

## STARK BROADENING PARAMETER TABLES FOR Be I LINES OF ASTROPHYSICAL INTEREST

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**SUMMARY:** Using a semiclassical approach, we have calculated electron-, proton-, and ionized helium-impact line widths and shifts for 19 Be I multiplets as a function of temperature for perturber densities  $10^{16}$ – $10^{19}$  cm<sup>-3</sup>.

### 1. INTRODUCTION

As discussed in our article concerning Stark broadening parameters of Be II lines (Dimitrijević and Sahal-Bréchet, 1992 a), stark broadening data for beryllium lines are of interest in astrophysics since the surface content of Be provides informations on nucleogenesis, mixing between atmosphere and interior, the internal structure and evolution of a star (Boesgaard, 1988). Such data are of interest as well for the analysis and diagnostics of stellar and laboratory plasmas.

In order to provide reliable data for Be I lines broadened by collisions with charged perturbers in stellar and laboratory plasmas, we have calculated electron-, proton-, and ionized helium-impact line widths and shifts for 19 Be I multiplets, using the semiclassical-perturbation formalism (Sahal-Bréchet, 1969 a b). The obtained results for perturber

density of  $10^{15}$  cm<sup>-3</sup>, together with discussion, analysis and comparison with existing theoretical data will be published in the principal article elsewhere (Dimitrijević, and Sahal-Bréchet, 1992b). Since data are not linear with perturber density (N), due to the Debye screening effect, we will present here the data for  $N = 10^{16}$ – $10^{19}$  cm<sup>-3</sup>.

### 2. RESULTS AND DISCUSSION

All details of the calculation procedure has been described in Dimitrijević and Sahal-Bréchet (1984) and will not be repeated here. Energy levels for Be II lines have been taken from Bashkin and Stoner (1975). Oscillator strengths have been calculated using the method of Bates and Damgaard (1949) and tables of Oertel and Shomo (1968). For the transitions including higher atomic energy levels,

Table 1. This table gives electron-, proton-, and ionized-helium- impact broadening parameters for Be I lines, for perturber densities  $10^{16} - 10^{19} \text{ cm}^{-3}$  and 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. 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= $0.1 \times 10^{17} (\text{cm}^{-3})$							
TRANSITION	PERTURBERS ARE T(K)	ELECTRONS		PROTONS		IONIZED HELIUM	
		WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
2S - 2P 2349.3 Å C= $0.67 \times 10^{19}$	3000.	0.165E-02	0.955E-03	0.102E-02	0.254E-03	0.101E-02	0.209E-03
	5000.	0.184E-02	0.103E-02	0.102E-02	0.279E-03	0.101E-02	0.230E-03
	10000.	0.201E-02	0.100E-02	0.103E-02	0.316E-03	0.102E-02	0.261E-03
	20000.	0.234E-02	0.820E-03	0.104E-02	0.356E-03	0.102E-02	0.295E-03
	30000.	0.267E-02	0.589E-03	0.104E-02	0.382E-03	0.103E-02	0.317E-03
50000.	0.326E-02	0.325E-03	0.105E-02	0.417E-03	0.103E-02	0.345E-03	
2S - 3P 1661.5 Å C= $0.12 \times 10^{19}$	3000.	0.792E-02	0.484E-02	0.310E-02	0.126E-02	0.300E-02	0.102E-02
	5000.	0.859E-02	0.549E-02	0.317E-02	0.141E-02	0.306E-02	0.115E-02
	10000.	0.962E-02	0.628E-02	0.326E-02	0.163E-02	0.313E-02	0.134E-02
	20000.	0.109E-01	0.639E-02	0.338E-02	0.186E-02	0.321E-02	0.154E-02
	30000.	0.118E-01	0.610E-02	0.345E-02	0.201E-02	0.326E-02	0.166E-02
50000.	0.131E-01	0.531E-02	0.357E-02	0.220E-02	0.334E-02	0.182E-02	
2S - 4P 1491.8 Å C= $0.39 \times 10^{18}$	3000.	0.227E-01	0.127E-01	*0.871E-02	*0.300E-02		
	5000.	0.254E-01	0.144E-01	*0.898E-02	*0.348E-02	*0.865E-02	*0.280E-02
	10000.	0.299E-01	0.165E-01	*0.926E-02	*0.412E-02	*0.893E-02	*0.335E-02
	20000.	0.357E-01	0.151E-01	0.955E-02	0.477E-02	*0.915E-02	*0.392E-02
	30000.	0.396E-01	0.140E-01	0.974E-02	0.517E-02	*0.929E-02	*0.426E-02
50000.	0.447E-01	0.116E-01	0.100E-01	0.570E-02	0.948E-02	0.470E-02	
2S - 5P 1426.1 Å C= $0.16 \times 10^{18}$	3000.	0.567E-01	0.291E-01				
	5000.	0.653E-01	0.319E-01				
	10000.	0.798E-01	0.338E-01	*0.220E-01	*0.878E-02		
	20000.	0.976E-01	0.317E-01	*0.227E-01	*0.104E-01		
	30000.	0.109	0.276E-01	*0.232E-01	*0.114E-01	*0.222E-01	*0.930E-02
50000.	0.122	0.229E-01	*0.238E-01	*0.126E-01	*0.226E-01	*0.104E-01	
2S - 6P 1393.8 Å C= $0.83 \times 10^{17}$	3000.	0.124	0.524E-01				
	5000.	0.147	0.588E-01				
	10000.	0.184	0.604E-01				
	20000.	0.228	0.543E-01				
	30000.	0.255	0.472E-01				
50000.	0.282	0.383E-01					
3S - 3P 18148.6 Å C= $0.14 \times 10^{21}$	3000.	0.752	0.258	0.348	0.693E-01	0.344	0.566E-01
	5000.	0.825	0.274	0.350	0.770E-01	0.348	0.632E-01
	10000.	1.05	0.220	0.352	0.880E-01	0.350	0.726E-01
	20000.	1.45	0.173	0.354	0.100	0.352	0.827E-01
	30000.	1.74	0.158	0.356	0.108	0.353	0.890E-01
50000.	2.11	0.126	0.358	0.118	0.354	0.975E-01	

STARK BROADENING PARAMETER TABLES FOR Be I LINES OF ASTROPHYSICAL INTEREST

PERTURBER DENSITY= 0.1D+17(cm-3)							
TRANSITION	PERTURBERS ARE T(K)	ELECTRONS		PROTONS		IONIZED HELIUM	
		WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
3S - 4P 8092.3 A C= 0.11E+20	3000.	0.657	0.353	*0.254	*0.818E-01		
	5000.	0.736	0.405	*0.261	*0.945E-01	*0.253	*0.762E-01
	10000.	0.883	0.416	*0.268	*0.112	*0.260	*0.911E-01
	20000.	1.09	0.351	0.275	0.129	*0.265	*0.106
	30000.	1.24	0.303	0.280	0.140	*0.269	*0.115
	50000.	1.43	0.273	0.287	0.154	0.273	0.127
3S - 5P 6475.3 A C= 0.33E+19	3000.	1.17	0.579				
	5000.	1.35	0.666				
	10000.	1.66	0.686	*0.452	*0.178		
	20000.	2.05	0.597	*0.467	*0.210		
	30000.	2.30	0.530	*0.475	*0.229	*0.456	*0.188
	50000.	2.59	0.454	*0.487	*0.255	*0.465	*0.209
3S - 6P 5858.6 A C= 0.15E+19	3000.	2.20	0.949				
	5000.	2.60	1.02				
	10000.	3.27	1.09				
	20000.	4.07	0.916				
	30000.	4.55	0.784				
	50000.	5.05	0.661				
2P - 3S 8256.3 A C= 0.38E+20	3000.	0.130	0.929E-01	0.305E-01	0.246E-01	0.261E-01	0.200E-01
	5000.	0.145	0.105	0.329E-01	0.275E-01	0.280E-01	0.225E-01
	10000.	0.162	0.123	0.365E-01	0.317E-01	0.309E-01	0.261E-01
	20000.	0.175	0.129	0.406E-01	0.361E-01	0.343E-01	0.298E-01
	30000.	0.186	0.126	0.433E-01	0.389E-01	0.364E-01	0.321E-01
	50000.	0.198	0.113	0.469E-01	0.426E-01	0.394E-01	0.353E-01
2P - 4S 4409.2 A C= 0.35E+19	3000.	0.203	0.148	*0.457E-01	*0.341E-01	*0.380E-01	*0.267E-01
	5000.	0.230	0.175	0.498E-01	0.400E-01	*0.414E-01	*0.320E-01
	10000.	0.251	0.201	0.559E-01	0.478E-01	*0.464E-01	*0.388E-01
	20000.	0.262	0.198	0.627E-01	0.558E-01	0.521E-01	0.457E-01
	30000.	0.266	0.182	0.671E-01	0.606E-01	0.557E-01	0.498E-01
	50000.	0.281	0.155	0.731E-01	0.669E-01	0.607E-01	0.551E-01
3P - 4S 19770.7 A C= 0.70E+20	3000.	4.09	2.85	*0.923	*0.641	*0.789	*0.504
	5000.	4.54	3.34	0.995	0.750	*0.849	*0.601
	10000.	5.00	3.40	1.10	0.895	*0.937	*0.728
	20000.	5.67	3.33	1.22	1.04	1.04	0.854
	30000.	6.12	2.94	1.30	1.13	1.10	0.930
	50000.	6.96	2.49	1.41	1.25	1.19	1.03
2P - 3D 4573.9 A C= 0.55E+19	3000.	0.853E-01	0.524E-01	0.287E-01	0.133E-01	*0.274E-01	*0.107E-01
	5000.	0.940E-01	0.594E-01	0.296E-01	0.150E-01	0.281E-01	0.122E-01
	10000.	0.107	0.675E-01	0.308E-01	0.175E-01	0.290E-01	0.143E-01
	20000.	0.122	0.683E-01	0.323E-01	0.200E-01	0.301E-01	0.165E-01
	30000.	0.134	0.673E-01	0.333E-01	0.216E-01	0.308E-01	0.178E-01
	50000.	0.149	0.572E-01	0.347E-01	0.237E-01	0.319E-01	0.196E-01

PERTURBER DENSITY= 0.1D+17(cm-3)							
TRANSITION	PERTURBERS ARE T(K)	ELECTRONS WIDTH(A)	SHIFT(A)	PROTONS WIDTH(A)	SHIFT(A)	IONIZED HELIUM WIDTH(A)	SHIFT(A)
2P - 4D 3814.5 A C= 0.79E+18	3000.	0.217	-0.522E-01	*0.659E-01	-0.231E-01		
	5000.	0.251	-0.303E-01	*0.682E-01	-0.269E-01		
	10000.	0.308	-0.733E-02	*0.706E-01	-0.321E-01	*0.678E-01	-0.261E-01
	20000.	0.364	0.121E-01	0.731E-01	-0.374E-01	*0.697E-01	-0.306E-01
	30000.	0.399	0.214E-01	0.747E-01	-0.405E-01	*0.708E-01	-0.333E-01
	50000.	0.439	0.229E-01	0.770E-01	-0.447E-01	*0.724E-01	-0.369E-01
3P - 3D 23579.5 A C= 0.14E+21	3000.	1.94	0.820	0.633	0.204	0.621	0.166
	5000.	2.14	0.866	0.642	0.229	0.629	0.187
	10000.	2.72	0.850	0.654	0.264	0.638	0.217
	20000.	3.71	0.663	0.667	0.300	0.648	0.248
	30000.	4.44	0.558	0.677	0.324	0.654	0.267
	50000.	5.35	0.499	0.691	0.355	0.663	0.293
3P - 4D 11636.7 A C= 0.73E+19	3000.	2.05	-0.601	*0.576	*-0.230		
	5000.	2.34	-0.395	*0.598	*-0.270	*0.568	*-0.216
	10000.	2.91	-0.242	*0.624	*-0.322	*0.591	*-0.262
	20000.	3.53	-0.134	0.653	-0.376	*0.612	*-0.308
	30000.	3.93	-0.908E-01	0.672	-0.408	*0.626	*-0.335
	50000.	4.40	0.295E-02	0.699	-0.450	0.645	-0.371
2P - 3S 3322.0 A C= 0.75E+19	3000.	0.142E-01	0.118E-01	0.369E-02	0.319E-02	0.307E-02	0.260E-02
	5000.	0.163E-01	0.133E-01	0.401E-02	0.356E-02	0.334E-02	0.292E-02
	10000.	0.192E-01	0.157E-01	0.450E-02	0.408E-02	0.374E-02	0.336E-02
	20000.	0.211E-01	0.173E-01	0.504E-02	0.464E-02	0.419E-02	0.384E-02
	30000.	0.219E-01	0.175E-01	0.539E-02	0.500E-02	0.448E-02	0.413E-02
	50000.	0.229E-01	0.165E-01	0.587E-02	0.548E-02	0.488E-02	0.453E-02
3S - 3P 14648.5 A C= 0.68E+20	3000.	0.498	0.279	0.198	0.720E-01	0.193	0.586E-01
	5000.	0.545	0.283	0.201	0.805E-01	0.196	0.659E-01
	10000.	0.678	0.212	0.205	0.925E-01	0.199	0.762E-01
	20000.	0.922	0.122	0.211	0.105	0.203	0.871E-01
	30000.	1.09	0.944E-01	0.215	0.114	0.205	0.938E-01
	50000.	1.29	0.553E-01	0.220	0.124	0.209	0.103
3S - 4P 6788.4 A C= 0.52E+19	3000.	0.644	0.444	*0.195	*0.939E-01		
	5000.	0.703	0.478	*0.205	*0.111	*0.189	*0.885E-01
	10000.	0.803	0.456	*0.218	*0.134	*0.200	*0.108
	20000.	0.938	0.388	0.233	0.157	*0.211	*0.128
	30000.	1.05	0.339	0.242	0.170	*0.219	*0.140
	50000.	1.19	0.285	0.255	0.188	*0.229	*0.155
PERTURBER DENSITY= 0.1D+18(cm-3)							
2S - 2P 2349.3 A C= 0.67E+20	3000.	0.165E-01	0.937E-02	0.100E-01	0.236E-02	0.985E-02	0.192E-02
	5000.	0.184E-01	0.101E-01	0.101E-01	0.265E-02	0.100E-01	0.217E-02
	10000.	0.201E-01	0.991E-02	0.103E-01	0.306E-02	0.101E-01	0.252E-02
	20000.	0.234E-01	0.813E-02	0.104E-01	0.349E-02	0.102E-01	0.288E-02
	30000.	0.267E-01	0.584E-02	0.104E-01	0.376E-02	0.103E-01	0.311E-02
	50000.	0.326E-01	0.322E-02	0.105E-01	0.413E-02	0.103E-01	0.341E-02

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PERTURBER DENSITY= 0.1D+18(cm-3)							
PERTURBERS ARE		ELECTRONS		PROTONS		IONIZED HELIUM	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
2S - 3P 1661.5 A C= 0.12E+20	3000.	0.792E-01	0.453E-01	*0.286E-01	*0.950E-02		
	5000.	0.859E-01	0.525E-01	*0.305E-01	*0.118E-01		
	10000.	0.962E-01	0.611E-01	*0.322E-01	*0.146E-01	*0.306E-01	*0.117E-01
	20000.	0.109	0.628E-01	*0.336E-01	*0.174E-01	*0.318E-01	*0.142E-01
	30000.	0.118	0.603E-01	0.345E-01	0.191E-01	*0.325E-01	*0.156E-01
50000.	0.131	0.528E-01	0.357E-01	0.213E-01	*0.333E-01	*0.175E-01	
2S - 4P 1491.8 A C= 0.39E+19	3000.	0.226	0.113				
	5000.	0.254	0.133				
	10000.	0.299	0.157				
	20000.	0.357	0.145				
	30000.	0.396	0.136				
50000.	0.447	0.115	*0.998E-01	*0.534E-01			
2S - 5P 1426.1 A C= 0.16E+19	3000.	0.562	0.239				
	5000.	0.651	0.279				
	10000.	0.797	0.310				
	20000.	0.975	0.296				
	30000.	1.09	0.261				
50000.	1.22	0.223					
2S - 6P 1393.8 A C= 0.83E+18	3000.	*1.17	*0.382				
	5000.	*1.42	*0.478				
	10000.	1.81	0.526				
	20000.	2.27	0.485				
	30000.	2.53	0.432				
50000.	2.81	0.368					
3S - 3P 18148.6 A C= 0.14E+22	3000.	7.51	2.46	*3.20	*0.584		
	5000.	8.25	2.65	*3.37	*0.686		
	10000.	10.5	2.15	*3.48	*0.821	*3.42	*0.666
	20000.	14.5	1.70	3.53	0.958	*3.49	*0.784
	30000.	17.4	1.58	3.55	1.04	*3.51	*0.855
50000.	21.1	1.25	3.58	1.15	*3.53	*0.947	
3S - 4P 8092.3 A C= 0.11E+21	3000.	6.55	3.15				
	5000.	7.35	3.76				
	10000.	8.83	3.99				
	20000.	10.9	3.43				
	30000.	12.4	3.02				
50000.	14.3	2.72	*2.86	*1.45			
3S - 5P 6475.3 A C= 0.33E+20	3000.	11.6	4.75				
	5000.	13.4	5.85				
	10000.	16.6	6.38				
	20000.	20.5	5.77				
	30000.	23.0	5.13				
50000.	25.9	4.51					

PERTURBER DENSITY= 0.1D+18(cm-3)							
TRANSITION	T(K)	ELECTRONS		PROTONS		IONIZED HELIUM	
		WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
2P - 3S 8256.3 A C= 0.38E+21	3000.	1.30	0.876	0.303	0.193	*0.257	*0.148
	5000.	1.45	1.01	0.328	0.235	*0.278	*0.185
	10000.	1.62	1.20	0.365	0.288	0.309	0.232
	20000.	1.75	1.28	0.406	0.341	0.342	0.278
	30000.	1.86	1.25	0.433	0.372	0.364	0.305
	50000.	1.98	1.13	0.469	0.413	0.394	0.339
2P - 4S 4409.2 A C= 0.35E+20	3000.	2.03	1.28				
	5000.	2.30	1.60				
	10000.	2.51	1.92				
	20000.	2.62	1.94	*0.627	*0.481		
	30000.	2.66	1.79	*0.671	*0.543		
	50000.	2.81	1.55	*0.731	*0.620		
2P - 3D 4573.9 A C= 0.55E+20	3000.	0.852	0.484	*0.262	*0.932E-01		
	5000.	0.940	0.564	*0.284	*0.120		
	10000.	1.07	0.657	*0.304	*0.153	*0.283	*0.122
	20000.	1.22	0.675	*0.322	*0.185	*0.298	*0.150
	30000.	1.34	0.671	*0.332	*0.203	*0.307	*0.166
	50000.	1.49	0.571	0.347	0.227	*0.318	*0.186
2P - 4D 3814.5 A C= 0.79E+19	3000.	2.14	-0.385				
	5000.	2.49	-0.200				
	10000.	3.07	-0.119E-01				
	20000.	3.64	0.147				
	30000.	3.98	0.218				
	50000.	4.39	0.233	*0.767	*0.416		
2P - 3S 3322.0 A C= 0.75E+20	3000.	0.142	0.112	0.368E-01	0.259E-01	*0.306E-01	*0.200E-01
	5000.	0.163	0.128	0.401E-01	0.309E-01	0.334E-01	0.245E-01
	10000.	0.192	0.153	0.449E-01	0.375E-01	0.374E-01	0.303E-01
	20000.	0.211	0.172	0.504E-01	0.441E-01	0.419E-01	0.360E-01
	30000.	0.219	0.174	0.539E-01	0.481E-01	0.448E-01	0.394E-01
	50000.	0.229	0.164	0.586E-01	0.532E-01	0.487E-01	0.438E-01
3S - 3P 14648.5 A C= 0.68E+21	3000.	4.98	2.66	*1.85	*0.573		
	5000.	5.45	2.72	*1.95	*0.691	*1.85	*0.545
	10000.	6.78	2.04	*2.03	*0.845	*1.95	*0.681
	20000.	9.22	1.17	2.10	0.997	*2.02	*0.814
	30000.	10.9	0.919	2.14	1.09	*2.05	*0.892
	50000.	12.9	0.536	2.20	1.21	*2.09	*0.992
3S - 4P 6788.4 A C= 0.52E+20	3000.	6.42	3.82				
	5000.	7.03	4.30				
	10000.	8.03	4.23				
	20000.	9.38	3.68				
	30000.	10.5	3.29				
	50000.	11.9	2.78				

**STARK BROADENING PARAMETER TABLES FOR B<sub>0</sub> I LINES OF ASTROPHYSICAL INTEREST**

PERTURBER DENSITY= 0.1D+19(cm <sup>-3</sup> )							
TRANSITION	PERTURBERS ARE T(K)	ELECTRONS		PROTONS		IONIZED HELIUM	
		WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
2S - 2P <sup>M</sup> 2349.3 A C= 0.67E+21	3000.	0.165	0.883E-01	*0.863E-01	*0.181E-01	*0.749E-01	*0.136E-01
	5000.	0.184	0.970E-01	*0.949E-01	*0.222E-01	*0.889E-01	*0.174E-01
	10000.	0.201	0.960E-01	*0.100	*0.276E-01	*0.974E-01	*0.221E-01
	20000.	0.234	0.789E-01	0.103	0.328E-01	*0.101	*0.267E-01
	30000.	0.267	0.565E-01	0.104	0.359E-01	*0.102	*0.293E-01
	50000.	0.326	0.310E-01	0.105	0.399E-01	0.103	0.327E-01
2S - 3P 1661.5 A C= 0.12E+21	3000.	0.784	0.355				
	5000.	0.856	0.449				
	10000.	0.961	0.557				
	20000.	1.09	0.589				
	30000.	1.18	0.572				
2S - 4P 1491.8 A C= 0.39E+20	3000.	*2.10	*0.644				
	5000.	*2.47	*0.954				
	10000.	2.96	1.30				
	20000.	3.55	1.27				
	30000.	3.95	1.21				
2S - 5P 1426.1 A C= 0.16E+20	3000.						
	5000.						
	10000.	*6.94	*2.11				
	20000.	*9.06	*2.27				
	30000.	10.3	2.06				
2P - 3S 8256.3 A C= 0.38E+22	3000.	13.0	7.09				
	5000.	14.5	8.84				
	10000.	16.2	11.1				
	20000.	17.5	12.5	*4.04	*2.77		
	30000.	18.6	12.2	*4.32	*3.20		
	50000.	19.8	11.2	*4.68	*3.72	*3.93	*2.99
2P - 3D 4573.9 A C= 0.55E+21	3000.	8.42	3.56				
	5000.	9.36	4.64				
	10000.	10.7	5.98				
	20000.	12.2	6.50				
	30000.	13.4	6.48				
2P - 3S 3322.0 A C= 0.75E+21	3000.	1.42	0.934				
	5000.	1.63	1.14	*0.385	*0.163		
	10000.	1.92	1.43	*0.446	*0.272		
	20000.	2.11	1.65	*0.503	*0.368	*0.418	*0.287
	30000.	2.18	1.71	*0.539	*0.421	*0.448	*0.334
50000.	2.29	1.62	*0.586	*0.486	*0.487	*0.392	

PERTURBER DENSITY= 0.1D+20(cm <sup>-3</sup> )							
PERTURBERS ARE		ELECTRONS		PROTONS		IONIZED HELIUM	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
2S - 2P	3000.	1.61	0.704				
2349.3 A	5000.	1.82	0.832				
c= 0.67E+22	10000.	2.00	0.862				
	20000.	2.34	0.722				
	30000.	2.66	0.510	*0.994	*0.303		
	50000.	3.26	0.266	*1.03	*0.356		

the method described by Van Regemorter et al. (1979) has been used.

Our results are shown in Table 1 for perturber densities  $10^{16} - 10^{19} \text{ cm}^{-3}$  and temperatures of  $T = 3,000; 5,000; 10,000; 20,000; 30,000$  and  $50,000$  K. 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 electron-impact 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 than one and the impact approximation is valid (Sahal-Bréchet, 1969 a b). Values for  $NV > 0.5$  are not given in Table 1; 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 formulae (cf. Sahal-Bréchet (1991) or Griem (1974)).

The analysis of present results and comparison with available experimental and theoretical data is given in Dimitrijević and Sahal - Bréchet (1992b).

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ТАБЕЛЕ ПАРАМЕТАРА ШТАРКОВОГ ШИРЕЊА ЛИНИЈА Be I ОД  
ЗНАЧАЈА У АСТРОФИЗИЦИ

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Користећи семикласичан прилаз, израчуна-  
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