

## STARK BROADENING PARAMETER TABLES FOR Ne VIII AND Na IX LINES OF ASTROPHYSICAL INTEREST

M. S. Dimitrijević<sup>1</sup> and S. Sahal–Bréchet<sup>2</sup>

<sup>1</sup> *Astronomical Observatory, Volgina 7, 11050 Belgrade, Yugoslavia*

<sup>2</sup> *Laboratoire "Astrophysique, Atomes et Molécules"  
Département Atomes et Molécules en Astrophysique  
Unité associée au C.N.R.S. No 812  
Observatoire de Paris–Meudon, 92190 Meudon, France*

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**SUMMARY:** Using a semiclassical approach, we have calculated electron–, proton–, and He III–impact line widths and shifts for 20 Ne VIII and 8 Na IX multiplets as a function of temperature and perturber density.

### 1. INTRODUCTION

In order to investigate the behavior of Stark broadening parameters along the lithium isoelectronic sequence as far as possible, we have calculated electron–, proton–, and He III–impact line widths and shifts for 20 Ne VIII and 8 Na IX multiplets, by using the semiclassical-perturbation formalism (Sahal–Bréchet 1969ab). A summary of the formalism is given in Dimitrijević and Sahal–Bréchet (1991). Discussion, analysis and comparison with the existing experimental and theoretical data, and all details of the calculations will be published in the principal article elsewhere (Dimitrijević, and Sahal–Bréchet, 1994). Since data are not linear with perturber density ( $N$ ), due to the Debye screening effect, which is often important at high densities of interest for sub-photospheric layers, we will present here the data

for  $N = 10^{16} - 10^{22} \text{ cm}^{-3}$  and temperatures from 200,000 K up to 2,000,000 K.

### 2. RESULTS AND DISCUSSION

Our results for 20 Ne VIII and 8 Na IX multiplets are shown in Table 1, for perturber densities  $10^{16} - 10^{22} \text{ cm}^{-3}$  and temperatures  $T = 200,000 - 2,000,000 \text{ K}$ . We also specify a parameter  $c$  (Dimitrijević & 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 electron-impact 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,

Table 1. This table shows electron-, proton-, and He III- impact broadening parameters for Ne VIII and Na IX, for perturber densities of  $10^{16} - 10^{22} \text{ cm}^{-3}$  and temperatures from 200,000 to 2,000,000 K. Transitions and averaged wavelengths for the multiplet (in Å) are also given. By using c [see Eq. (5) in Dimitrijević et al, 1991a], 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. 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 and Sahal—Bréchet, 1994.

PERTURBER DENSITY = $0.1\text{E}+17\text{cm}^{-3}$							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
NeVIII 5S-5P	200000.	0.355	-0.210E-02	0.132	0.132	0.268	0.270
10427.5 Å	500000.	0.263	-0.645E-02	0.185	0.160	0.371	0.336
C=0.54E+19	1000000.	0.211	-0.790E-02	0.198	0.184	0.409	0.367
	2000000.	0.169	-0.781E-02	0.221	0.219	0.444	0.434
PERTURBER DENSITY = $0.1\text{E}+18\text{cm}^{-3}$							
NeVIII 2S-4P	200000.	0.364E-04	0.127E-05	0.383E-05	0.437E-05	0.764E-05	0.887E-05
67.4 Å	500000.	0.261E-04	0.117E-05	0.628E-05	0.589E-05	0.127E-04	0.120E-04
C=0.25E+17	1000000.	0.206E-04	0.908E-06	0.770E-05	0.703E-05	0.159E-04	0.142E-04
	2000000.	0.165E-04	0.724E-06	0.978E-05	0.823E-05	0.195E-04	0.169E-04
NeVIII 2S-5P	200000.	0.850E-04	0.584E-05	0.469E-04	0.478E-04	0.975E-04	0.967E-04
60.7 Å	500000.	0.625E-04	0.415E-05	0.621E-04	0.582E-04	0.133E-03	0.117E-03
C=0.18E+16	1000000.	0.497E-04	0.288E-05	0.712E-04	0.663E-04	*0.149E-03	*0.136E-03
	2000000.	0.398E-04	0.180E-05	0.876E-04	0.790E-04	*0.170E-03	*0.164E-03
NeVIII 3S-4P	200000.	0.605E-03	0.106E-04	0.537E-04	0.600E-04	0.106E-03	0.122E-03
260.5 Å	500000.	0.434E-03	0.895E-05	0.885E-04	0.814E-04	0.179E-03	0.167E-03
C=0.37E+18	1000000.	0.345E-03	0.538E-05	0.110E-03	0.968E-04	0.221E-03	0.198E-03
	2000000.	0.277E-03	0.335E-05	0.134E-03	0.116E-03	0.259E-03	0.234E-03
NeVIII 3S-5P	200000.	0.801E-03	0.489E-04	0.425E-03	0.432E-03	0.884E-03	0.875E-03
182.8 Å	500000.	0.589E-03	0.334E-04	0.561E-03	0.527E-03	0.121E-02	0.106E-02
C=0.17E+17	1000000.	0.469E-03	0.221E-04	0.647E-03	0.600E-03	*0.135E-02	*0.124E-02
	2000000.	0.375E-03	0.126E-04	0.795E-03	0.713E-03	*0.153E-02	*0.148E-02
NeVIII 4S-5P	200000.	0.852E-02	0.304E-03	0.401E-02	0.404E-02	0.827E-02	0.823E-02
563.7 Å	500000.	0.627E-02	0.170E-03	0.526E-02	0.488E-02	0.115E-01	0.996E-02
C=0.16E+18	1000000.	0.501E-02	0.734E-04	0.614E-02	0.562E-02	*0.124E-01	*0.115E-01
	2000000.	0.402E-02	0.132E-04	0.744E-02	0.679E-02	*0.138E-01	*0.138E-01
NeVIII 5S-5P	200000.	3.55	-0.235E-01	1.32	1.32	2.68	2.69
10427.5 Å	500000.	2.63	-0.645E-01	1.85	1.60	3.71	3.35
C=0.54E+20	1000000.	2.11	-0.790E-01	1.98	1.84	*4.09	*3.67
	2000000.	1.69	-0.781E-01	2.21	2.19	*4.44	*4.34
NeVIII 2P-6S	200000.	0.104E-03	0.198E-04	0.324E-04	0.338E-04	0.660E-04	0.687E-04
62.6 Å	500000.	0.786E-04	0.170E-04	0.446E-04	0.421E-04	0.903E-04	0.856E-04
C=0.13E+17	1000000.	0.632E-04	0.135E-04	0.533E-04	0.486E-04	0.105E-03	0.989E-04
	2000000.	0.502E-04	0.108E-04	0.593E-04	0.548E-04	0.123E-03	0.111E-03
NeVIII 5P-6S	200000.	0.760E-01	0.538E-02	0.114E-01	-0.114E-01	0.228E-01	-0.233E-01
1246.9 Å	500000.	0.568E-01	0.497E-02	0.154E-01	-0.142E-01	0.319E-01	-0.296E-01
C=0.78E+18	1000000.	0.455E-01	0.412E-02	0.178E-01	-0.163E-01	0.372E-01	-0.331E-01
	2000000.	0.363E-01	0.351E-02	0.208E-01	-0.185E-01	0.430E-01	-0.383E-01
PERTURBER DENSITY = $0.1\text{E}+19\text{cm}^{-3}$							
NeVIII 2S-2P	200000.	0.432E-02	-0.729E-04	0.178E-04	-0.612E-04	0.334E-04	-0.120E-03
773.7 Å	500000.	0.283E-02	-0.966E-04	0.794E-04	-0.140E-03	0.153E-03	-0.282E-03
C=0.77E+21	1000000.	0.208E-02	-0.984E-04	0.176E-03	-0.219E-03	0.350E-03	-0.444E-03
	2000000.	0.157E-02	-0.917E-04	0.289E-03	-0.300E-03	0.576E-03	-0.610E-03

STARK BROADENING PARAMETER TABLES FOR Ne VIII AND Na IX LINES OF ASTROPHYSICAL INTEREST

PERTURBER DENSITY = 0.1E+19 cm <sup>-3</sup>							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
NeVIII 2S-3P 88.1 Å C=0.98E+18	200000.	0.215E-03	0.274E-05	0.772E-05	0.106E-04	0.150E-04	0.209E-04
	500000.	0.147E-03	0.268E-05	0.175E-04	0.178E-04	0.343E-04	0.360E-04
	1000000.	0.113E-03	0.245E-05	0.250E-04	0.225E-04	0.504E-04	0.459E-04
	2000000.	0.889E-04	0.171E-05	0.318E-04	0.272E-04	0.634E-04	0.558E-04
NeVIII 2S-4P 67.4 Å C=0.25E+18	200000.	0.364E-03	0.118E-04	0.383E-04	0.432E-04	0.764E-04	0.850E-04
	500000.	0.261E-03	0.116E-04	0.628E-04	0.588E-04	0.127E-03	0.120E-03
	1000000.	0.206E-03	0.908E-05	0.770E-04	0.703E-04	0.159E-03	0.142E-03
	2000000.	0.165E-03	0.724E-05	0.978E-04	0.823E-04	0.195E-03	0.169E-03
NeVIII 2S-5P 60.7 Å C=0.18E+17	200000.	0.831E-03	0.396E-04	*0.471E-03	*0.461E-03		
	500000.	0.612E-03	0.384E-04	*0.621E-03	*0.579E-03		
	1000000.	0.488E-03	0.288E-04	*0.712E-03	*0.663E-03		
	2000000.	0.391E-03	0.180E-04	*0.876E-03	*0.790E-03		
NeVIII 3S-3P 2879.1 Å C=0.10E+22	200000.	0.304	-0.677E-02	0.597E-02	-0.154E-02	0.114E-01	-0.304E-02
	500000.	0.212	-0.763E-02	0.120E-01	-0.331E-02	0.234E-01	-0.668E-02
	1000000.	0.166	-0.738E-02	0.165E-01	-0.485E-02	0.325E-01	-0.903E-02
	2000000.	0.132	-0.730E-02	0.189E-01	-0.646E-02	0.377E-01	-0.132E-01
NeVIII 3S-4P 260.5 Å C=0.37E+19	200000.	0.605E-02	0.971E-04	0.537E-03	0.593E-03	0.106E-02	0.117E-02
	500000.	0.434E-02	0.871E-04	0.885E-03	0.812E-03	0.179E-02	0.186E-02
	1000000.	0.345E-02	0.538E-04	0.110E-02	0.968E-03	0.221E-02	0.198E-02
	2000000.	0.277E-02	0.335E-04	0.134E-02	0.116E-02	0.255E-02	0.234E-02
NeVIII 3S-5P 182.8 Å C=0.17E+18	200000.	0.784E-02	0.320E-03	*0.426E-02	*0.417E-02		
	500000.	0.577E-02	0.306E-03	*0.561E-02	*0.524E-02		
	1000000.	0.461E-02	0.221E-03	*0.647E-02	*0.600E-02		
	2000000.	0.370E-02	0.126E-03	*0.795E-02	*0.713E-02		
NeVIII 4S-4P 6993.0 Å C=0.27E+22	200000.	5.75	-0.174	0.227	0.803E-01	0.445	0.159
	500000.	4.17	-0.164	0.342	0.132	0.679	0.268
	1000000.	3.33	-0.171	0.393	0.165	0.783	0.536
	2000000.	2.69	-0.140	0.446	0.197	0.885	0.403
NeVIII 4S-5P 563.7 Å C=0.16E+19	200000.	0.835E-01	0.146E-02	*0.402E-01	*0.390E-01		
	500000.	0.617E-01	0.144E-02	*0.526E-01	*0.485E-01		
	1000000.	0.493E-01	0.734E-03	*0.614E-01	*0.562E-01		
	2000000.	0.396E-01	0.132E-03	*0.744E-01	*0.679E-01		
NeVIII 2P-3S 103.0 Å C=0.37E+19	200000.	0.173E-03	0.137E-04	0.627E-05	0.167E-04	0.124E-04	0.330E-04
	500000.	0.121E-03	0.151E-04	0.188E-04	0.276E-04	0.378E-04	0.560E-04
	1000000.	0.943E-04	0.145E-04	0.311E-04	0.346E-04	0.631E-04	0.707E-04
	2000000.	0.748E-04	0.133E-04	0.413E-04	0.414E-04	0.860E-04	0.848E-04
NeVIII 2P-4S 74.6 Å C=0.80E+18	200000.	0.250E-03	0.350E-04	0.317E-04	0.484E-04	0.632E-04	0.952E-04
	500000.	0.183E-03	0.338E-04	0.614E-04	0.664E-04	0.124E-03	0.136E-03
	1000000.	0.147E-03	0.315E-04	0.795E-04	0.792E-04	0.160E-03	0.161E-03
	2000000.	0.118E-03	0.257E-04	0.992E-04	0.946E-04	0.191E-03	0.190E-03

PERTURBER DENSITY = $0.1E+19\text{cm}^{-3}$							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
NeVIII 2P-5S	200000.	0.458E-03	0.783E-04	0.893E-04	0.103E-03	0.179E-03	0.202E-03
66.3 A	500000.	0.340E-03	0.761E-04	0.132E-03	0.133E-03	0.267E-03	0.271E-03
C=0.42E+18	1000000.	0.275E-03	0.670E-04	0.165E-03	0.157E-03	0.337E-03	0.320E-03
	2000000.	0.223E-03	0.537E-04	0.194E-03	0.180E-03	*0.393E-03	*0.370E-03
NeVIII 2P-6S	200000.	0.104E-02	0.187E-03	0.324E-03	0.328E-03		
62.6 A	500000.	0.786E-03	0.168E-03	0.446E-03	0.419E-03		
C=0.13E+18	1000000.	0.632E-03	0.135E-03	0.533E-03	0.486E-03		
	2000000.	0.502E-03	0.108E-03	0.593E-03	0.548E-03		
NeVIII 3P-4S	200000.	0.581E-02	0.518E-03	0.467E-03	0.706E-03	0.933E-03	0.139E-02
298.6 A	500000.	0.419E-02	0.495E-03	0.897E-03	0.979E-03	0.183E-02	0.199E-02
C=0.11E+20	1000000.	0.334E-02	0.462E-03	0.118E-02	0.116E-02	0.240E-02	0.240E-02
	2000000.	0.268E-02	0.378E-03	0.144E-02	0.136E-02	0.299E-02	0.280E-02
NeVIII 3P-5S	200000.	0.491E-02	0.685E-03	0.783E-03	0.912E-03	0.158E-02	0.179E-02
198.9 A	500000.	0.361E-02	0.664E-03	0.117E-02	0.118E-02	0.237E-02	0.239E-02
C=0.38E+19	1000000.	0.291E-02	0.584E-03	0.147E-02	0.139E-02	0.297E-02	0.282E-02
	2000000.	0.235E-02	0.469E-03	0.174E-02	0.159E-02	0.353E-02	0.323E-02
NeVIII 3P-6S	200000.	0.815E-02	0.135E-02	0.235E-02	0.238E-02		
168.8 A	500000.	0.612E-02	0.121E-02	0.324E-02	0.304E-02		
C=0.91E+18	1000000.	0.491E-02	0.968E-03	0.386E-02	0.353E-02		
	2000000.	0.390E-02	0.775E-03	0.427E-02	0.396E-02		
NeVIII 4P-5S	200000.	0.746E-01	0.638E-02	0.677E-02	0.778E-02	0.136E-01	0.153E-01
651.4 A	500000.	0.549E-01	0.618E-02	0.101E-01	0.999E-02	0.209E-01	0.205E-01
C=0.23E+20	1000000.	0.442E-01	0.555E-02	0.123E-01	0.120E-01	0.256E-01	0.240E-01
	2000000.	0.358E-01	0.444E-02	0.155E-01	0.138E-01	0.307E-01	0.283E-01
NeVIII 4P-6S	200000.	0.571E-01	0.760E-02	0.135E-01	0.137E-01		
411.0 A	500000.	0.428E-01	0.679E-02	0.186E-01	0.175E-01		
C=0.54E+19	1000000.	0.343E-01	0.546E-02	0.216E-01	0.202E-01		
	2000000.	0.273E-01	0.436E-02	0.253E-01	0.226E-01		
NeVIII 5P-6S	200000.	0.752	0.574E-01	0.114	-0.111		
1246.9 A	500000.	0.563	0.503E-01	0.154	-0.142		
C=0.78E+19	1000000.	0.451	0.412E-01	0.178	-0.163		
	2000000.	0.360	0.351E-01	0.208	-0.185		
PERTURBER DENSITY = $0.1E+20\text{cm}^{-3}$							
NeVIII 2S-2P	200000.	0.436E-01	-0.845E-03	0.178E-03	-0.592E-03	0.333E-03	-0.112E-02
773.7 A	500000.	0.283E-01	-0.951E-03	0.794E-03	-0.139E-02	0.153E-02	-0.278E-02
C=0.77E+22	1000000.	0.208E-01	-0.984E-03	0.176E-02	-0.218E-02	0.350E-02	-0.443E-02
	2000000.	0.157E-01	-0.917E-03	0.289E-02	-0.300E-02	0.576E-02	-0.610E-02
NeVIII 2S-3P	200000.	0.215E-02	0.250E-04	0.771E-04	0.102E-03	0.150E-03	0.192E-03
88.1 A	500000.	0.147E-02	0.248E-04	0.173E-03	0.176E-03	0.343E-03	0.353E-03
C=0.98E+19	1000000.	0.113E-02	0.240E-04	0.250E-03	0.224E-03	0.504E-03	0.458E-03
	2000000.	0.889E-03	0.171E-04	0.318E-03	0.272E-03	0.634E-03	0.557E-03

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PERTURBER DENSITY = $0.1E+20\text{cm}^{-3}$							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
NeVIII 2S-4P 67.4 A	200000.	0.364E-02	0.955E-04	0.384E-03	0.407E-03	*0.757E-03	*0.746E-03
	500000.	0.261E-02	0.106E-03	0.628E-03	0.577E-03	*0.127E-02	*0.115E-02
	C=0.25E+19	1000000.	0.206E-02	0.883E-04	0.770E-03	0.701E-03	*0.159E-02
	2000000.	0.165E-02	0.724E-04	0.978E-03	0.823E-03	*0.195E-02	*0.188E-02
NeVIII 2S-5P 80.7 A	200000.	0.744E-02	-0.270E-04				
	500000.	0.559E-02	0.130E-03				
	C=0.18E+18	1000000.	0.450E-02	0.221E-03			
	2000000.	0.364E-02	0.180E-03				
NeVIII 3S-3P 2879.1 A	200000.	3.04	-0.683E-01	0.596E-01	-0.149E-01	0.113	-0.282E-01
	500000.	2.12	-0.765E-01	0.120	-0.329E-01	0.234	0.659E-01
	C=0.17E+23	1000000.	1.66	-0.735E-01	0.165	-0.485E-01	0.325
	2000000.	1.32	-0.730E-01	0.189	-0.646E-01	0.377	-0.170
NeVIII 3S-4P 260.5 A	200000.	0.605E-01	0.649E-03	0.536E-02	0.560E-02	*0.106E-01	*0.103E-01
	500000.	0.434E-01	0.735E-03	0.885E-02	0.798E-02	*0.179E-01	*0.160E-01
	C=0.37E+20	1000000.	0.344E-01	0.508E-03	0.110E-01	0.966E-02	*0.221E-01
	2000000.	0.277E-01	0.335E-03	0.134E-01	0.116E-01	*0.259E-01	*0.233E-01
NeVIII 3S-5P 182.8 A	200000.	0.704E-01	-0.628E-03				
	500000.	0.528E-01	0.764E-03				
	C=0.17E+19	1000000.	0.425E-01	0.161E-02			
	2000000.	0.345E-01	0.126E-02				
NeVIII 4S-5P 563.7 A	200000.	0.760	-0.203E-01				
	500000.	0.570	-0.678E-02				
	C=0.16E+20	1000000.	0.440	0.171E-02			
	2000000.	0.373	0.132E-02				
NeVIII 2P-3S 103.0 A	200000.	0.174E-02	0.137E-03	0.625E-04	0.161E-03	0.124E-03	0.305E-03
	500000.	0.121E-02	0.149E-03	0.188E-03	0.273E-03	0.338E-03	0.549E-03
	C=0.37E+20	1000000.	0.943E-03	0.144E-03	0.311E-03	0.346E-03	0.631E-03
	2000000.	0.848E-03	0.133E-03	0.413E-03	0.414E-03	0.841E-03	0.847E-03
NeVIII 2P-4S 74.6 A	200000.	0.250E-02	0.323E-03	0.316E-03	0.457E-03	*0.632E-03	*0.638E-03
	500000.	0.183E-02	0.324E-03	0.614E-03	0.652E-03	*0.124E-02	*0.131E-02
	C=0.80E+19	1000000.	0.147E-02	0.313E-03	0.795E-03	0.789E-03	*0.160E-02
	2000000.	0.118E-02	0.257E-03	0.992E-03	0.946E-03	*0.191E-02	*0.190E-02
NeVIII 2P-5S 66.3 A	200000.	0.458E-02	0.700E-03	0.893E-03	0.954E-03		
	500000.	0.340E-02	0.724E-03	*0.133E-02	*0.130E-02		
	C=0.42E+19	1000000.	0.275E-02	0.664E-03	*0.165E-02	*0.157E-02	
	2000000.	0.223E-02	0.537E-03	*0.194E-02	*0.180E-02		
NeVIII 2P-6S 62.6 A	200000.	0.103E-01	0.137E-02				
	500000.	0.779E-02	0.147E-02				
	C=0.13E+19	1000000.	0.627E-02	0.131E-02			
	2000000.	0.498E-02	0.108E-02				

PERTURBER DENSITY = 0.1E+20cm <sup>-3</sup>							
PERTURBERS ARE:		ELECTRONS	PROTONS		He III		
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
NeVIII 3P-4S	200000.	0.581E-01	0.477E-02	0.466E-02	0.667E-02	*0.930E-02	*0.122E-01
298.6 A	500000.	0.419E-01	0.477E-02	0.898E-02	0.962E-02	*0.183E-01	*0.192E-01
C=0.11E+21	1000000.	0.334E-01	0.460E-02	0.118E-01	0.116E-01	*0.240E-01	*0.239E-01
	2000000.	0.268E-01	0.378E-02	0.144E-01	0.136E-01	*0.299E-01	*0.279E-01
NeVIII 3P-5S	200000.	0.491E-01	0.611E-02	0.783E-02	0.842E-02		
198.9 A	500000.	0.361E-01	0.633E-02	*0.117E-01	*0.115E-01		
C=0.38E+20	1000000.	0.291E-01	0.578E-02	*0.147E-01	*0.138E-01		
	2000000.	0.235E-01	0.469E-02	*0.174E-01	*0.159E-01		
NeVIII 3P-6S	200000.	0.807E-01	0.986E-02				
168.8 A	500000.	0.607E-01	0.106E-01				
C=0.91E+19	1000000.	0.487E-01	0.939E-02				
	2000000.	0.388E-01	0.775E-02				
NeVIII 4P-5S	200000.	0.746	0.578E-01	0.677E-01	0.724E-01		
651.4 A	500000.	0.549	0.593E-01	0.101	0.974E-01		
C=0.23E+21	1000000.	0.442	0.551E-01	0.123	0.120		
	2000000.	0.358	0.444E-01	0.155	0.138		
NeVIII 4P-6S	200000.	0.566	0.554E-01				
411.0 A	500000.	0.425	0.594E-01				
C=0.54E+20	1000000.	0.341	0.529E-01				
	2000000.	0.272	0.436E-01				
NeVIII 5P-6S	200000.	7.11	0.555				
1246.9 A	500000.	5.37	0.528				
C=0.78E+20	1000000.	4.33	0.424				
	2000000.	3.47	0.351				
PERTURBER DENSITY = 0.1E+21cm <sup>-3</sup>							
NeVIII 2S-2P	200000.	0.436	-0.735E-02	0.176E-02	-0.529E-02	0.324E-02	-0.909E-02
773.7 A	500000.	0.283	-0.914E-02	0.795E-02	-0.135E-01	0.153E-01	-0.259E-01
C=0.77E+23	1000000.	0.208	-0.955E-02	0.176E-01	-0.216E-01	0.350E-01	-0.436E-01
	2000000.	0.157	-0.914E-02	0.289E-01	-0.300E-01	0.576E-01	-0.609E-01
NeVIII 2S-3P	200000.	0.215E-01	0.836E-04	0.765E-03	0.893E-03	0.145E-02	0.150E-02
88.1 A	500000.	0.147E-01	0.157E-03	0.173E-02	0.168E-02	*0.341E-02	*0.316E-02
C=0.98E+20	1000000.	0.113E-01	0.201E-03	0.250E-02	0.220E-02	*0.503E-02	*0.442E-02
	2000000.	0.888E-02	0.163E-03	0.318E-02	0.271E-02	*0.634E-02	*0.555E-02
NeVIII 2S-4P	200000.	0.356E-01	0.124E-04	*0.377E-02	*0.328E-02		
67.4 A	500000.	0.256E-01	0.502E-03	*0.636E-02	*0.530E-02		
C=0.25E+20	1000000.	0.203E-01	0.608E-03	*0.762E-02	*0.674E-02		
	2000000.	0.163E-01	0.671E-03	*0.978E-02	*0.818E-02		
NeVIII 2S-5P	200000.	0.605E-01	-0.155E-02				
60.7 A	500000.	0.471E-01	-0.569E-03				
C=0.18E+19	1000000.	0.389E-01	0.376E-03				
	2000000.	0.321E-01	0.102E-02				

STARK BROADENING PARAMETER TABLES FOR Ne VII AND Na IX LINES OF ASTROPHYSICAL INTEREST

PERTURBER DENSITY = $0.10 \times 10^{21} \text{ cm}^{-3}$								
TRANSITION	PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
	TYPE	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	
NeVII 3S-4P 250.5 A	200000.	0.595	-0.614E-02	*0.520E-01	*0.495E-01			
	500000.	0.627	-0.139E-01	*0.881E-01	*0.734E-01			
	C=0.57E+21	1000000.	0.340	0.431E-02	*0.111	*0.932E-01		
		2000000.	0.175	0.264E-02	*0.174	*0.115		
NeVII 3S-5P 182.8 A	200000.	0.379	-0.112E-01					
	500000.	0.650	-0.389E-02					
	C=0.17E+20	1000000.	0.377	-0.413E-03				
		2000000.	0.306	0.563E-02				
NeVII 4S-5P 583.7 A	200000.	3.40	-0.257					
	500000.	6.95	-0.125					
	C=0.16E+21	1000000.	4.02	-0.126				
		2000000.	3.36	-0.510E-01				
NeVIII 2P-3S 103.0 A	200000.	0.374E-01	0.112E-02	0.630E-03	0.141E-02	0.124E-02	*0.237E-01	
	500000.	0.129E-01	0.135E-02	0.188E-02	0.260E-02	*0.375E-02	*0.489E-02	
	C=0.37E+21	1000000.	0.944E-02	0.139E-02	0.311E-02	0.340E-02	*0.630E-02	*0.890E-02
		2000000.	0.748E-02	0.132E-02	0.413E-02	0.412E-02	*0.840E-02	*0.944E-02
NeVIII 2P-4S 74.6 A	200000.	0.249E-01	0.216E-02	*0.316E-02	*0.372E-02			
	500000.	0.182E-01	0.264E-02	*0.605E-02	*0.600E-02			
	C=0.80E+20	1000000.	0.168E-01	0.200E-02	*0.803E-02	*0.753E-02		
		2000000.	0.118E-01	0.252E-02	*0.992E-02	*0.941E-02		
NeVIII 2P-5S 66.3 A	200000.	0.450E-01	0.374E-02					
	500000.	0.338E-01	0.542E-02					
	C=0.42E+20	1000000.	0.272E-01	0.579E-02				
		2000000.	0.226E-01	0.521E-02				
NeVIII 2P-6S 62.6 A	200000.	0.866E-01	0.475E-03					
	500000.	0.682E-01	0.638E-02					
	C=0.13E+20	1000000.	0.559E-01	0.849E-02				
		2000000.	0.450E-01	0.986E-02				
NeVIII 3P-4S 298.6 A	200000.	0.579	0.326E-01	*0.465E-01	*0.545E-01			
	500000.	0.418	0.391E-01	*0.906E-01	*0.883E-01			
	C=0.11E+22	1000000.	0.333	0.421E-01	*0.117	*0.112		
		2000000.	0.267	0.372E-01	*0.144	*0.135		
NeVIII 3P-5S 198.9 A	200000.	0.404	0.327E-01					
	500000.	0.357	0.470E-01					
	C=0.38E+21	1000000.	0.285	0.504E-01				
		2000000.	0.273	0.455E-01				
NeVIII 3P-6S 158.8 A	200000.	0.647	0.276E-02					
	500000.	0.536	0.451E-01					
	C=0.91E+20	1000000.	0.338	0.606E-01				
		2000000.	0.353	0.707E-01				

PERTURBER DENSITY = 0.1E+21cm-3							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
NeVIII 4P-5S	200000.	7.31	0.353				
651.4 A	500000.	5.40	0.469				
C=0.23E+22	1000000.	4.36	0.495				
	2000000.	3.53	0.434				
NeVIII 4P-6S	200000.	4.93	0.176E-01				
411.0 A	500000.	3.81	0.252				
C=0.54E+21	1000000.	3.10	0.341				
	2000000.	2.50	0.398				
PERTURBER DENSITY = 0.1E+22cm-3							
NeVIII 2S-2P	200000.	4.36	-0.544E-01	0.163E-01	-0.372E-01	0.259E-01	-0.459E-01
773.7 A	500000.	2.83	-0.769E-01	0.788E-01	-0.122	0.151	-0.216
C=0.77E+24	1000000.	2.08	-0.870E-01	0.177	-0.208	0.348	-0.394
	2000000.	1.57	-0.865E-01	0.289	-0.296	0.576	-0.579
NeVIII 2S-3P	200000.	0.207	-0.290E-02	*0.697E-02	*0.576E-02		
88.1 A	500000.	0.143	-0.876E-03	*0.171E-01	*0.143E-01		
C=0.98E+21	1000000.	0.111	0.236E-03	*0.252E-01	*0.204E-01		
	2000000.	0.870E-01	0.665E-03	*0.318E-01	*0.262E-01		
NeVIII 2S-4P	200000.	*0.304	*-0.629E-02				
67.4 A	500000.	0.227	-0.123E-02				
C=0.25E+21	1000000.	0.183	0.561E-03				
	2000000.	0.149	0.272E-02				
NeVIII 2S-5P	200000.	*0.448	*0.334E-02				
60.7 A	500000.	0.366	-0.845E-03				
C=0.18E+20	1000000.	0.314	-0.946E-03				
	2000000.	0.268	0.101E-03				
NeVIII 3S-4P	200000.	*5.15	*-0.107				
260.5 A	500000.	3.84	-0.639E-01				
C=0.37E+22	1000000.	3.10	-0.496E-01				
	2000000.	2.53	-0.244E-01				
NeVIII 3S-5P	200000.	*4.36	*0.241E-01				
182.8 A	500000.	3.54	-0.300E-01				
C=0.17E+21	1000000.	3.02	-0.371E-01				
	2000000.	2.57	-0.311E-01				
NeVIII 2P-3S	200000.	0.172	0.295E-02	0.615E-02	0.895E-02		
103.0 A	500000.	0.120	0.847E-02	*0.189E-01	*0.219E-01		
C=0.37E+22	1000000.	0.937E-01	0.106E-01	*0.308E-01	*0.312E-01		
	2000000.	0.744E-01	0.117E-01	*0.412E-01	*0.399E-01		
NeVIII 2P-4S	200000.	0.219	-0.877E-02				
74.6 A	500000.	0.166	0.739E-02				
C=0.80E+21	1000000.	0.136	0.155E-01				
	2000000.	0.110	0.186E-01				



STARK BROADENING PARAMETER TABLES FOR Ne VIII AND Na IX LINES OF ASTROPHYSICAL INTEREST

PERTURBER DENSITY = 0.1E+22cm <sup>-3</sup>							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
NeVIII 2P-5S	200000.	0.338	-0.328E-01				
66.3 A	500000.	0.276	0.773E-02				
C=0.42E+21	1000000.	0.232	0.244E-01				
	2000000.	0.192	0.335E-01				
NeVIII 2P-6S	200000.	0.417	-0.751E-01				
62.6 A	500000.	0.414	-0.157E-01				
C=0.13E+21	1000000.	0.375	0.129E-01				
	2000000.	0.322	0.439E-01				
NeVIII 3P-4S	200000.	5.22	-0.116				
298.6 A	500000.	3.89	0.117				
C=0.11E+23	1000000.	3.13	0.233				
	2000000.	2.53	0.277				
NeVIII 3P-5S	200000.	3.79	-0.285				
198.9 A	500000.	3.02	0.686E-01				
C=0.38E+22	1000000.	2.51	0.213				
	2000000.	2.07	0.293				
NeVIII 3P-6S	200000.	3.58	-0.538				
168.8 A	500000.	3.40	-0.115				
C=0.91E+21	1000000.	3.03	0.890E-01				
	2000000.	2.59	0.313				
PERTURBER DENSITY = 0.1E+23cm <sup>-3</sup>							
NeVIII 2S-3P	200000.	*1.76	*-0.102E-01				
88.1 A	500000.	1.26	-0.855E-02				
C=0.98E+22	1000000.	0.996	-0.480E-02				
	2000000.	0.796	-0.299E-02				
NeVIII 2P-3S	200000.	1.36	-0.166				
103.0 A	500000.	1.04	-0.386E-01				
C=0.37E+23	1000000.	0.840	0.166E-01				
	2000000.	0.678	0.536E-01				
NeVIII 2P-4S	200000.	*1.02	*-0.304				
74.6 A	500000.	1.01	-0.114				
C=0.80E+22	1000000.	0.925	-0.164E-01				
	2000000.	0.811	0.432E-01				
NeVIII 2P-5S	200000.	*0.864	*-0.568				
66.3 A	500000.	1.21	-0.221				
C=0.42E+22	1000000.	1.26	-0.603E-01				
	2000000.	1.20	0.572E-01				

PERTURBER DENSITY = 0.1E+19 cm <sup>-3</sup>							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
Na IX 2P-5S	200000.	0.247E-03	0.384E-04	0.466E-04	0.604E-04	0.931E-04	0.117E-03
52.5 A	500000.	0.184E-03	0.375E-04	0.751E-04	0.784E-04	0.153E-03	0.159E-03
C=0.22E+18	1000000.	0.149E-03	0.330E-04	0.956E-04	0.922E-04	0.199E-03	0.188E-03
	2000000.	0.120E-03	0.264E-04	0.114E-03	0.107E-03	0.233E-03	0.215E-03
Na IX 5P-4S	200000.	0.298E-02	0.240E-03	0.190E-03	0.312E-03	0.380E-03	0.615E-03
235.6 A	500000.	0.212E-02	0.228E-03	0.407E-03	0.463E-03	0.817E-03	0.940E-03
C=0.79E+19	1000000.	0.168E-02	0.219E-03	0.539E-03	0.556E-03	0.110E-02	0.113E-02
	2000000.	0.134E-02	0.184E-03	0.682E-03	0.653E-03	0.142E-02	0.134E-02
Na IX 3P-5S	200000.	0.265E-02	0.336E-03	0.411E-03	0.534E-03	0.821E-03	0.104E-02
157.3 A	500000.	0.195E-02	0.327E-03	0.666E-03	0.693E-03	0.135E-02	0.141E-02
C=0.20E+19	1000000.	0.156E-02	0.288E-03	0.845E-03	0.814E-03	0.176E-02	0.167E-02
	2000000.	0.126E-02	0.230E-03	0.101E-02	0.940E-03	0.209E-02	0.189E-02
PERTURBER DENSITY = 0.1E+20 cm <sup>-3</sup>							
Na IX 2S-2P	200000.	0.304E-01	-0.455E-03	0.641E-04	-0.285E-03	0.120E-03	-0.538E-03
686.8 A	500000.	0.196E-01	-0.513E-03	0.312E-03	-0.712E-03	0.599E-03	-0.142E-02
C=0.68E+22	1000000.	0.142E-01	-0.582E-03	0.812E-03	-0.121E-02	0.158E-02	-0.244E-02
	2000000.	0.106E-01	-0.550E-03	0.149E-02	-0.173E-02	0.296E-02	-0.350E-02
Na IX 2S-3P	200000.	0.120E-02	0.136E-04	0.273E-04	0.433E-04	0.525E-04	0.819E-04
70.6 A	500000.	0.812E-03	0.125E-04	0.725E-04	0.811E-04	0.144E-03	0.163E-03
C=0.71E+19	1000000.	0.618E-03	0.110E-04	0.117E-03	0.112E-03	0.235E-03	0.227E-03
	2000000.	0.479E-03	0.838E-05	0.151E-03	0.134E-03	0.307E-03	0.273E-03
Na IX 3S-3P	200000.	1.95	-0.306E-01	0.246E-01	-0.530E-02	0.467E-01	-0.100E-01
2500.6 A	500000.	1.34	-0.409E-01	0.591E-01	-0.130E-01	0.115	-0.259E-01
C=0.89E+22	1000000.	1.04	-0.412E-01	0.861E-01	-0.214E-01	0.169	-0.433E-01
	2000000.	0.816	-0.420E-01	0.105	-0.298E-01	0.209	-0.603E-01
Na IX 2P-3S	200000.	0.905E-03	0.568E-04	0.187E-04	0.655E-04	0.363E-04	0.124E-03
81.5 A	500000.	0.622E-03	0.671E-04	0.745E-04	0.120E-03	0.150E-03	0.241E-03
C=0.26E+20	1000000.	0.480E-03	0.664E-04	0.135E-03	0.165E-03	0.271E-03	0.334E-03
	2000000.	0.378E-03	0.633E-04	0.189E-03	0.199E-03	0.381E-03	0.401E-03
Na IX 2P-4S	200000.	0.126E-02	0.153E-03	0.129E-03	0.201E-03	*0.259E-03	*0.373E-03
59.0 A	500000.	0.913E-03	0.151E-03	0.276E-03	0.309E-03	*0.556E-03	*0.621E-03
C=0.57E+19	1000000.	0.730E-03	0.148E-03	0.367E-03	0.376E-03	0.753E-03	0.770E-03
	2000000.	0.588E-03	0.125E-03	0.445E-03	0.452E-03	0.931E-03	0.902E-03
Na IX 2P-5S	200000.	0.247E-02	0.336E-03	*0.466E-03	*0.549E-03		
52.5 A	500000.	0.184E-02	0.354E-03	*0.752E-03	*0.763E-03		
C=0.22E+19	1000000.	0.148E-02	0.325E-03	0.956E-03	0.918E-03		
	2000000.	0.120E-02	0.264E-03	0.114E-02	0.107E-02		
Na IX 3P-4S	200000.	0.298E-01	0.224E-02	0.191E-02	0.292E-02	0.379E-02	0.546E-02
235.6 A	500000.	0.212E-01	0.221E-02	0.406E-02	0.455E-02	0.817E-02	0.910E-02
C=0.79E+20	1000000.	0.168E-01	0.217E-02	0.539E-02	0.554E-02	*0.110E-01	*0.113E-01
	2000000.	0.134E-01	0.184E-02	0.682E-02	0.653E-02	*0.142E-01	*0.133E-01

STARK BROADENING PARAMETER TABLES FOR Na VIII AND Na IX LINES OF ASTROPHYSICAL INTEREST

PERTURBER DENSITY = $0.1E+20$ cm <sup>-3</sup>							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
Na IX 3P-5S	200000.	0.265E-01	0.293E-02	*0.411E-02	*0.485E-02		
157.3 A	500000.	0.195E-01	0.309E-02	*0.666E-02	*0.676E-02		
C=0.20E+20	1000000.	0.156E-01	0.204E-02	0.845E-02	0.610E-02		
	2000000.	0.126E-01	0.230E-02	0.101E-01	0.940E-02		
PERTURBER DENSITY = $0.1E+21$ cm <sup>-3</sup>							
Na IX 2S-2P	200000.	0.304	0.361E-02	0.634E-03	-0.253E-02	0.116E-02	-0.633E-02
684.8 A	500000.	0.196	-0.502E-02	0.311E-02	-0.690E-02	0.595E-02	-0.131E-01
C=0.68E+23	1000000.	0.143	-0.976E-02	0.812E-02	-0.120E-01	0.158E-01	-0.235E-01
	2000000.	0.106	-0.548E-02	0.149E-01	-0.173E-01	0.296E-01	-0.349E-01
Na IX 2S-3P	200000.	0.120E-01	0.548E-04	0.271E-03	0.381E-03	0.507E-03	0.630E-03
70.6 A	500000.	0.812E-02	0.802E-04	0.726E-03	0.775E-03	0.144E-02	0.168E-02
C=0.71E+20	1000000.	0.617E-02	0.923E-04	0.117E-02	0.110E-02	*0.234E-02	*0.215E-02
	2000000.	0.479E-02	0.800E-04	0.151E-02	0.134E-02	*0.307E-02	*0.272E-02
Na IX 3S-3P	200000.	19.5	-0.310	0.243	-0.471E-01	0.466	-0.708E-01
2500.6 A	500000.	13.4	-0.420	0.590	-0.126	1.14	-0.240
C=0.89E+23	1000000.	10.4	-0.405	0.851	-0.212	1.69	-0.419
	2000000.	8.16	-0.421	1.05	-0.298	2.09	-0.602
Na IX 2P-3S	200000.	0.905E-02	0.452E-03	0.187E-03	0.575E-03	0.361E-03	0.950E-03
81.3 A	500000.	0.622E-02	0.621E-03	0.749E-03	0.114E-02	0.151E-02	0.215E-02
C=0.26E+21	1000000.	0.481E-02	0.632E-03	0.135E-02	0.162E-02	0.271E-02	0.318E-02
	2000000.	0.378E-02	0.628E-03	0.189E-02	0.198E-02	0.381E-02	0.400E-02
Na IX 2P-4S	200000.	0.126E-01	0.106E-02	*0.129E-02	*0.166E-02		
59.0 A	500000.	0.912E-02	0.124E-02	*0.276E-02	*0.286E-02		
C=0.57E+20	1000000.	0.729E-02	0.136E-02	*0.366E-02	*0.364E-02		
	2000000.	0.587E-02	0.123E-02	*0.445E-02	*0.450E-02		
Na IX 2P-5S	200000.	0.241E-01	0.146E-02				
52.5 A	500000.	0.180E-01	0.247E-02				
C=0.22E+20	1000000.	0.146E-01	0.275E-02				
	2000000.	0.118E-01	0.254E-02				
Na IX 3P-4S	200000.	0.297	0.158E-01	*0.190E-01	*0.244E-01		
235.6 A	500000.	0.212	0.183E-01	*0.407E-01	*0.422E-01		
C=0.79E+21	1000000.	0.168	0.200E-01	*0.540E-01	*0.538E-01		
	2000000.	0.134	0.180E-01	*0.682E-01	*0.650E-01		
Na IX 3P-5S	200000.	0.259	0.126E-01				
157.3 A	500000.	0.191	0.215E-01				
C=0.20E+21	1000000.	0.154	0.240E-01				
	2000000.	0.124	0.222E-01				
PERTURBER DENSITY = $0.1E+22$ cm <sup>-3</sup>							
Na IX 2S-2P	200000.	3.04	-0.211E-01	0.564E-02	-0.167E-01	0.864E-02	-0.192E-01
684.8 A	500000.	1.96	-0.421E-01	0.310E-01	-0.620E-01	0.586E-01	-0.108
C=0.68E+24	1000000.	1.43	-0.518E-01	0.810E-01	-0.115	0.157	-0.216
	2000000.	1.06	-0.527E-01	0.149	-0.170	0.296	-0.333

PERTURBER DENSITY = 0.1E+22 cm <sup>-3</sup>							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
Na IX 2S-3P	200000.	0.117	-0.137E-02	0.242E-02	0.240E-02	*0.372E-02	*0.251E-02
70.6 A	500000.	0.796E-01	-0.398E-03	*0.716E-02	*0.660E-02		
C=0.71E+21	1000000.	0.607E-01	0.779E-04	*0.117E-01	*0.102E-01		
	2000000.	0.471E-01	0.353E-03	*0.151E-01	*0.130E-01		
Na IX 2P-3S	200000.	0.901E-01	0.830E-03	0.183E-02	0.359E-02	*0.321E-02	*0.370E-02
81.3 A	500000.	0.620E-01	0.404E-02	0.746E-02	0.968E-02		
C=0.26E+22	1000000.	0.479E-01	0.497E-02	*0.135E-01	*0.150E-01		
	2000000.	0.377E-01	0.563E-02	*0.189E-01	*0.192E-01		
Na IX 2P-4S	200000.	0.114	-0.366E-02				
59.0 A	500000.	0.851E-01	0.375E-02				
C=0.57E+21	1000000.	0.689E-01	0.786E-02				
	2000000.	0.559E-01	0.940E-02				
Na IX 2P-5S	200000.	0.172	-0.202E-01				
52.5 A	500000.	0.143	0.726E-03				
C=0.22E+21	1000000.	0.121	0.981E-02				
	2000000.	0.101	0.152E-01				
Na IX 3P-4S	200000.	2.75	-0.458E-01				
235.6 A	500000.	2.01	0.592E-01				
C=0.79E+22	1000000.	1.60	0.118				
	2000000.	1.29	0.140				
Na IX 3P-5S	200000.	1.96	-0.176				
157.3 A	500000.	1.58	0.622E-02				
C=0.20E+22	1000000.	1.31	0.850E-01				
	2000000.	1.08	0.132				
PERTURBER DENSITY = 0.1E+23 cm <sup>-3</sup>							
Na IX 2S-3P	200000.	*1.02	*-0.596E-02				
70.6 A	500000.	0.717	-0.512E-02				
C=0.71E+22	1000000.	0.556	-0.387E-02				
	2000000.	0.437	-0.202E-02				
Na IX 2P-3S	200000.	0.740	-0.850E-01				
81.3 A	500000.	0.555	-0.180E-01				
C=0.26E+23	1000000.	0.440	0.813E-02				
	2000000.	0.351	0.279E-01				
Na IX 2P-4S	200000.	0.573	-0.153				
59.0 A	500000.	0.546	-0.612E-01				
C=0.57E+22	1000000.	0.491	-0.901E-02				
	2000000.	0.425	0.236E-01				
Na IX 2P-5S	200000.	0.490	-0.264				
52.5 A	500000.	0.638	-0.112				
C=0.22E+22	1000000.	0.664	-0.373E-01				
	2000000.	0.626	0.210E-01				

STARK BROADENING PARAMETER TABLES FOR Ne VIII AND Na IX LINES OF ASTROPHYSICAL INTEREST

PERTURBER DENSITY = 0.1E+23 cm <sup>-3</sup>							
PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)	WIDTH(A)	SHIFT(A)
Na IX 3P-4S	200000.	*16.8	*-2.33				
235.6 A	500000.	14.3	-0.935				
C=0.79E+23	1000000.	12.3	-0.139				
	2000000.	10.4	0.350				
Na IX 3P-5S	200000.	*7.80	*-2.33				
157.3 A	500000.	8.24	-0.986				
C=0.20E+23	1000000.	7.96	-0.333				
	2000000.	7.23	0.178				

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 estimations (Sahal-Bréchet 1991 and Griem 1974). The accuracy of the results obtained decreases when broadening by ion interactions becomes important.

The analysis of present results and comparison with available experimental and theoretical data is given in Dimitrijević and Sahal-Bréchet (1994).

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## ТАБЕЛЕ ПАРАМЕТАРА ШТАРКОВОГ ШИРЕЊА ЛИНИЈА Ne VIII и Na IX ОД ЗНАЧАЈА У АСТРОФИЗИЦИ

М. С. Димитријевић<sup>1</sup> и S. Sahal-Bréchet<sup>2</sup>

<sup>1</sup> *Астрономска опсерваторија, Волгина 7, 11050 Београд, Југославија*

<sup>2</sup> *Laboratoire "Astrophysique, Atomes et Molécules"  
Département Atomes et Molécules en Astrophysique  
Unité associée au C.N.R.S. No 812  
Observatoire de Paris-Meudon, 92190 Meudon, France*

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Претходно саопштење

Користећи семикласичан прилаз, израчуна-  
те су ширине и помераји спектралних линија, про-  
узроковани сударима са електронима, протонима

и He III, за 20 мултиплета Ne VIII и 8 мултиплета  
Na IX. Резултати су дати у функцији температуре  
и концентрације пертурбера.