

STARK BROADENING PARAMETER TABLES FOR Be I LINES OF
ASTROPHYSICAL INTEREST

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Table 1 is also available in electronic form: see the editorial in *Astron. Astrophys.* 1992, Vol. 266, No 2, page E1 or in *Astron. Astrophys. Suppl. Series* 1992, Vol. 96, No 3, and Dimitrijević, M. S., Sahal–Bréchet, S.: 1994, *Astron. Astrophys. Suppl. Series*, in press.

Addendum to the Table 1 for perturber density 10^{15} cm^{-3} . This addendum to the table 1 gives

electron–, proton–, and ionized–helium– impact broadening parameters for Be I lines, for temperatures from 3,000 K to 50,000 K. Transitions and averaged wavelengths for the multiplet (in Å) are also given. By dividing c by the electron–impact full halfwidth, we obtain an estimate for the maximum perturber density for which the line may be treated as isolated and tabulated data may be used.

PERTURBER DENSITY = $1 \cdot 10^{15} \text{ cm}^{-3}$							
PERTURBERS ARE		ELECTRONS		PROTONS		IONIZED HELIUM	
TRANSITION	T [K]	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)
2S - 2P 2349.3 Å C= 0.67E+18	3000.	0.165E-03	0.961E-04	0.102E-03	0.259E-04	0.101E-03	0.215E-04
	5000.	0.184E-03	0.103E-03	0.102E-03	0.283E-04	0.101E-03	0.235E-04
	10000.	0.201E-03	0.100E-03	0.103E-03	0.319E-04	0.102E-03	0.264E-04
	20000.	0.234E-03	0.820E-04	0.104E-03	0.358E-04	0.102E-03	0.297E-04
	30000.	0.267E-03	0.589E-04	0.104E-03	0.384E-04	0.103E-03	0.318E-04
	50000.	0.326E-03	0.325E-04	0.105E-03	0.418E-04	0.103E-03	0.347E-04
2S - 3P 1661.5 Å C= 0.12E+18	3000.	0.793E-03	0.494E-03	0.312E-03	0.135E-03	0.304E-03	0.112E-03
	5000.	0.860E-03	0.556E-03	0.318E-03	0.149E-03	0.308E-03	0.123E-03
	10000.	0.962E-03	0.633E-03	0.327E-03	0.169E-03	0.313E-03	0.140E-03
	20000.	0.109E-02	0.641E-03	0.338E-03	0.190E-03	0.321E-03	0.158E-03
	30000.	0.118E-02	0.612E-03	0.346E-03	0.204E-03	0.326E-03	0.169E-03
	50000.	0.131E-02	0.531E-03	0.357E-03	0.222E-03	0.334E-03	0.184E-03
2S - 4P 1491.8 Å C= 0.39E+17	3000.	0.227E-02	0.132E-02	0.896E-03	0.346E-03	0.876E-03	0.283E-03
	5000.	0.254E-02	0.148E-02	0.909E-03	0.383E-03	0.886E-03	0.315E-03
	10000.	0.299E-02	0.166E-02	0.930E-03	0.437E-03	0.900E-03	0.361E-03
	20000.	0.357E-02	0.152E-02	0.957E-03	0.496E-03	0.918E-03	0.410E-03
	30000.	0.396E-02	0.140E-02	0.975E-03	0.533E-03	0.930E-03	0.441E-03
	50000.	0.447E-02	0.116E-02	0.100E-02	0.581E-03	0.948E-03	0.482E-03
2S - 5P 1426.1 Å C= 0.16E+17	3000.	0.567E-02	0.306E-02	*0.215E-02	*0.750E-03	*0.210E-02	*0.610E-03
	5000.	0.654E-02	0.331E-02	0.218E-02	0.840E-03	*0.213E-02	*0.687E-03
	10000.	0.798E-02	0.345E-02	0.223E-02	0.967E-03	*0.217E-02	*0.796E-03
	20000.	0.976E-02	0.318E-02	0.228E-02	0.110E-02	0.220E-02	0.910E-03
	30000.	0.109E-01	0.277E-02	0.232E-02	0.119E-02	0.223E-02	0.981E-03
	50000.	0.122E-01	0.229E-02	0.238E-02	0.130E-02	0.227E-02	0.108E-02
2S - 6P 1393.8 Å C= 0.83E+16	3000.	0.124E-01	0.568E-02	*0.442E-02	*0.136E-02		
	5000.	0.147E-01	0.621E-02	*0.451E-02	*0.154E-02		
	10000.	0.184E-01	0.623E-02	*0.460E-02	*0.180E-02	*0.449E-02	*0.147E-02
	20000.	0.228E-01	0.545E-02	0.469E-02	0.206E-02	*0.456E-02	*0.170E-02
	30000.	0.255E-01	0.472E-02	0.476E-02	0.223E-02	*0.460E-02	*0.184E-02
	50000.	0.282E-01	0.385E-02	0.485E-02	0.244E-02	*0.467E-02	*0.202E-02
3S - 3P 18148.6 Å C= 0.14E+20	3000.	0.752E-01	0.261E-01	0.350E-01	0.727E-02	0.349E-01	0.601E-02
	5000.	0.825E-01	0.275E-01	0.351E-01	0.798E-02	0.350E-01	0.659E-02
	10000.	0.105	0.221E-01	0.353E-01	0.899E-02	0.351E-01	0.747E-02
	20000.	0.145	0.173E-01	0.355E-01	0.101E-01	0.352E-01	0.840E-02
	30000.	0.174	0.158E-01	0.356E-01	0.109E-01	0.353E-01	0.900E-02
	50000.	0.211	0.126E-01	0.358E-01	0.118E-01	0.354E-01	0.982E-02
3S - 4P 8092.3 Å C= 0.11E+19	3000.	0.658E-01	0.365E-01	0.261E-01	0.937E-02	0.256E-01	0.768E-02
	5000.	0.736E-01	0.414E-01	0.264E-01	0.104E-01	0.259E-01	0.854E-02
	10000.	0.883E-01	0.421E-01	0.269E-01	0.118E-01	0.262E-01	0.976E-02
	20000.	0.109	0.352E-01	0.276E-01	0.134E-01	0.266E-01	0.111E-01
	30000.	0.124	0.304E-01	0.280E-01	0.144E-01	0.269E-01	0.119E-01
	50000.	0.143	0.273E-01	0.287E-01	0.157E-01	0.274E-01	0.130E-01

STARK BROADENING PARAMETER TABLES FOR Be I LINES OF ASTROPHYSICAL INTEREST

PERTURBER DENSITY = $1 \cdot 10^{15} \text{ cm}^{-3}$							
PERTURBERS ARE		ELECTRONS		PROTONS		IONIZED HELIUM	
TRANSITION	T [K]	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)
3S - 5P 6475.3 Å C= 0.33E+18	3000.	0.117	0.612E-01	*0.442E-01	*0.152E-01	*0.432E-01	*0.123E-01
	5000.	0.135	0.690E-01	0.449E-01	0.170E-01	*0.439E-01	*0.139E-01
	10000.	0.166	0.700E-01	0.458E-01	0.195E-01	*0.446E-01	*0.161E-01
	20000.	0.205	0.602E-01	0.469E-01	0.223E-01	0.453E-01	0.184E-01
	30000.	0.230	0.532E-01	0.476E-01	0.240E-01	0.458E-01	0.198E-01
	50000.	0.259	0.454E-01	0.487E-01	0.263E-01	0.466E-01	0.217E-01
3S - 6P 5858.6 Å C= 0.15E+18	3000.	0.220	0.102	*0.781E-01	*0.239E-01		
	5000.	0.260	0.108	*0.796E-01	*0.271E-01		
	10000.	0.327	0.112	*0.811E-01	*0.315E-01	*0.793E-01	*0.258E-01
	20000.	0.407	0.929E-01	0.828E-01	0.362E-01	*0.805E-01	*0.298E-01
	30000.	0.455	0.792E-01	0.839E-01	0.390E-01	*0.813E-01	*0.322E-01
	50000.	0.505	0.662E-01	0.856E-01	0.429E-01	*0.824E-01	*0.354E-01
4S - 4P 55885.6 Å C= 0.55E+20	3000.	3.26	-1.33	1.22	-0.337	1.20	-0.277
	5000.	4.00	-1.48	1.22	-0.372	1.21	-0.307
	10000.	5.45	-1.50	1.24	-0.423	1.22	-0.350
	20000.	7.33	-1.25	1.25	-0.480	1.23	-0.397
	30000.	8.53	-1.08	1.26	-0.515	1.24	-0.427
	50000.	9.93	-0.958	1.28	-0.562	1.25	-0.465
4S - 5P 20512.1 Å C= 0.34E+19	3000.	1.08	0.408	*0.433	*0.111	*0.428	*0.908E-01
	5000.	1.30	0.387	0.437	0.124	*0.432	*0.102
	10000.	1.72	0.315	0.442	0.142	*0.436	*0.117
	20000.	2.28	0.234	0.447	0.162	0.440	0.134
	30000.	2.62	0.239	0.450	0.174	0.442	0.144
	50000.	2.99	0.170	0.456	0.191	0.445	0.158
4S - 6P 15382.8 Å C= 0.10E+19	3000.	1.49	0.638	*0.535	*0.150		
	5000.	1.78	0.633	*0.543	*0.170		
	10000.	2.30	0.570	*0.553	*0.198	*0.542	*0.162
	20000.	2.94	0.418	0.562	0.226	*0.549	*0.187
	30000.	3.31	0.371	0.568	0.244	*0.554	*0.202
	50000.	3.70	0.292	0.577	0.268	*0.560	*0.222
2P - 3S 8256.3 Å C= 0.38E+19	3000.	0.130E-01	0.946E-02	0.306E-02	0.262E-02	0.261E-02	0.216E-02
	5000.	0.145E-01	0.107E-01	0.329E-02	0.288E-02	0.280E-02	0.238E-02
	10000.	0.162E-01	0.124E-01	0.365E-02	0.326E-02	0.310E-02	0.270E-02
	20000.	0.175E-01	0.129E-01	0.406E-02	0.368E-02	0.343E-02	0.305E-02
	30000.	0.186E-01	0.126E-01	0.433E-02	0.394E-02	0.364E-02	0.327E-02
	50000.	0.198E-01	0.113E-01	0.469E-02	0.430E-02	0.394E-02	0.356E-02
2P - 4S 4409.2 Å C= 0.35E+18	3000.	0.203E-01	0.155E-01	0.458E-02	0.404E-02	0.380E-02	0.330E-02
	5000.	0.230E-01	0.179E-01	0.498E-02	0.449E-02	0.414E-02	0.368E-02
	10000.	0.252E-01	0.202E-01	0.559E-02	0.513E-02	0.464E-02	0.423E-02
	20000.	0.262E-01	0.198E-01	0.628E-02	0.582E-02	0.521E-02	0.481E-02
	30000.	0.266E-01	0.182E-01	0.672E-02	0.627E-02	0.558E-02	0.518E-02
	50000.	0.281E-01	0.155E-01	0.731E-02	0.685E-02	0.607E-02	0.568E-02

PERTURBER DENSITY = $1 \cdot 10^{15} \text{ cm}^{-3}$							
PERTURBERS ARE		ELECTRONS		PROTONS		IONIZED HELIUM	
TRANSITION	T [K]	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)
3P - 4S 19770.7 Å C= 0.70E+19	3000.	0.409	0.296	0.927E-01	0.754E-01	0.796E-01	0.617E-01
	5000.	0.454	0.342	0.997E-01	0.838E-01	0.852E-01	0.688E-01
	10000.	0.501	0.345	0.110	0.957E-01	0.938E-01	0.789E-01
	20000.	0.567	0.335	0.122	0.109	0.104	0.898E-01
	30000.	0.612	0.294	0.130	0.117	0.110	0.967E-01
	50000.	0.696	0.250	0.141	0.128	0.119	0.106
2P - 3D 4573.9 Å C= 0.55E+18	3000.	0.853E-02	0.537E-02	0.290E-02	0.145E-02	0.278E-02	0.120E-02
	5000.	0.940E-02	0.603E-02	0.297E-02	0.160E-02	0.283E-02	0.132E-02
	10000.	0.107E-01	0.681E-02	0.309E-02	0.182E-02	0.291E-02	0.150E-02
	20000.	0.122E-01	0.686E-02	0.323E-02	0.205E-02	0.301E-02	0.170E-02
	30000.	0.134E-01	0.673E-02	0.333E-02	0.220E-02	0.308E-02	0.182E-02
	50000.	0.149E-01	0.573E-02	0.347E-02	0.240E-02	0.319E-02	0.199E-02
2P - 4D 3814.5 Å C= 0.79E+17	3000.	0.217E-01	-0.557E-02	0.681E-02	-0.270E-02	0.664E-02	-0.221E-02
	5000.	0.251E-01	-0.333E-02	0.692E-02	-0.300E-02	0.673E-02	-0.247E-02
	10000.	0.308E-01	-0.919E-03	0.710E-02	-0.343E-02	0.685E-02	-0.283E-02
	20000.	0.364E-01	0.113E-02	0.732E-02	-0.389E-02	0.699E-02	-0.322E-02
	30000.	0.399E-01	0.212E-02	0.748E-02	-0.419E-02	0.710E-02	-0.346E-02
	50000.	0.439E-01	0.228E-02	0.771E-02	-0.457E-02	0.725E-02	-0.379E-02
3P - 3D 23579.5 Å C= 0.14E+20	3000.	0.194	0.835E-01	0.639E-01	0.218E-01	0.630E-01	0.180E-01
	5000.	0.214	0.875E-01	0.645E-01	0.240E-01	0.634E-01	0.198E-01
	10000.	0.272	0.850E-01	0.655E-01	0.272E-01	0.640E-01	0.225E-01
	20000.	0.371	0.663E-01	0.667E-01	0.306E-01	0.648E-01	0.254E-01
	30000.	0.444	0.559E-01	0.677E-01	0.328E-01	0.654E-01	0.272E-01
	50000.	0.535	0.499E-01	0.691E-01	0.358E-01	0.663E-01	0.297E-01
3P - 4D 11636.7 Å C= 0.73E+18	3000.	0.205	-0.640E-01	0.593E-01	-0.272E-01	0.571E-01	-0.222E-01
	5000.	0.234	-0.424E-01	0.606E-01	-0.302E-01	0.581E-01	-0.248E-01
	10000.	0.290	-0.250E-01	0.627E-01	-0.345E-01	0.596E-01	-0.285E-01
	20000.	0.353	-0.136E-01	0.654E-01	-0.392E-01	0.614E-01	-0.324E-01
	30000.	0.393	-0.926E-02	0.672E-01	-0.422E-01	0.627E-01	-0.349E-01
	50000.	0.440	0.295E-03	0.699E-01	-0.461E-01	0.646E-01	-0.382E-01
4P - 4D 57268.5 Å C= 0.18E+20	3000.	6.54	-3.29	1.52	-0.875	1.43	-0.714
	5000.	7.32	-3.07	1.58	-0.975	1.47	-0.800
	10000.	9.01	-2.59	1.67	-1.12	1.54	-0.921
	20000.	11.4	-2.07	1.78	-1.27	1.62	-1.05
	30000.	12.9	-1.78	1.86	-1.37	1.67	-1.13
	50000.	14.6	-1.40	1.96	-1.50	1.75	-1.24
3D - 4P 38367.2 Å C= 0.26E+20	3000.	1.43	0.754	0.496	0.183	0.486	0.150
	5000.	1.61	0.749	0.502	0.202	0.491	0.167
	10000.	2.02	0.743	0.512	0.230	0.497	0.190
	20000.	2.61	0.579	0.525	0.261	0.506	0.216
	30000.	3.04	0.511	0.534	0.280	0.512	0.232
	50000.	3.56	0.468	0.548	0.306	0.521	0.254

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PERFURDER DENSITY = $1 \cdot 10^{15} \text{ cm}^{-3}$							
PERFURDERS ARE		ELECTRONS		PROTONS		IONIZED HELIUM	
TRANSITION	T [K]	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)	WIDTH (Å)	SHIFT (Å)
3D - 5P 17566.6 Å C= 0.25E+19	3000.	0.858	0.449	*0.304	*0.108	*0.297	*0.881E-01
	5000.	0.992	0.483	0.309	0.121	*0.301	*0.992E-01
	10000.	1.23	0.490	0.315	0.139	0.306	0.115
	20000.	1.54	0.400	0.323	0.159	0.312	0.131
	30000.	1.74	0.360	0.329	0.171	0.315	0.141
	50000.	1.98	0.309	0.338	0.188	0.321	0.155
3D - 6P 13665.3 Å C= 0.79E+18	3000.	1.20	0.538	*0.412	*0.129		
	5000.	1.42	0.611	*0.419	*0.146		
	10000.	1.79	0.595	*0.428	*0.170	*0.418	*0.139
	20000.	2.24	0.477	0.437	0.195	*0.424	*0.160
	30000.	2.50	0.409	0.443	0.210	*0.429	*0.173
	50000.	2.79	0.332	0.453	0.231	*0.435	*0.191
4D - 5P 74647.5 Å C= 0.30E+20	3000.	20.9	9.91	5.20	2.47	*4.96	*2.01
	5000.	23.9	10.6	5.34	2.78	*5.08	*2.27
	10000.	29.4	10.6	5.57	3.21	5.24	2.64
	20000.	36.4	8.75	5.84	3.66	5.43	3.02
	30000.	41.1	7.31	6.02	3.95	5.57	3.26
	50000.	46.3	6.68	6.29	4.33	5.76	3.58
4D - 6P 33721.2 Å C= 0.48E+19	3000.	8.35	3.68	*2.37	*0.855		
	5000.	9.84	3.91	*2.43	*0.972	*2.35	*0.790
	10000.	12.4	3.97	*2.49	*1.13	*2.41	*0.928
	20000.	15.3	3.19	2.57	1.30	*2.46	*1.07
	30000.	17.2	2.64	2.62	1.41	*2.49	*1.16
	50000.	19.1	2.31	2.69	1.54	2.54	1.28
2P - 3S 3322.0 Å C= 0.75E+18	3000.	0.142E-02	0.120E-02	0.369E-03	0.338E-03	0.307E-03	0.279E-03
	5000.	0.163E-02	0.134E-02	0.401E-03	0.370E-03	0.334E-03	0.306E-03
	10000.	0.192E-02	0.157E-02	0.450E-03	0.419E-03	0.374E-03	0.347E-03
	20000.	0.211E-02	0.174E-02	0.504E-03	0.472E-03	0.419E-03	0.391E-03
	30000.	0.219E-02	0.175E-02	0.539E-03	0.506E-03	0.448E-03	0.419E-03
	50000.	0.229E-02	0.165E-02	0.587E-03	0.551E-03	0.488E-03	0.457E-03
3S - 3P 14643.5 Å C= 0.68E+19	3000.	0.499E-01	0.285E-01	0.199E-01	0.766E-02	0.195E-01	0.632E-02
	5000.	0.545E-01	0.286E-01	0.201E-01	0.841E-02	0.197E-01	0.695E-02
	10000.	0.678E-01	0.214E-01	0.206E-01	0.953E-02	0.200E-01	0.728E-02
	20000.	0.922E-01	0.123E-01	0.211E-01	0.107E-01	0.203E-01	0.889E-02
	30000.	0.109	0.948E-02	0.215E-01	0.115E-01	0.206E-01	0.953E-02
	50000.	0.129	0.554E-02	0.220E-01	0.125E-01	0.209E-01	0.104E-01
3S - 4P 6788.4 Å C= 0.52E+18	3000.	0.644E-01	0.464E-01	0.200E-01	0.113E-01	0.188E-01	0.925E-02
	5000.	0.703E-01	0.493E-01	0.208E-01	0.126E-01	0.193E-01	0.104E-01
	10000.	0.803E-01	0.467E-01	0.219E-01	0.145E-01	0.202E-01	0.119E-01
	20000.	0.938E-01	0.393E-01	0.233E-01	0.164E-01	0.212E-01	0.136E-01
	30000.	0.105	0.342E-01	0.242E-01	0.177E-01	0.219E-01	0.146E-01
	50000.	0.119	0.286E-01	0.255E-01	0.193E-01	0.229E-01	0.160E-01