0.268E-06	-0.201E-06	0.421E-06	-0.409E-06
Mg XI 1S 3P 7.9 Å C=0.23E+17	500000.	0.843E-05	-0.379E-06	0.235E-05	-0.276E-05	0.380E-05	-0.538E-05
	750000.	0.714E-05	-0.352E-06	0.355E-05	-0.330E-05	0.553E-05	-0.659E-05
	1000000.	0.637E-05	-0.335E-06	0.444E-05	-0.354E-05	0.674E-05	-0.710E-05
	2000000.	0.486E-05	-0.299E-06	0.652E-05	-0.428E-05	0.922E-05	-0.868E-05
	3000000.	0.418E-05	-0.255E-06	0.795E-05	-0.473E-05	0.109E-04	-0.970E-05
	5000000.	0.347E-05	-0.202E-06	0.971E-05	-0.529E-05	0.134E-04	-0.108E-04
Mg XI 2S 2P 1473.6 Å C=0.15E+23	500000.	0.819E-01	-0.257E-02	0.984E-03	-0.425E-02	0.189E-02	-0.836E-02
	750000.	0.681E-01	-0.247E-02	0.223E-02	-0.599E-02	0.429E-02	-0.119E-01
	1000000.	0.600E-01	-0.241E-02	0.339E-02	-0.734E-02	0.650E-02	-0.147E-01
	2000000.	0.446E-01	-0.231E-02	0.800E-02	-0.106E-01	0.144E-01	-0.214E-01
	3000000.	0.378E-01	-0.222E-02	0.122E-01	-0.128E-01	0.208E-01	-0.258E-01
	5000000.	0.309E-01	-0.191E-02	0.178E-01	-0.147E-01	0.283E-01	-0.298E-01
Mg XI 2S 3P 52.7 Å C=0.11E+19	500000.	0.401E-03	-0.192E-04	0.107E-03	-0.126E-03	0.174E-03	-0.246E-03
	750000.	0.341E-03	-0.185E-04	0.162E-03	-0.151E-03	0.253E-03	-0.300E-03
	1000000.	0.304E-03	-0.176E-04	0.201E-03	-0.161E-03	0.307E-03	-0.323E-03
	2000000.	0.233E-03	-0.160E-04	0.298E-03	-0.196E-03	0.420E-03	-0.395E-03
	3000000.	0.201E-03	-0.140E-04	0.361E-03	-0.215E-03	0.498E-03	-0.440E-03
	5000000.	0.167E-03	-0.114E-04	0.447E-03	-0.242E-03	0.612E-03	-0.491E-03
Mg XI 3S 3P 5065.9 Å C=0.98E+22	500000.	4.89	-0.355	1.26	-1.49	2.15	-2.91
	750000.	4.19	-0.347	1.89	-1.75	3.10	-3.49
	1000000.	3.77	-0.336	2.26	-1.89	3.57	-3.76
	2000000.	2.94	-0.308	3.34	-2.26	4.87	-4.60
	3000000.	2.55	-0.270	4.06	-2.48	5.77	-5.08
	5000000.	2.14	-0.222	5.06	-2.76	6.94	-5.64
Mg XI 2P 3S 55.2 Å C=0.60E+19	500000.	0.254E-03	0.246E-04	0.404E-04	0.676E-04	0.791E-04	0.133E-03
	750000.	0.219E-03	0.244E-04	0.578E-04	0.830E-04	0.111E-03	0.166E-03
	1000000.	0.198E-03	0.239E-04	0.760E-04	0.940E-04	0.143E-03	0.188E-03
	2000000.	0.156E-03	0.222E-04	0.122E-03	0.113E-03	0.218E-03	0.230E-03
	3000000.	0.135E-03	0.198E-04	0.150E-03	0.125E-03	0.254E-03	0.256E-03
	5000000.	0.113E-03	0.166E-04	0.191E-03	0.142E-03	0.306E-03	0.288E-03
Mg XI 2P 4S 40.7 Å C=0.32E+19	500000.	0.310E-03	0.432E-04	0.667E-04	0.952E-04	0.133E-03	0.185E-03
	750000.	0.270E-03	0.427E-04	0.971E-04	0.112E-03	0.191E-03	0.223E-03
	1000000.	0.246E-03	0.422E-04	0.112E-03	0.121E-03	0.220E-03	0.240E-03
	2000000.	0.197E-03	0.389E-04	0.156E-03	0.144E-03	0.291E-03	0.294E-03
	3000000.	0.173E-03	0.344E-04	0.186E-03	0.159E-03	0.338E-03	0.326E-03
	5000000.	0.147E-03	0.289E-04	0.231E-03	0.177E-03	0.397E-03	0.362E-03
Mg XI 2P 5S 36.1 Å C=0.55E+18	500000.	0.748E-03	0.109E-03	*0.440E-03	*0.426E-03		
	750000.	0.660E-03	0.105E-03	*0.530E-03	*0.485E-03		
	1000000.	0.603E-03	0.979E-04	*0.601E-03	*0.520E-03		
	2000000.	0.481E-03	0.896E-04	*0.793E-03	*0.602E-03		
	3000000.	0.419E-03	0.789E-04	*0.928E-03	*0.659E-03		
	5000000.	0.350E-03	0.641E-04	0.113E-02	0.734E-03	*0.164E-02	*0.149E-02

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		He III	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
Mg XI 3P 4S	500000.	0.754E-02	0.816E-03	0.196E-02	0.224E-02	*0.352E-02	*0.434E-02
160.3 Å	750000.	0.653E-02	0.803E-03	0.266E-02	0.252E-02	*0.466E-02	*0.500E-02
C=0.98E+19	1000000.	0.592E-02	0.788E-03	0.315E-02	0.273E-02	0.532E-02	0.544E-02
	2000000.	0.469E-02	0.723E-03	0.446E-02	0.326E-02	0.692E-02	0.662E-02
	3000000.	0.409E-02	0.637E-03	0.545E-02	0.360E-02	0.814E-02	0.734E-02
	5000000.	0.345E-02	0.530E-03	0.664E-02	0.391E-02	0.977E-02	0.813E-02
Mg XI 3P 5S	500000.	0.774E-02	0.102E-02	*0.409E-02	*0.388E-02		
106.7 Å	750000.	0.680E-02	0.978E-03	*0.494E-02	*0.441E-02		
C=0.43E+19	1000000.	0.620E-02	0.914E-03	*0.560E-02	*0.473E-02		
	2000000.	0.492E-02	0.836E-03	*0.757E-02	*0.554E-02		
	3000000.	0.428E-02	0.735E-03	*0.895E-02	*0.591E-02		
	5000000.	0.358E-02	0.597E-03	*0.110E-01	*0.658E-02		
Mg XI 2P 3D	500000.	0.270E-03	0.103E-04	0.691E-04	0.806E-04	0.105E-03	0.158E-03
54.7 Å	750000.	0.226E-03	0.999E-05	0.103E-03	0.994E-04	0.147E-03	0.198E-03
C=0.11E+19	1000000.	0.200E-03	0.924E-05	0.138E-03	0.111E-03	0.193E-03	0.223E-03
	2000000.	0.151E-03	0.930E-05	0.215E-03	0.134E-03	0.286E-03	0.271E-03
	3000000.	0.129E-03	0.857E-05	0.261E-03	0.148E-03	0.344E-03	0.300E-03
	5000000.	0.107E-03	0.718E-05	0.320E-03	0.167E-03	0.428E-03	0.340E-03
Mg XI 2S 2P	500000.	0.366E-01	-0.908E-03	0.291E-03	-0.134E-02	0.557E-03	-0.262E-02
1014.7 Å	750000.	0.304E-01	-0.101E-02	0.648E-03	-0.192E-02	0.125E-02	-0.383E-02
C=0.10E+23	1000000.	0.267E-01	-0.961E-03	0.106E-02	-0.238E-02	0.205E-02	-0.477E-02
	2000000.	0.197E-01	-0.932E-03	0.261E-02	-0.357E-02	0.495E-02	-0.722E-02
	3000000.	0.167E-01	-0.896E-03	0.376E-02	-0.435E-02	0.675E-02	-0.879E-02
	5000000.	0.136E-01	-0.807E-03	0.586E-02	-0.511E-02	0.990E-02	-0.104E-01
Mg XI 2S 3P	500000.	0.337E-03	0.219E-05	0.150E-04	0.194E-04	0.277E-04	0.381E-04
50.5 Å	750000.	0.285E-03	0.199E-05	0.247E-04	0.254E-04	0.436E-04	0.507E-04
C=0.39E+19	1000000.	0.253E-03	0.205E-05	0.312E-04	0.287E-04	0.527E-04	0.577E-04
	2000000.	0.193E-03	0.169E-05	0.566E-04	0.386E-04	0.861E-04	0.785E-04
	3000000.	0.166E-03	0.145E-05	0.724E-04	0.430E-04	0.102E-03	0.874E-04
	5000000.	0.139E-03	0.120E-05	0.963E-04	0.487E-04	0.123E-03	0.997E-04
Mg XI 3S 3P	500000.	2.36	-0.732E-01	0.966E-01	-0.138	0.178	-0.271
3688.7 Å	750000.	2.02	-0.735E-01	0.158	-0.174	0.279	-0.349
C=0.21E+23	1000000.	1.81	-0.716E-01	0.206	-0.201	0.340	-0.402
	2000000.	1.41	-0.703E-01	0.381	-0.258	0.551	-0.524
	3000000.	1.22	-0.629E-01	0.500	-0.287	0.651	-0.584
	5000000.	1.02	-0.525E-01	0.690	-0.329	0.797	-0.666
Mg XI 2P 3S	500000.	0.223E-03	0.207E-04	0.256E-04	0.490E-04	0.505E-04	0.964E-04
53.9 Å	750000.	0.192E-03	0.208E-04	0.382E-04	0.599E-04	0.747E-04	0.119E-03
C=0.79E+19	1000000.	0.173E-03	0.203E-04	0.506E-04	0.688E-04	0.970E-04	0.138E-03
	2000000.	0.136E-03	0.196E-04	0.854E-04	0.849E-04	0.157E-03	0.172E-03
	3000000.	0.118E-03	0.176E-04	0.106E-03	0.938E-04	0.187E-03	0.191E-03
	5000000.	0.986E-04	0.148E-04	0.136E-03	0.106E-03	0.226E-03	0.218E-03
Mg XI 2P 3D	500000.	0.236E-03	-0.296E-05	0.123E-04	-0.224E-04	0.228E-04	-0.441E-04
52.7 Å	750000.	0.197E-03	-0.268E-05	0.222E-04	-0.292E-04	0.393E-04	-0.584E-04
C=0.42E+19	1000000.	0.174E-03	-0.289E-05	0.286E-04	-0.331E-04	0.491E-04	-0.664E-04
	2000000.	0.130E-03	-0.180E-05	0.549E-04	-0.442E-04	0.862E-04	-0.897E-04
	3000000.	0.111E-03	-0.113E-05	0.703E-04	-0.491E-04	0.104E-03	-0.100E-03
	5000000.	0.917E-04	-0.771E-06	0.917E-04	-0.559E-04	0.127E-03	-0.113E-03
Mg XI 3P 3D	500000.	6.88	-0.123	0.499	-0.663	0.932	-1.30
6605.9 Å	750000.	5.82	-0.119	0.727	-0.808	1.29	-1.61
C=0.66E+23	1000000.	5.19	-0.121	0.961	-0.931	1.63	-1.86
	2000000.	3.98	-0.967E-01	1.64	-1.16	2.46	-2.35
	3000000.	3.44	-0.806E-01	2.09	-1.29	2.92	-2.61
	5000000.	2.89	-0.669E-01	2.77	-1.47	3.54	-2.97
PERTURBER DENSITY = 1.E+20cm-3							
Mg XI 1S 2P	500000.	0.250E-04	-0.270E-06	0.147E-06	-0.383E-06	0.276E-06	-0.722E-06
9.2 Å	750000.	0.205E-04	-0.178E-06	0.287E-06	-0.580E-06	0.541E-06	-0.112E-05
C=0.57E+19	1000000.	0.179E-04	-0.118E-06	0.450E-06	-0.761E-06	0.841E-06	-0.149E-05
	2000000.	0.129E-04	-0.104E-06	0.116E-05	-0.129E-05	0.204E-05	-0.258E-05
	3000000.	0.108E-04	-0.901E-07	0.171E-05	-0.157E-05	0.288E-05	-0.319E-05
	5000000.	0.862E-05	-0.421E-07	0.268E-05	-0.201E-05	0.421E-05	-0.408E-05

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		He III	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
Mg XI 1S 3P 7.9 Å C=0.23E+18	500000.	0.827E-04	-0.203E-05	0.235E-04	-0.255E-04	*0.378E-04	-0.465E-04
	750000.	0.702E-04	-0.205E-05	0.355E-04	-0.313E-04	*0.553E-04	-0.592E-04
	1000000.	0.626E-04	-0.206E-05	0.444E-04	-0.345E-04	*0.675E-04	-0.660E-04
	2000000.	0.479E-04	-0.192E-05	0.652E-04	-0.426E-04	*0.923E-04	-0.844E-04
	3000000.	0.412E-04	-0.200E-05	0.795E-04	-0.471E-04	*0.109E-03	-0.966E-04
	5000000.	0.342E-04	-0.194E-05	0.971E-04	-0.529E-04	*0.134E-03	-0.108E-03
Mg XI 2S 2P 1473.6 Å C=0.15E+24	500000.	0.819	-0.236E-01	0.987E-02	-0.407E-01	0.188E-01	-0.768E-01
	750000.	0.682	-0.234E-01	0.223E-01	-0.584E-01	0.429E-01	-0.113
	1000000.	0.600	-0.227E-01	0.339E-01	-0.726E-01	0.649E-01	-0.142
	2000000.	0.446	-0.222E-01	0.800E-01	-0.106	0.145	-0.212
	3000000.	0.378	-0.218E-01	0.122	-0.127	0.208	-0.258
	5000000.	0.309	-0.190E-01	0.178	-0.147	0.283	-0.298
Mg XI 2S 3P 52.7 Å C=0.11E+20	500000.	0.394E-02	-0.113E-03	0.108E-02	-0.116E-02	*0.173E-02	-0.212E-02
	750000.	0.335E-02	-0.116E-03	0.162E-02	-0.143E-02	*0.253E-02	-0.269E-02
	1000000.	0.299E-02	-0.118E-03	0.201E-02	-0.157E-02	*0.308E-02	-0.300E-02
	2000000.	0.230E-02	-0.111E-03	0.298E-02	-0.195E-02	*0.421E-02	-0.383E-02
	3000000.	0.198E-02	-0.115E-03	0.361E-02	-0.214E-02	*0.498E-02	-0.439E-02
	5000000.	0.165E-02	-0.110E-03	0.447E-02	-0.242E-02	*0.612E-02	-0.489E-02
Mg XI 2P 3S 55.2 Å C=0.60E+20	500000.	0.254E-02	0.206E-03	0.403E-03	0.632E-03	*0.791E-03	*0.118E-02
	750000.	0.219E-02	0.210E-03	0.579E-03	0.794E-03	*0.111E-02	*0.152E-02
	1000000.	0.198E-02	0.210E-03	0.760E-03	0.922E-03	*0.143E-02	*0.178E-02
	2000000.	0.156E-02	0.200E-03	0.122E-02	0.113E-02	*0.217E-02	*0.224E-02
	3000000.	0.135E-02	0.188E-03	0.150E-02	0.125E-02	*0.254E-02	*0.255E-02
	5000000.	0.113E-02	0.164E-03	0.191E-02	0.142E-02	0.306E-02	0.287E-02
Mg XI 2P 4S 40.7 Å C=0.32E+20	500000.	0.309E-02	0.359E-03	0.670E-03	0.875E-03		
	750000.	0.270E-02	0.364E-03	0.971E-03	0.106E-02		
	1000000.	0.246E-02	0.369E-03	0.112E-02	0.117E-02		
	2000000.	0.197E-02	0.348E-03	0.156E-02	0.144E-02		
	3000000.	0.173E-02	0.325E-03	0.186E-02	0.158E-02	*0.338E-02	*0.325E-02
	5000000.	0.146E-02	0.286E-03	0.231E-02	0.177E-02	*0.397E-02	*0.360E-02
Mg XI 2P 5S 36.1 Å C=0.55E+19	500000.	0.692E-02	0.505E-03				
	750000.	0.616E-02	0.541E-03				
	1000000.	0.565E-02	0.541E-03				
	2000000.	0.454E-02	0.533E-03				
	3000000.	0.397E-02	0.605E-03				
	5000000.	0.333E-02	0.615E-03				
Mg XI 3P 4S 160.3 Å C=0.98E+20	500000.	0.747E-01	0.632E-02	*0.196E-01	*0.203E-01		
	750000.	0.648E-01	0.644E-02	*0.267E-01	*0.236E-01		
	1000000.	0.587E-01	0.653E-02	*0.315E-01	*0.264E-01		
	2000000.	0.465E-01	0.616E-02	*0.446E-01	*0.325E-01		
	3000000.	0.407E-01	0.584E-02	*0.545E-01	*0.359E-01		
	5000000.	0.343E-01	0.523E-02	*0.664E-01	*0.391E-01		
Mg XI 3P 5S 106.7 Å C=0.43E+20	500000.	0.723E-01	0.474E-02				
	750000.	0.639E-01	0.508E-02				
	1000000.	0.584E-01	0.509E-02				
	2000000.	0.467E-01	0.499E-02				
	3000000.	0.408E-01	0.564E-02				
	5000000.	0.342E-01	0.572E-02				
Mg XI 2P 3D 54.7 Å C=0.11E+20	500000.	0.265E-02	0.598E-04	0.689E-03	0.752E-03	*0.105E-02	*0.139E-02
	750000.	0.223E-02	0.628E-04	0.103E-02	0.950E-03	*0.147E-02	*0.180E-02
	1000000.	0.197E-02	0.597E-04	0.138E-02	0.109E-02	*0.193E-02	*0.210E-02
	2000000.	0.149E-02	0.655E-04	0.215E-02	0.133E-02	*0.287E-02	*0.264E-02
	3000000.	0.127E-02	0.719E-04	0.261E-02	0.147E-02	*0.344E-02	*0.299E-02
	5000000.	0.105E-02	0.697E-04	0.320E-02	0.167E-02	*0.428E-02	*0.339E-02
Mg XI 2S 2P 1014.7 Å C=0.10E+24	500000.	0.367	-0.868E-02	0.292E-02	-0.128E-01	0.554E-02	-0.241E-01
	750000.	0.304	-0.962E-02	0.648E-02	-0.188E-01	0.125E-01	-0.363E-01
	1000000.	0.267	-0.922E-02	0.106E-01	-0.236E-01	0.205E-01	-0.463E-01
	2000000.	0.197	-0.903E-02	0.261E-01	-0.356E-01	0.495E-01	-0.716E-01
	3000000.	0.167	-0.882E-02	0.376E-01	-0.435E-01	0.675E-01	-0.878E-01
	5000000.	0.136	-0.805E-02	0.586E-01	-0.511E-01	0.990E-01	-0.104

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		He III	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
Mg XI 2S 3P	500000.	0.337E-02	0.124E-04	0.150E-03	0.184E-03	0.275E-03	0.346E-03
50.5 Å	750000.	0.284E-02	0.117E-04	0.246E-03	0.245E-03	0.435E-03	0.474E-03
C=0.39E+20	1000000.	0.253E-02	0.135E-04	0.312E-03	0.283E-03	0.527E-03	0.552E-03
	2000000.	0.193E-02	0.114E-04	0.566E-03	0.385E-03	0.860E-03	0.772E-03
	3000000.	0.166E-02	0.119E-04	0.724E-03	0.429E-03	0.102E-02	0.873E-03
	5000000.	0.139E-02	0.117E-04	0.963E-03	0.487E-03	0.123E-02	0.995E-03
Mg XI 2P 3S	500000.	0.223E-02	0.181E-03	0.257E-03	0.462E-03	0.503E-03	0.864E-03
53.9 Å	750000.	0.192E-02	0.186E-03	0.382E-03	0.576E-03	0.747E-03	0.110E-02
C=0.79E+20	1000000.	0.173E-02	0.183E-03	0.506E-03	0.676E-03	0.968E-03	0.131E-02
	2000000.	0.136E-02	0.181E-03	0.854E-03	0.847E-03	0.158E-02	0.169E-02
	3000000.	0.118E-02	0.169E-03	0.106E-02	0.936E-03	0.187E-02	0.191E-02
	5000000.	0.986E-03	0.147E-03	0.136E-02	0.106E-02	0.226E-02	0.217E-02
Mg XI 2P 3D	500000.	0.236E-02	-0.179E-04	0.123E-03	-0.213E-03	0.227E-03	-0.400E-03
52.7 Å	750000.	0.197E-02	-0.171E-04	0.222E-03	-0.283E-03	0.393E-03	-0.546E-03
C=0.42E+20	1000000.	0.174E-02	-0.208E-04	0.287E-03	-0.327E-03	0.491E-03	-0.636E-03
	2000000.	0.130E-02	-0.119E-04	0.549E-03	-0.441E-03	0.862E-03	-0.883E-03
	3000000.	0.111E-02	-0.812E-05	0.703E-03	-0.490E-03	0.104E-02	-0.998E-03
	5000000.	0.917E-03	-0.730E-05	0.917E-03	-0.559E-03	0.127E-02	-0.113E-02
PERTURBER DENSITY = 1.E+21cm-3							
Mg XI 1S 2P	500000.	0.250E-03	-0.212E-05	0.145E-05	-0.340E-05	0.266E-05	-0.568E-05
9.2 Å	750000.	0.205E-03	-0.125E-05	0.286E-05	-0.540E-05	0.535E-05	-0.985E-05
C=0.57E+20	1000000.	0.179E-03	-0.802E-06	0.450E-05	-0.722E-05	0.837E-05	-0.136E-04
	2000000.	0.129E-03	-0.750E-06	0.116E-04	-0.128E-04	0.204E-04	-0.249E-04
	3000000.	0.108E-03	-0.660E-06	0.171E-04	-0.156E-04	0.288E-04	-0.314E-04
	5000000.	0.862E-04	-0.311E-06	0.268E-04	-0.201E-04	0.421E-04	-0.408E-04
Mg XI 1S 3P	500000.	0.770E-03	0.284E-05				
7.9 Å	750000.	0.656E-03	-0.131E-05				
C=0.23E+19	1000000.	0.587E-03	-0.409E-05				
	2000000.	0.452E-03	-0.591E-05				
	3000000.	0.390E-03	-0.617E-05				
	5000000.	0.326E-03	-0.108E-04				
Mg XI 2S 2P	500000.	8.19	-0.178	0.981E-01	-0.359	0.186	-0.598
1473.6 Å	750000.	6.82	-0.186	0.222	-0.539	0.428	-0.980
C=0.15E+25	1000000.	6.00	-0.188	0.339	-0.683	0.649	-1.27
	2000000.	4.46	-0.192	0.801	-1.04	1.44	-2.02
	3000000.	3.78	-0.192	1.22	-1.26	2.08	-2.52
	5000000.	3.09	-0.179	1.78	-1.46	2.83	-2.97
Mg XI 2S 3P	500000.	0.368E-01	-0.295E-04				
52.7 Å	750000.	0.315E-01	-0.256E-03				
C=0.11E+21	1000000.	0.282E-01	-0.397E-03				
	2000000.	0.218E-01	-0.487E-03				
	3000000.	0.188E-01	-0.501E-03				
	5000000.	0.158E-01	-0.703E-03				
Mg XI 2P 3S	500000.	0.246E-01	0.735E-03	*0.403E-02	*0.528E-02		
55.2 Å	750000.	0.213E-01	0.103E-02	*0.577E-02	*0.697E-02		
C=0.60E+21	1000000.	0.193E-01	0.120E-02	*0.758E-02	*0.825E-02		
	2000000.	0.152E-01	0.133E-02	*0.121E-01	*0.109E-01		
	3000000.	0.132E-01	0.127E-02	*0.150E-01	*0.122E-01		
	5000000.	0.111E-01	0.136E-02	*0.191E-01	*0.142E-01		
Mg XI 2P 4S	500000.	0.295E-01	0.118E-02				
40.7 Å	750000.	0.259E-01	0.171E-02				
C=0.32E+21	1000000.	0.237E-01	0.206E-02				
	2000000.	0.191E-01	0.227E-02				
	3000000.	0.168E-01	0.215E-02				
	5000000.	0.142E-01	0.235E-02				
Mg XI 2P 5S	500000.	0.485E-01	-0.149E-02				
36.1 Å	750000.	0.451E-01	-0.595E-04				
C=0.55E+20	1000000.	0.424E-01	0.657E-03				
	2000000.	0.356E-01	0.141E-02				
	3000000.	0.318E-01	0.179E-02				
	5000000.	0.272E-01	0.333E-02				

STARK BROADENING PARAMETER TABLES FOR O VII AND Mg XI

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		He III	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
Mg XI 3P 4S	500000.	0.702	0.164E-01				
160.3 Å	750000.	0.612	0.266E-01				
C=0.98E+21	1000000.	0.556	0.334E-01				
	2000000.	0.444	0.374E-01				
	3000000.	0.389	0.356E-01				
	5000000.	0.330	0.408E-01				
Mg XI 3P 5S	500000.	0.531	-0.139E-01				
106.7 Å	750000.	0.487	-0.447E-03				
C=0.43E+21	1000000.	0.454	0.638E-02				
	2000000.	0.377	0.133E-01				
	3000000.	0.335	0.167E-01				
	5000000.	0.286	0.310E-01				
Mg XI 2P 3D	500000.	0.250E-01	0.137E-03				
54.7 Å	750000.	0.211E-01	0.243E-03				
C=0.11E+21	1000000.	0.187E-01	0.262E-03				
	2000000.	0.142E-01	0.378E-03				
	3000000.	0.121E-01	0.412E-03				
	5000000.	0.101E-01	0.492E-03	*0.320E-01	*0.166E-01		
Mg XI 2S 2P	500000.	3.67	-0.690E-01	0.290E-01	-0.113	0.544E-01	-0.189
1014.7 Å	750000.	3.04	-0.823E-01	0.648E-01	-0.174	0.124	-0.316
C=0.10E+25	1000000.	2.67	-0.802E-01	0.105	-0.223	0.205	-0.417
	2000000.	1.97	-0.811E-01	0.261	-0.351	0.495	-0.684
	3000000.	1.67	-0.803E-01	0.377	-0.430	0.674	-0.860
	5000000.	1.36	-0.769E-01	0.586	-0.510	0.990	-1.04
Mg XI 2S 3P	500000.	0.331E-01	-0.137E-03	0.149E-02	0.159E-02	*0.264E-02	*0.258E-02
50.5 Å	750000.	0.280E-01	-0.874E-04	0.245E-02	0.223E-02	*0.429E-02	*0.395E-02
C=0.39E+21	1000000.	0.249E-01	-0.380E-04	0.311E-02	0.261E-02	*0.522E-02	*0.476E-02
	2000000.	0.191E-01	-0.169E-04	0.565E-02	0.376E-02	*0.859E-02	*0.719E-02
	3000000.	0.164E-01	-0.101E-04	0.723E-02	0.422E-02	*0.102E-01	*0.842E-02
	5000000.	0.137E-01	0.506E-04	0.963E-02	0.486E-02	*0.123E-01	*0.991E-02
Mg XI 2P 3S	500000.	0.220E-01	0.886E-03	*0.257E-02	*0.391E-02		
53.9 Å	750000.	0.189E-01	0.112E-02	*0.382E-02	*0.510E-02		
C=0.79E+21	1000000.	0.171E-01	0.121E-02	*0.504E-02	*0.611E-02		
	2000000.	0.134E-01	0.135E-02	*0.855E-02	*0.820E-02		
	3000000.	0.117E-01	0.128E-02	*0.106E-01	*0.913E-02		
	5000000.	0.977E-02	0.129E-02	*0.136E-01	*0.106E-01		
Mg XI 2P 3D	500000.	0.233E-01	0.153E-03	0.123E-02	-0.184E-02	*0.222E-02	-0.297E-02
52.7 Å	750000.	0.194E-01	0.971E-04	0.222E-02	-0.256E-02	*0.390E-02	-0.454E-02
C=0.42E+21	1000000.	0.172E-01	0.191E-04	0.286E-02	-0.300E-02	*0.488E-02	-0.546E-02
	2000000.	0.129E-01	0.518E-04	0.548E-02	-0.429E-02	*0.861E-02	-0.821E-02
	3000000.	0.110E-01	0.757E-04	0.703E-02	-0.481E-02	*0.104E-01	-0.963E-02
	5000000.	0.908E-02	0.364E-05	0.917E-02	-0.557E-02	*0.127E-01	-0.113E-01
PERTURBER DENSITY = 1.E+22cm-3							
Mg XI 1S 2P	500000.	0.248E-02	-0.168E-05	0.129E-04	-0.224E-04	*0.198E-04	-0.257E-04
9.2 Å	750000.	0.204E-02	0.338E-05	0.278E-04	-0.439E-04	*0.466E-04	-0.617E-04
C=0.57E+21	1000000.	0.178E-02	0.395E-05	0.445E-04	-0.628E-04	*0.800E-04	-0.101E-03
	2000000.	0.129E-02	0.913E-06	0.116E-03	-0.119E-03	*0.202E-03	-0.219E-03
	3000000.	0.107E-02	0.170E-06	0.171E-03	-0.150E-03	0.287E-03	-0.285E-03
	5000000.	0.860E-03	0.297E-05	0.268E-03	-0.198E-03	0.420E-03	-0.385E-03
Mg XI 1S 3P	500000.	*0.673E-02	*0.173E-03				
7.9 Å	750000.	0.577E-02	0.119E-03				
C=0.23E+20	1000000.	0.519E-02	0.837E-04				
	2000000.	0.404E-02	0.383E-04				
	3000000.	0.351E-02	0.226E-04				
	5000000.	0.296E-02	0.107E-04				
Mg XI 2S 3P	500000.	*0.324	*0.829E-02				
52.7 Å	750000.	0.278	0.494E-02				
C=0.11E+22	1000000.	0.251	0.297E-02				
	2000000.	0.196	0.417E-03				
	3000000.	0.170	-0.477E-03				
	5000000.	0.144	-0.104E-02				

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		He III	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
Mg XI 2P 3S	500000.	0.196	-0.124E-01				
55.2 Å	750000.	0.175	-0.590E-02				
C=0.60E+22	1000000.	0.161	-0.270E-02				
	2000000.	0.131	0.288E-02				
	3000000.	0.115	0.418E-02				
	5000000.	0.979E-01	0.458E-02				
Mg XI 2P 4S	500000.	*0.203	-0.227E-01				
40.7 Å	750000.	0.189	-0.113E-01				
C=0.32E+22	1000000.	0.179	-0.531E-02				
	2000000.	0.152	0.427E-02				
	3000000.	0.137	0.641E-02				
	5000000.	0.119	0.740E-02				
Mg XI 2P 5S	500000.	*0.219	-0.298E-01				
36.1 Å	750000.	*0.227	-0.184E-01				
C=0.55E+21	1000000.	*0.228	-0.115E-01				
	2000000.	0.216	-0.222E-02				
	3000000.	0.203	0.247E-02				
	5000000.	0.184	0.573E-02				
Mg XI 3P 4S	500000.	*5.19	-0.425				
160.3 Å	750000.	*4.71	-0.224				
C=0.98E+22	1000000.	*4.38	-0.116				
	2000000.	3.65	0.504E-01				
	3000000.	3.25	0.898E-01				
	5000000.	2.81	0.111				
Mg XI 3P 5S	500000.	*2.82	-0.293				
106.7 Å	750000.	*2.77	-0.182				
C=0.43E+22	1000000.	*2.70	-0.116				
	2000000.	2.46	-0.264E-01				
	3000000.	2.28	0.174E-01				
	5000000.	2.03	0.484E-01				
Mg XI 2P 3D	500000.	0.232	-0.542E-03				
54.7 Å	750000.	0.195	0.568E-03				
C=0.11E+22	1000000.	0.173	0.848E-03				
	2000000.	0.132	0.228E-02				
	3000000.	0.113	0.277E-02				
	5000000.	0.944E-01	0.274E-02				
Mg XI 2S 3P	500000.	*0.300	-0.706E-03				
50.5 Å	750000.	0.256	-0.816E-03				
C=0.39E+22	1000000.	0.230	-0.685E-03				
	2000000.	0.177	-0.499E-03				
	3000000.	0.154	-0.371E-03				
	5000000.	0.129	-0.211E-03				
Mg XI 2P 3S	500000.	0.185	-0.103E-01				
53.9 Å	750000.	0.164	-0.412E-02				
C=0.79E+22	1000000.	0.150	-0.113E-02				
	2000000.	0.120	0.421E-02				
	3000000.	0.105	0.521E-02				
	5000000.	0.892E-01	0.531E-02				
Mg XI 2P 3D	500000.	0.219	0.444E-02				
52.7 Å	750000.	0.184	0.360E-02				
C=0.42E+22	1000000.	0.163	0.267E-02				
	2000000.	0.123	0.233E-02				
	3000000.	0.105	0.225E-02				
	5000000.	0.871E-01	0.184E-02				
PERTURBER DENSITY = 1.E+23cm-3							
Mg XI 1S 2P	500000.	*0.239E-01	0.182E-03	*0.661E-04	-0.613E-04		
9.2 Å	750000.	0.198E-01	0.230E-03	*0.223E-03	-0.219E-03		
C=0.57E+22	1000000.	0.173E-01	0.224E-03	*0.387E-03	-0.380E-03		
	2000000.	0.126E-01	0.143E-03	*0.114E-02	-0.980E-03		
	3000000.	0.105E-01	0.113E-03	*0.170E-02	-0.131E-02		
	5000000.	0.841E-02	0.117E-03	0.268E-02	-0.181E-02		

STARK BROADENING PARAMETER TABLES FOR O VII AND Mg XI

PERTURBERS ARE: TRANSITION	T(K)	ELECTRONS		PROTONS		He III	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
Mg XI 1S 3P 7.9 Å C=0.23E+21	500000.						
	750000.	*0.495E-01	*0.105E-02				
	1000000.	*0.444E-01	*0.865E-03				
	2000000.	*0.347E-01	*0.630E-03				
	3000000.	0.303E-01	0.506E-03				
5000000.	0.259E-01	0.394E-03					
Mg XI 2S 3P 52.7 Å C=0.11E+23	500000.						
	750000.						
	1000000.	*2.12	*0.523E-01				
	2000000.	*1.67	*0.308E-01				
	3000000.	1.46	0.205E-01				
5000000.	1.25	0.125E-01					
Mg XI 2P 3S 55.2 Å C=0.60E+23	500000.	*1.23	-0.144				
	750000.	*1.13	-0.106				
	1000000.	*1.07	-0.812E-01				
	2000000.	0.921	-0.307E-01				
	3000000.	0.839	-0.110E-01				
5000000.	0.738	-0.149E-03					
Mg XI 2P 4S 40.7 Å C=0.32E+23	500000.	*0.761	-0.254				
	750000.	*0.803	-0.188				
	1000000.	*0.824	-0.142				
	2000000.	*0.833	-0.573E-01				
	3000000.	0.809	-0.251E-01				
5000000.	0.756	-0.442E-02					
Mg XI 2P 3D 54.7 Å C=0.11E+23	500000.						
	750000.	*1.81	-0.121E-01				
	1000000.	*1.60	-0.773E-02				
	2000000.	1.21	0.987E-02				
	3000000.	1.04	0.158E-01				
5000000.	0.875	0.173E-01					
Mg XI 2S 3P 50.5 Å C=0.39E+23	500000.						
	750000.						
	1000000.	*1.94	*0.140E-01				
	2000000.	*1.53	*0.916E-02				
	3000000.	1.33	0.739E-02				
5000000.	1.13	0.499E-02					
Mg XI 2P 3S 53.9 Å C=0.79E+23	500000.	*1.17	-0.153				
	750000.	*1.08	-0.111				
	1000000.	*1.01	-0.829E-01				
	2000000.	0.869	-0.283E-01				
	3000000.	0.787	-0.882E-02				
5000000.	0.688	0.339E-02					
Mg XI 2P 3D 52.7 Å C=0.42E+23	500000.						
	750000.	*1.69	*0.183E-01				
	1000000.	*1.49	*0.158E-01				
	2000000.	1.13	0.207E-01				
	3000000.	0.970	0.214E-01				
5000000.	0.811	0.192E-01					
PERTURBER DENSITY = 1.E+24cm-3							
Mg XI 1S 2P 9.2 Å C=0.57E+23	500000.						
	750000.						
	1000000.	*0.165	*0.963E-03				
	2000000.	*0.120	*0.118E-02				
	3000000.	0.100	0.117E-02				
5000000.	0.804E-01	0.134E-02					

Mg XI multiplets are shown in Table 2, for perturber densities $10^{18} - 10^{24} \text{ cm}^{-3}$, and temperatures $T = 500,000 - 5,000,000 \text{ K}$. The complete set of data is given for the perturber density of 10^{19} cm^{-3} in both cases. For lower perturber densities, only data needed for better interpolation are given. Stark broadening parameters for densities lower than tabulated, or for transitions not tabulated for perturber densities lower than 10^{19} cm^{-3} , are linear with perturber density. The parameter c (Dimitrijević and Sahal—Bréchet 1984) gives an estimate for the maximum perturber density for which the line may be treated as isolated when divided by the corresponding full width at half maximum. For each value given in Tables 1 and 2, the collision volume (V) multiplied by the perturber density (N) is much less 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. 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 formula for such a case is given. The accuracy of the results obtained decreases when broadening by ion interactions becomes important.

We hope that the present results might be useful for a number of problems in stellar and laboratory plasma research, modeling and diagnostic.

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ТАБЕЛЕ ПАРАМЕТАРА ШТАРКОВОГ ШИРЕЊА СПЕКТРАЛНИХ ЛИНИЈА О VII И Mg XI

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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 14 мултиплета О VII и 18 мултиплета Mg XI. Резултати су дати у функцији температуре и концентрације пертурбера.