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Preliminary report

STARK BROADENING PARAMETER TABLES FOR K VIII AND K IX

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SUMMARY: Using a semiclassical approach, we have calculated electron−, proton−, and He III−impact line widths and shifts for 4 K VIII and 30 K IX multiplets as a function of temperature and perturber density.

1. INTRODUCTION

Potassium lines are of astrophysical interest since they are present in Solar (Moore *et al.* 1966) and stellar spectra (Merrill, 1956). For example potassium has been found in SN 1987 A ejecta (Trimble, 1991). As the potassium is a product of alpha processes - neutron capture on slow time scale, the data on the spectral line broadening parameters of this element in various ionization stages are of interest for the considering and modelling of subphotospheric layers (Seaton, 1987). Such data are as well of interest for the fusion plasmas and laser-produced plasmas research and for the investigation of soft X-ray lasers (see e.g. Griem and Moreno, 1990; Fill and Schöning, 1994).

As a continuation of our efforts to provide an as much as possible large set of reliable Stark broadening data needed for the consideration and modelling of astrophysical and laboratory plasmas as well as laser produced and fusion plasmas, we have calculated within the semiclassical-perturbation formalism (Sahal−Bréchot, 1969ab, see also Sahal−Bréchot, 1974, Fleurier *et al.* 1977, Dimitrijević and Sahal−Bréchot, 1984, Dimitrijević *et al.* 1991, Dimitrijević and Sahal−Bréchot, 1995) electron-, proton-, and He III-impact line widths and shifts for 4 K VIII and 30 K IX multiplets. The used formalism has been reviewed briefly in Dimitrijević and Sahal−Bréchot, 1995.

2. RESULTS AND DISCUSSION

All relevant details concerning the obtained results and the calculation procedure will be published in Dimitrijević and Sahal−Bréchot, 1998. Here, we present only tables of Stark broadening parameters. Atomic energy levels needed for calculations have been taken from Bashkin and Stoner (1978). Our results for 4 K VIII and 30 K IX multiplets are shown in Tables 1 and 2, for perturber densities $10^{18} - 10^{22}$ cm^{-3}. Stark broadening parameters for densities lower than tabulated, are linear with perturber density. We also specify a parameter C (Dimitrijević and Sahal−Bréchot 1984), which gives an estimate for the maximum perturber density for which the line may be treated as isolated when it is

Table 1. This table shows electron-, proton-, and He III- impact broadening parameters for K VIII for perturber densities of 10^{18} − 10^{22} cm^{-3} and temperatures from 200,000 up to 3,000,000 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)
K VIII 3S 3P	200000.	0.445E-02	-0.434E-04	0.673E-04	-0.271E-04	0.131E-03	-0.532E-04
519.4 Å	500000.	0.291E-02	-0.476E-04	0.168E-03	-0.620E-04	0.330E-03	-0.124E-03
C = 0.52E+21	1000000.	0.218E-02	-0.553E-04	0.250E-03	-0.969E-04	0.495E-03	-0.195E-03
	1500000.	0.187E-02	-0.517E-04	0.297E-03	-0.118E-03	0.591E-03	-0.237E-03
	2000000.	0.169E-02	-0.507E-04	0.316E-03	-0.133E-03	0.629E-03	-0.269E-03
	3000000.	0.148E-02	-0.490E-04	0.345E-03	-0.149E-03	0.686E-03	-0.301E-03
K VIII 3P 4S	200000.	0.141E-02	0.939E-04	0.463E-04	0.983E-04	0.918E-04	0.193E-03
221.3 Å	500000.	0.983E-03	0.111E-03	0.120E-03	0.158E-03	0.238E-03	0.318E-03
C = 0.25E+20	1000000.	0.772E-03	0.106E-03	0.185E-03	0.195E-03	0.372E-03	0.393E-03
	1500000.	0.677E-03	0.102E-03	0.219E-03	0.215E-03	0.437E-03	0.437E-03
	2000000.	0.620E-03	0.990E-04	0.244E-03	0.233E-03	0.476E-03	0.470E-03
	3000000.	0.549E-03	0.890E-04	0.284E-03	0.256E-03	0.547E-03	0.520E-03
K VIII 3P 5S	200000.	0.135E-02	0.196E-03	0.142E-03	0.206E-03	0.286E-03	0.403E-03
142.8 Å	500000.	0.985E-03	0.185E-03	0.264E-03	0.278E-03	0.530E-03	0.564E-03
C = 0.41E+19	1000000.	0.794E-03	0.175E-03	0.342E-03	0.332E-03	0.683E-03	0.674E-03
	1500000.	0.703E-03	0.160E-03	0.391E-03	0.369E-03	0.767E-03	0.739E-03
	2000000.	0.646E-03	0.147E-03	0.430E-03	0.391E-03	0.824E-03	0.781E-03
	3000000.	0.573E-03	0.127E-03	0.508E-03	0.418E-03	0.964E-03	0.853E-03
K VIII 3P 3D	200000.	0.391E-02	0.538E-04	0.983E-04	0.233E-04	0.191E-03	0.458E-04
441.4 Å	500000.	0.255E-02	0.661E-04	0.212E-03	0.524E-04	0.419E-03	0.105E-03
C = 0.38E+21	1000000.	0.192E-02	0.758E-04	0.298E-03	0.801E-04	0.590E-03	0.162E-03
	1500000.	0.166E-02	0.800E-04	0.329E-03	0.973E-04	0.657E-03	0.196E-03
	2000000.	0.150E-02	0.769E-04	0.350E-03	0.110E-03	0.697E-03	0.222E-03
	3000000.	0.133E-02	0.753E-04	0.376E-03	0.122E-03	0.750E-03	0.247E-03

PERTURBER DENSITY = 1.E+19cm^{-3}

K VIII 3S 3P	200000.	0.445E-01	-0.444E-03	0.672E-03	-0.262E-03	0.130E-02	-0.496E-03
519.4 Å	500000.	0.291E-01	-0.466E-03	0.168E-02	-0.616E-03	0.330E-02	-0.123E-02
C = 0.52E+22	1000000.	0.218E-01	-0.551E-03	0.250E-02	-0.969E-03	0.495E-02	-0.195E-02
	1500000.	0.187E-01	-0.517E-03	0.297E-02	-0.118E-02	0.591E-02	-0.237E-02
	2000000.	0.169E-01	-0.506E-03	0.316E-02	-0.133E-02	0.629E-02	-0.268E-02
	3000000.	0.148E-01	-0.490E-03	0.345E-02	-0.149E-02	0.686E-02	-0.301E-02
K VIII 3P 4S	200000.	0.141E-01	0.903E-03	0.464E-03	0.945E-03	0.916E-03	0.177E-02
221.3 Å	500000.	0.983E-02	0.108E-02	0.120E-02	0.156E-02	0.238E-02	0.311E-02
C = 0.25E+21	1000000.	0.772E-02	0.104E-02	0.185E-02	0.194E-02	0.372E-02	0.392E-02
	1500000.	0.677E-02	0.102E-02	0.219E-02	0.215E-02	0.437E-02	0.436E-02
	2000000.	0.620E-02	0.989E-03	0.244E-02	0.233E-02	0.476E-02	0.469E-02
	3000000.	0.549E-02	0.888E-03	0.284E-02	0.256E-02	0.547E-02	0.520E-02
K VIII 3P 5S	200000.	0.135E-01	0.183E-02	0.142E-02	0.194E-02	*0.286E-02	*0.352E-02
142.8 Å	500000.	0.985E-02	0.174E-02	0.264E-02	0.273E-02	*0.530E-02	*0.542E-02
C = 0.41E+20	1000000.	0.794E-02	0.171E-02	0.342E-02	0.331E-02	*0.683E-02	*0.671E-02
	1500000.	0.703E-02	0.159E-02	0.391E-02	0.368E-02	*0.767E-02	*0.735E-02
	2000000.	0.646E-02	0.146E-02	0.430E-02	0.391E-02	*0.824E-02	*0.778E-02
	3000000.	0.573E-02	0.127E-02	0.508E-02	0.418E-02	*0.964E-02	*0.853E-02
K VIII 3P 3D	200000.	0.391E-01	0.513E-03	0.982E-03	0.226E-03	0.190E-02	0.427E-03
441.4 Å	500000.	0.255E-01	0.658E-03	0.212E-02	0.521E-03	0.419E-02	0.104E-02
C = 0.38E+22	1000000.	0.192E-01	0.754E-03	0.298E-02	0.801E-03	0.590E-02	0.161E-02
	1500000.	0.166E-01	0.803E-03	0.329E-02	0.973E-03	0.657E-02	0.196E-02
	2000000.	0.150E-01	0.768E-03	0.350E-02	0.110E-02	0.696E-02	0.222E-02
	3000000.	0.133E-01	0.752E-03	0.376E-02	0.122E-02	0.750E-02	0.247E-02

PERTURBERS ARE:		ELECTRONS		PROTONS		IONIZED HELIUM	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
PERTURBER DENSITY = 1.E+20cm^{-3}							
K VIII 3S 3P	200000.	0.445	-0.424E-02	0.665E-02	-0.234E-02	0.126E-01	-0.402E-02
519.4 Å	500000.	0.291	-0.450E-02	0.168E-01	-0.598E-02	0.328E-01	-0.115E-01
C = 0.52E+23	1000000.	0.218	-0.535E-02	0.250E-01	-0.960E-02	0.494E-01	-0.192E-01
	1500000.	0.187	-0.504E-02	0.297E-01	-0.117E-01	0.591E-01	-0.234E-01
	2000000.	0.169	-0.501E-02	0.315E-01	-0.133E-01	0.629E-01	-0.268E-01
	3000000.	0.148	-0.486E-02	0.345E-01	-0.149E-01	0.686E-01	-0.300E-01
K VIII 3P 4S	200000.	0.141	0.771E-02	0.462E-02	0.822E-02	*0.905E-02	*0.136E-01
221.3 Å	500000.	0.983E-01	0.100E-01	0.119E-01	0.148E-01	*0.239E-01	*0.275E-01
C = 0.25E+22	1000000.	0.772E-01	0.979E-02	0.185E-01	0.190E-01	*0.373E-01	*0.377E-01
	1500000.	0.677E-01	0.964E-02	0.219E-01	0.215E-01	*0.437E-01	*0.423E-01
	2000000.	0.620E-01	0.961E-02	0.244E-01	0.232E-01	*0.476E-01	*0.467E-01
	3000000.	0.549E-01	0.866E-02	0.284E-01	0.256E-01	*0.547E-01	*0.518E-01
K VIII 3P 5S	200000.	0.135	0.140E-01	*0.142E-01	*0.156E-01		
142.8 Å	500000.	0.985E-01	0.148E-01	*0.264E-01	*0.250E-01		
C = 0.41E+21	1000000.	0.793E-01	0.150E-01	*0.343E-01	*0.320E-01		
	1500000.	0.703E-01	0.142E-01	*0.391E-01	*0.366E-01		
	2000000.	0.645E-01	0.137E-01	*0.430E-01	*0.388E-01		
	3000000.	0.572E-01	0.120E-01	*0.508E-01	*0.416E-01		
K VIII 3P 3D	200000.	0.391	0.482E-02	0.970E-02	0.202E-02	0.183E-01	0.346E-02
441.4 Å	500000.	0.255	0.637E-02	0.212E-01	0.506E-02	0.417E-01	0.969E-02
C = 0.38E+23	1000000.	0.192	0.749E-02	0.298E-01	0.793E-02	0.590E-01	0.158E-01
	1500000.	0.166	0.790E-02	0.329E-01	0.972E-02	0.657E-01	0.194E-01
	2000000.	0.150	0.764E-02	0.350E-01	0.110E-01	0.696E-01	0.222E-01
	3000000.	0.133	0.749E-02	0.376E-01	0.122E-01	0.749E-01	0.246E-01
PERTURBER DENSITY = 1.E+21cm^{-3}							
K VIII 3S 3P	200000.	4.45	-0.314E-01	0.600E-01	-0.165E-01	*0.929E-01	-0.203E-01
519.4 Å	500000.	2.91	-0.392E-01	0.166	-0.542E-01	*0.317	-0.953E-01
C = 0.52E+24	1000000.	2.18	-0.493E-01	0.250	-0.921E-01	*0.489	-0.173
	1500000.	1.87	-0.469E-01	0.297	-0.115	*0.588	-0.221
	2000000.	1.69	-0.467E-01	0.315	-0.131	*0.627	-0.255
	3000000.	1.48	-0.462E-01	0.344	-0.148	*0.685	-0.294
K VIII 3P 4S	200000.	1.41	0.276E-01	*0.444E-01	*0.512E-01		
221.3 Å	500000.	0.981	0.716E-01	*0.119	*0.123		
C = 0.25E+23	1000000.	0.771	0.777E-01	*0.184	*0.173		
	1500000.	0.677	0.799E-01	*0.219	*0.205		
	2000000.	0.619	0.805E-01	*0.245	*0.224		
	3000000.	0.548	0.759E-01	*0.284	*0.255		
K VIII 3P 5S	200000.	*1.25	-0.141E-01				
142.8 Å	500000.	0.936	0.606E-01				
C = 0.41E+22	1000000.	0.760	0.888E-01				
	1500000.	0.676	0.898E-01				
	2000000.	0.622	0.872E-01				
	3000000.	0.553	0.842E-01				
K VIII 3P 3D	200000.	3.91	0.395E-01	0.867E-01	0.142E-01		
441.4 Å	500000.	2.55	0.586E-01	0.208	0.457E-01		
C = 0.38E+24	1000000.	1.92	0.707E-01	0.297	0.760E-01		
	1500000.	1.66	0.761E-01	0.329	0.952E-01		
	2000000.	1.50	0.732E-01	0.349	0.108	*0.694	*0.210
	3000000.	1.33	0.729E-01	0.376	0.122	*0.748	*0.241
PERTURBER DENSITY = 1.E+22cm^{-3}							
K VIII 3P 4S	200000.						
221.3 Å	500000.	*9.07	-0.190				
C = 0.25E+24	1000000.	7.25	0.183				
	1500000.	6.40	0.324				
	2000000.	5.88	0.391				
	3000000.	5.23	0.405				
K VIII 3P 5S	200000.						
142.8 Å	500000.	*6.07	-0.719				
C = 0.41E+23	1000000.	*5.49	-0.921E-01				
	1500000.	*5.09	*0.919E-01				
	2000000.	*4.79	*0.171				
	3000000.	4.38	0.218				

Table 2. This table shows electron-, proton-, and He III- impact broadening parameters for K IX for perturber densities of 10^{18}− 10^{22} cm^{-3} and temperatures from 200,000 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+17cm^{-3}

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 3S 3P	200000.	0.662E-03	-0.829E-05	0.650E-05	-0.505E-05	0.126E-04	-0.101E-04
626.3 Å	500000.	0.433E-03	-0.883E-05	0.186E-04	-0.115E-04	0.364E-04	-0.231E-04
C = 0.63E+20	1000000.	0.323E-03	-0.974E-05	0.301E-04	-0.181E-04	0.596E-04	-0.364E-04
	2000000.	0.248E-03	-0.903E-05	0.424E-04	-0.248E-04	0.845E-04	-0.501E-04
	3000000.	0.215E-03	-0.868E-05	0.472E-04	-0.277E-04	0.934E-04	-0.560E-04
	5000000.	0.182E-03	-0.817E-05	0.542E-04	-0.319E-04	0.106E-03	-0.645E-04
K IX 3S 4P	200000.	0.738E-04	0.534E-06	0.305E-05	0.429E-06	0.597E-05	0.858E-06
131.7 Å	500000.	0.499E-04	0.733E-06	0.544E-05	0.912E-06	0.107E-04	0.183E-05
C = 0.10E+19	1000000.	0.384E-04	0.613E-06	0.687E-05	0.133E-05	0.137E-04	0.269E-05
	2000000.	0.305E-04	0.570E-06	0.784E-05	0.177E-05	0.155E-04	0.358E-05
	3000000.	0.271E-04	0.591E-06	0.846E-05	0.197E-05	0.166E-04	0.399E-05
	5000000.	0.236E-04	0.491E-06	0.926E-05	0.224E-05	0.175E-04	0.454E-05
K IX 3S 5P	200000.	0.903E-04	0.167E-05	0.735E-05	0.178E-05	0.145E-04	0.358E-05
98.8 Å	500000.	0.635E-04	0.202E-05	0.105E-04	0.297E-05	0.210E-04	0.598E-05
C = 0.28E+18	1000000.	0.506E-04	0.193E-05	0.121E-04	0.374E-05	0.240E-04	0.757E-05
	2000000.	0.414E-04	0.185E-05	0.136E-04	0.451E-05	0.267E-04	0.912E-05
	3000000.	0.373E-04	0.164E-05	0.144E-04	0.496E-05	0.276E-04	0.100E-04
	5000000.	0.330E-04	0.137E-05	0.156E-04	0.551E-05	0.287E-04	0.112E-04
K IX 4S 4P	200000.	0.144E-01	-0.281E-03	0.510E-03	-0.317E-03	0.100E-02	-0.636E-03
1657.9 Å	500000.	0.991E-02	-0.355E-03	0.950E-03	-0.547E-03	0.188E-02	-0.110E-02
C = 0.17E+21	1000000.	0.775E-02	-0.328E-03	0.123E-02	-0.736E-03	0.245E-02	-0.149E-02
	2000000.	0.623E-02	-0.315E-03	0.147E-02	-0.881E-03	0.291E-02	-0.178E-02
	3000000.	0.554E-02	-0.282E-03	0.165E-02	-0.977E-03	0.317E-02	-0.197E-02
	5000000.	0.483E-02	-0.238E-03	0.190E-02	-0.111E-02	0.351E-02	-0.224E-02
K IX 4S 5P	200000.	0.104E-02	0.384E-05	0.761E-04	0.599E-05	0.151E-03	0.120E-04
319.4 Å	500000.	0.737E-03	0.355E-05	0.109E-03	0.116E-04	0.216E-03	0.233E-04
C = 0.30E+19	1000000.	0.590E-03	0.440E-05	0.123E-03	0.160E-04	0.245E-03	0.323E-04
	2000000.	0.484E-03	0.426E-05	0.139E-03	0.197E-04	0.271E-03	0.398E-04
	3000000.	0.436E-03	0.319E-05	0.147E-03	0.218E-04	0.279E-03	0.440E-04
	5000000.	0.386E-03	0.257E-05	0.160E-03	0.247E-04	0.289E-03	0.498E-04
K IX 5S 5P	200000.	0.151	-0.537E-02	0.969E-02	-0.610E-02	0.192E-01	-0.123E-01
3448.3 Å	500000.	0.109	-0.509E-02	0.145E-01	-0.902E-02	0.290E-01	-0.182E-01
C = 0.34E+21	1000000.	0.878E-01	-0.470E-02	0.174E-01	-0.108E-01	0.346E-01	-0.218E-01
	2000000.	0.723E-01	-0.413E-02	0.210E-01	-0.129E-01	0.403E-01	-0.261E-01
	3000000.	0.651E-01	-0.363E-02	0.231E-01	-0.140E-01	0.432E-01	-0.283E-01
	5000000.	0.573E-01	-0.298E-02	0.259E-01	-0.151E-01	0.467E-01	-0.310E-01
K IX 3P 4S	200000.	0.921E-04	0.532E-05	0.197E-05	0.500E-05	0.389E-05	0.100E-04
185.4 Å	500000.	0.634E-04	0.668E-05	0.579E-05	0.849E-05	0.116E-04	0.171E-04
C = 0.21E+19	1000000.	0.493E-04	0.618E-05	0.102E-04	0.110E-04	0.205E-04	0.223E-04
	2000000.	0.392E-04	0.587E-05	0.135E-04	0.132E-04	0.269E-04	0.267E-04
	3000000.	0.346E-04	0.546E-05	0.156E-04	0.147E-04	0.306E-04	0.295E-04
	5000000.	0.297E-04	0.466E-05	0.190E-04	0.164E-04	0.363E-04	0.334E-04
K IX 3P 5S	200000.	0.779E-04	0.956E-05	0.562E-05	0.932E-05	0.113E-04	0.188E-04
121.5 Å	500000.	0.562E-04	0.971E-05	0.119E-04	0.135E-04	0.240E-04	0.273E-04
C = 0.43E+18	1000000.	0.450E-04	0.912E-05	0.159E-04	0.162E-04	0.319E-04	0.327E-04
	2000000.	0.366E-04	0.826E-05	0.205E-04	0.191E-04	0.407E-04	0.389E-04
	3000000.	0.325E-04	0.732E-05	0.238E-04	0.209E-04	0.457E-04	0.427E-04
	5000000.	0.280E-04	0.607E-05	0.274E-04	0.229E-04	0.516E-04	0.463E-04
K IX 3P 6S	200000.	0.115E-03	0.201E-04	0.147E-04	0.201E-04	0.294E-04	0.405E-04
103.4 Å	500000.	0.855E-04	0.185E-04	0.249E-04	0.260E-04	0.503E-04	0.525E-04
C = 0.17E+18	1000000.	0.694E-04	0.173E-04	0.317E-04	0.309E-04	0.640E-04	0.625E-04
	2000000.	0.569E-04	0.144E-04	0.398E-04	0.354E-04	0.783E-04	0.717E-04
	3000000.	0.506E-04	0.124E-04	0.458E-04	0.383E-04	0.867E-04	0.784E-04
	5000000.	0.436E-04	0.104E-04	0.538E-04	0.419E-04	0.976E-04	0.858E-04

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 3P 7S	200000.	0.190E-03	0.369E-04	0.347E-04	0.387E-04	0.697E-04	0.782E-04
95.3 Å	500000.	0.143E-03	0.343E-04	0.495E-04	0.494E-04	0.100E-03	0.997E-04
C = 0.89E+17	1000000.	0.117E-03	0.308E-04	0.639E-04	0.572E-04	0.127E-03	0.117E-03
	2000000.	0.959E-04	0.245E-04	0.773E-04	0.671E-04	0.143E-03	0.135E-03
	3000000.	0.852E-04	0.213E-04	0.875E-04	0.715E-04	0.164E-03	0.146E-03
	5000000.	0.730E-04	0.178E-04	0.102E-03	0.762E-04	0.184E-03	0.153E-03
K IX 4P 5S	200000.	0.156E-02	0.119E-03	0.875E-04	0.122E-03	0.175E-03	0.246E-03
446.9 Å	500000.	0.111E-02	0.118E-03	0.172E-03	0.178E-03	0.345E-03	0.359E-03
C = 0.58E+19	1000000.	0.885E-03	0.111E-03	0.224E-03	0.213E-03	0.450E-03	0.432E-03
	2000000.	0.720E-03	0.101E-03	0.288E-03	0.254E-03	0.560E-03	0.515E-03
	3000000.	0.642E-03	0.878E-04	0.327E-03	0.278E-03	0.611E-03	0.558E-03
	5000000.	0.558E-03	0.723E-04	0.383E-03	0.301E-03	0.700E-03	0.617E-03
K IX 4P 6S	200000.	0.983E-03	0.135E-03	0.104E-03	0.138E-03	0.207E-03	0.279E-03
272.3 Å	500000.	0.720E-03	0.123E-03	0.174E-03	0.179E-03	0.351E-03	0.361E-03
C = 0.12E+19	1000000.	0.583E-03	0.116E-03	0.221E-03	0.212E-03	0.443E-03	0.431E-03
	2000000.	0.477E-03	0.953E-04	0.278E-03	0.243E-03	0.546E-03	0.492E-03
	3000000.	0.425E-03	0.817E-04	0.318E-03	0.265E-03	0.597E-03	0.540E-03
	5000000.	0.368E-03	0.687E-04	0.374E-03	0.290E-03	0.665E-03	0.591E-03
K IX 4P 7S	200000.	0.115E-02	0.198E-03	0.189E-03	0.210E-03	0.380E-03	0.425E-03
222.3 Å	500000.	0.860E-03	0.183E-03	0.269E-03	0.268E-03	0.545E-03	0.542E-03
C = 0.49E+18	1000000.	0.703E-03	0.165E-03	0.348E-03	0.310E-03	0.691E-03	0.635E-03
	2000000.	0.577E-03	0.131E-03	0.419E-03	0.365E-03	0.778E-03	0.730E-03
	3000000.	0.513E-03	0.113E-03	0.475E-03	0.388E-03	0.890E-03	0.793E-03
	5000000.	0.441E-03	0.945E-04	0.556E-03	0.413E-03	0.101E-02	0.835E-03
K IX 5P 6S	200000.	0.138E-01	0.128E-02	0.122E-02	0.137E-02	0.243E-02	0.276E-02
873.1 Å	500000.	0.101E-01	0.114E-02	0.189E-02	0.178E-02	0.378E-02	0.359E-02
C = 0.12E+20	1000000.	0.823E-02	0.106E-02	0.237E-02	0.212E-02	0.468E-02	0.427E-02
	2000000.	0.679E-02	0.861E-03	0.300E-02	0.244E-02	0.564E-02	0.497E-02
	3000000.	0.609E-02	0.738E-03	0.328E-02	0.265E-02	0.610E-02	0.529E-02
	5000000.	0.532E-02	0.621E-03	0.382E-02	0.286E-02	0.707E-02	0.585E-02
K IX 5P 7S	200000.	0.723E-02	0.990E-03	0.100E-02	0.108E-02	0.201E-02	0.218E-02
507.2 Å	500000.	0.539E-02	0.910E-03	0.142E-02	0.138E-02	0.284E-02	0.279E-02
C = 0.25E+19	1000000.	0.441E-02	0.815E-03	0.182E-02	0.160E-02	0.358E-02	0.328E-02
	2000000.	0.364E-02	0.640E-03	0.216E-02	0.188E-02	0.405E-02	0.373E-02
	3000000.	0.325E-02	0.553E-03	0.247E-02	0.199E-02	0.457E-02	0.410E-02
	5000000.	0.282E-02	0.464E-03	0.291E-02	0.213E-02	0.525E-02	0.431E-02
K IX 3P 3D	200000.	0.397E-03	-0.208E-05	0.663E-05	-0.908E-06	0.129E-04	-0.181E-05
464.3 Å	500000.	0.258E-03	-0.136E-05	0.165E-04	-0.221E-05	0.324E-04	-0.442E-05
C = 0.34E+20	1000000.	0.191E-03	-0.241E-05	0.245E-04	-0.383E-05	0.483E-04	-0.770E-05
	2000000.	0.146E-03	-0.165E-05	0.307E-04	-0.562E-05	0.613E-04	-0.113E-04
	3000000.	0.127E-03	-0.171E-05	0.333E-04	-0.685E-05	0.662E-04	-0.138E-04
	5000000.	0.109E-03	-0.165E-05	0.364E-04	-0.792E-05	0.721E-04	-0.160E-04
K IX 3P 4D	200000.	0.962E-04	0.179E-05	0.404E-05	0.290E-05	0.793E-05	0.582E-05
147.6 Å	500000.	0.655E-04	0.139E-05	0.769E-05	0.494E-05	0.152E-04	0.994E-05
C = 0.52E+18	1000000.	0.506E-04	0.145E-05	0.102E-04	0.652E-05	0.199E-04	0.132E-04
	2000000.	0.403E-04	0.122E-05	0.128E-04	0.784E-05	0.239E-04	0.158E-04
	3000000.	0.357E-04	0.990E-06	0.147E-04	0.869E-05	0.265E-04	0.176E-04
	5000000.	0.310E-04	0.842E-06	0.170E-04	0.966E-05	0.290E-04	0.195E-04
K IX 3P 5D	200000.	0.128E-03	0.464E-05	0.105E-04	0.860E-05	0.208E-04	0.173E-04
112.4 Å	500000.	0.908E-04	0.404E-05	0.166E-04	0.124E-04	0.328E-04	0.250E-04
C = 0.16E+18	1000000.	0.723E-04	0.368E-05	0.209E-04	0.149E-04	0.402E-04	0.302E-04
	2000000.	0.589E-04	0.274E-05	0.262E-04	0.177E-04	0.479E-04	0.357E-04
	3000000.	0.528E-04	0.240E-05	0.291E-04	0.189E-04	0.521E-04	0.385E-04
	5000000.	0.463E-04	0.210E-05	0.342E-04	0.210E-04	0.572E-04	0.428E-04
K IX 3P 6D	200000.	0.205E-03	0.911E-05	0.259E-04	0.207E-04	0.514E-04	0.417E-04
99.6 Å	500000.	0.150E-03	0.902E-05	0.350E-04	0.265E-04	0.691E-04	0.536E-04
C = 0.71E+17	1000000.	0.122E-03	0.713E-05	0.435E-04	0.314E-04	0.835E-04	0.638E-04
	2000000.	0.101E-03	0.551E-05	0.531E-04	0.366E-04	0.947E-04	0.735E-04
	3000000.	0.906E-04	0.497E-05	0.600E-04	0.399E-04	0.102E-03	0.802E-04
	5000000.	0.798E-04	0.404E-05	0.680E-04	0.426E-04	0.112E-03	0.867E-04

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 3P 7D	200000.	0.331E-03	0.181E-04	0.516E-04	0.409E-04	0.103E-03	0.826E-04
93.3 Å	500000.	0.249E-03	0.170E-04	0.686E-04	0.519E-04	0.135E-03	0.106E-03
C = 0.39E+17	1000000.	0.205E-03	0.127E-04	0.823E-04	0.609E-04	0.154E-03	0.122E-03
	2000000.	0.171E-03	0.103E-04	0.102E-03	0.686E-04	0.183E-03	0.139E-03
	3000000.	0.154E-03	0.902E-05	0.114E-03	0.737E-04	0.194E-03	0.150E-03
	5000000.	0.136E-03	0.689E-05	0.130E-03	0.794E-04	0.209E-03	0.160E-03
K IX 4P 4D	200000.	0.102E-01	0.498E-04	0.525E-03	0.169E-03	0.103E-02	0.339E-03
1286.4 Å	500000.	0.705E-02	-0.200E-05	0.870E-03	0.296E-03	0.172E-02	0.598E-03
C = 0.40E+20	1000000.	0.552E-02	0.107E-04	0.105E-02	0.404E-03	0.206E-02	0.816E-03
	2000000.	0.445E-02	-0.189E-06	0.125E-02	0.484E-03	0.235E-02	0.978E-03
	3000000.	0.397E-02	-0.178E-04	0.139E-02	0.534E-03	0.253E-02	0.108E-02
	5000000.	0.348E-02	-0.173E-04	0.157E-02	0.601E-03	0.266E-02	0.122E-02
K IX 4P 5D	200000.	0.136E-02	0.375E-04	0.108E-03	0.788E-04	0.214E-03	0.159E-03
345.0 Å	500000.	0.971E-03	0.303E-04	0.165E-03	0.114E-03	0.326E-03	0.229E-03
C = 0.15E+19	1000000.	0.777E-03	0.275E-04	0.205E-03	0.137E-03	0.393E-03	0.276E-03
	2000000.	0.636E-03	0.192E-04	0.253E-03	0.162E-03	0.463E-03	0.327E-03
	3000000.	0.571E-03	0.159E-04	0.284E-03	0.175E-03	0.504E-03	0.355E-03
	5000000.	0.502E-03	0.140E-04	0.330E-03	0.194E-03	0.540E-03	0.392E-03
K IX 4P 6D	200000.	0.133E-02	0.530E-04	0.163E-03	0.127E-03	0.324E-03	0.255E-03
247.5 Å	500000.	0.978E-03	0.517E-04	0.219E-03	0.162E-03	0.431E-03	0.328E-03
C = 0.44E+18	1000000.	0.795E-03	0.403E-04	0.272E-03	0.193E-03	0.522E-03	0.393E-03
	2000000.	0.658E-03	0.305E-04	0.328E-03	0.224E-03	0.588E-03	0.451E-03
	3000000.	0.593E-03	0.272E-04	0.371E-03	0.245E-03	0.625E-03	0.488E-03
	5000000.	0.523E-03	0.219E-04	0.424E-03	0.262E-03	0.689E-03	0.531E-03
K IX 4P 7D	200000.	0.176E-02	0.906E-04	0.267E-03	0.210E-03	0.532E-03	0.425E-03
211.7 Å	500000.	0.132E-02	0.849E-04	0.355E-03	0.267E-03	0.697E-03	0.543E-03
C = 0.20E+18	1000000.	0.109E-02	0.629E-04	0.424E-03	0.313E-03	0.797E-03	0.627E-03
	2000000.	0.905E-03	0.505E-04	0.524E-03	0.352E-03	0.945E-03	0.712E-03
	3000000.	0.818E-03	0.439E-04	0.588E-03	0.379E-03	0.100E-02	0.774E-03
	5000000.	0.722E-03	0.333E-04	0.672E-03	0.408E-03	0.107E-02	0.822E-03
K IX 5P 5D	200000.	0.111	0.127E-02	0.941E-02	0.410E-02	0.186E-01	0.826E-02
2693.8 Å	500000.	0.799E-01	0.659E-03	0.128E-01	0.601E-02	0.252E-01	0.121E-01
C = 0.89E+20	1000000.	0.646E-01	0.500E-03	0.151E-01	0.722E-02	0.292E-01	0.145E-01
	2000000.	0.534E-01	0.334E-04	0.178E-01	0.853E-02	0.326E-01	0.172E-01
	3000000.	0.482E-01	-0.318E-05	0.194E-01	0.920E-02	0.341E-01	0.185E-01
	5000000.	0.426E-01	0.412E-04	0.225E-01	0.102E-01	0.363E-01	0.204E-01
K IX 5P 6D	200000.	0.109E-01	0.317E-03	0.126E-02	0.873E-03	0.249E-02	0.176E-02
660.9 Å	500000.	0.803E-02	0.297E-03	0.165E-02	0.112E-02	0.323E-02	0.227E-02
C = 0.31E+19	1000000.	0.657E-02	0.217E-03	0.203E-02	0.134E-02	0.383E-02	0.272E-02
	2000000.	0.546E-02	0.149E-03	0.237E-02	0.154E-02	0.432E-02	0.312E-02
	3000000.	0.493E-02	0.136E-03	0.263E-02	0.166E-02	0.455E-02	0.333E-02
	5000000.	0.435E-02	0.107E-03	0.307E-02	0.179E-02	0.504E-02	0.365E-02
K IX 5P 7D	200000.	0.872E-02	0.390E-03	0.127E-02	0.964E-03	0.251E-02	0.194E-02
455.3 Å	500000.	0.656E-02	0.359E-03	0.168E-02	0.123E-02	0.327E-02	0.249E-02
C = 0.94E+18	1000000.	0.541E-02	0.257E-03	0.197E-02	0.143E-02	0.373E-02	0.286E-02
	2000000.	0.452E-02	0.201E-03	0.243E-02	0.161E-02	0.444E-02	0.330E-02
	3000000.	0.409E-02	0.175E-03	0.274E-02	0.175E-02	0.466E-02	0.357E-02
	5000000.	0.361E-02	0.131E-03	0.312E-02	0.186E-02	0.499E-02	0.375E-02
K IX 3D 4P	200000.	0.287E-03	0.418E-05	0.130E-04	0.278E-05	0.255E-04	0.556E-05
260.3 Å	500000.	0.194E-03	0.482E-05	0.230E-04	0.564E-05	0.455E-04	0.113E-04
C = 0.41E+19	1000000.	0.149E-03	0.483E-05	0.287E-04	0.791E-05	0.572E-04	0.160E-04
	2000000.	0.118E-03	0.430E-05	0.329E-04	0.994E-05	0.652E-04	0.200E-04
	3000000.	0.105E-03	0.434E-05	0.355E-04	0.111E-04	0.698E-04	0.225E-04
	5000000.	0.917E-04	0.385E-05	0.385E-04	0.127E-04	0.738E-04	0.257E-04
K IX 3D 5P	200000.	0.226E-03	0.499E-05	0.190E-04	0.481E-05	0.375E-04	0.966E-05
157.0 Å	500000.	0.159E-03	0.580E-05	0.271E-04	0.794E-05	0.540E-04	0.160E-04
C = 0.71E+18	1000000.	0.127E-03	0.576E-05	0.310E-04	0.997E-05	0.617E-04	0.201E-04
	2000000.	0.104E-03	0.542E-05	0.352E-04	0.120E-04	0.689E-04	0.242E-04
	3000000.	0.936E-04	0.488E-05	0.373E-04	0.133E-04	0.716E-04	0.268E-04
	5000000.	0.830E-04	0.415E-05	0.405E-04	0.147E-04	0.747E-04	0.295E-04

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 4D 5P	200000.	0.351E-02	0.360E-04	0.277E-03	0.238E-04	0.548E-03	0.477E-04
571.3 Å	500000.	0.249E-02	0.540E-04	0.388E-03	0.444E-04	0.771E-03	0.895E-04
C = 0.78E+19	1000000.	0.199E-02	0.509E-04	0.444E-03	0.610E-04	0.873E-03	0.123E-03
	2000000.	0.164E-02	0.511E-04	0.505E-03	0.735E-04	0.964E-03	0.149E-03
	3000000.	0.148E-02	0.472E-04	0.538E-03	0.820E-04	0.993E-03	0.166E-03
	5000000.	0.131E-02	0.399E-04	0.592E-03	0.923E-04	0.103E-02	0.188E-03
PERTURBER DENSITY = 1.E+18cm^{-3}							
K IX 3S 3P	200000.	0.664E-02	-0.818E-04	0.650E-04	-0.500E-04	0.126E-03	-0.982E-04
626.3 Å	500000.	0.433E-02	-0.880E-04	0.186E-03	-0.115E-03	0.364E-03	-0.231E-03
C = 0.63E+21	1000000.	0.323E-02	-0.974E-04	0.301E-03	-0.181E-03	0.596E-03	-0.364E-03
	2000000.	0.248E-02	-0.902E-04	0.424E-03	-0.248E-03	0.845E-03	-0.501E-03
	3000000.	0.215E-02	-0.868E-04	0.472E-03	-0.277E-03	0.934E-03	-0.560E-03
	5000000.	0.182E-02	-0.817E-04	0.542E-03	-0.319E-03	0.106E-02	-0.645E-03
K IX 3S 4P	200000.	0.738E-03	0.499E-05	0.305E-04	0.425E-05	0.597E-04	0.834E-05
131.7 Å	500000.	0.499E-03	0.729E-05	0.544E-04	0.912E-05	0.107E-03	0.183E-04
C = 0.10E+20	1000000.	0.384E-03	0.613E-05	0.687E-04	0.133E-04	0.137E-03	0.268E-04
	2000000.	0.305E-03	0.570E-05	0.784E-04	0.177E-04	0.155E-03	0.358E-04
	3000000.	0.271E-03	0.591E-05	0.846E-04	0.197E-04	0.166E-03	0.399E-04
	5000000.	0.236E-03	0.491E-05	0.926E-04	0.224E-04	0.175E-03	0.454E-04
K IX 3S 5P	200000.	0.903E-03	0.165E-04	0.735E-04	0.176E-04	0.145E-03	0.346E-04
98.8 Å	500000.	0.635E-03	0.200E-04	0.105E-03	0.296E-04	0.210E-03	0.597E-04
C = 0.28E+19	1000000.	0.506E-03	0.193E-04	0.121E-03	0.374E-04	0.240E-03	0.756E-04
	2000000.	0.414E-03	0.185E-04	0.136E-03	0.451E-04	0.267E-03	0.912E-04
	3000000.	0.373E-03	0.164E-04	0.144E-03	0.496E-04	0.276E-03	0.100E-03
	5000000.	0.330E-03	0.137E-04	0.156E-03	0.551E-04	0.287E-03	0.112E-03
K IX 4S 4P	200000.	0.144	-0.278E-02	0.510E-02	-0.314E-02	0.100E-01	-0.618E-02
1657.9 Å	500000.	0.991E-01	-0.353E-02	0.950E-02	-0.547E-02	0.188E-01	-0.110E-01
C = 0.17E+22	1000000.	0.775E-01	-0.328E-02	0.123E-01	-0.736E-02	0.245E-01	-0.149E-01
	2000000.	0.623E-01	-0.315E-02	0.147E-01	-0.881E-02	0.291E-01	-0.178E-01
	3000000.	0.554E-01	-0.282E-02	0.165E-01	-0.977E-02	0.317E-01	-0.197E-01
	5000000.	0.483E-01	-0.238E-02	0.190E-01	-0.111E-01	0.351E-01	-0.224E-01
K IX 4S 5P	200000.	0.104E-01	0.395E-04	0.761E-03	0.594E-04	0.150E-02	0.117E-03
319.4 Å	500000.	0.737E-02	0.353E-04	0.109E-02	0.116E-03	0.216E-02	0.233E-03
C = 0.30E+20	1000000.	0.590E-02	0.439E-04	0.123E-02	0.160E-03	0.245E-02	0.323E-03
	2000000.	0.484E-02	0.425E-04	0.139E-02	0.197E-03	0.271E-02	0.398E-03
	3000000.	0.436E-02	0.319E-04	0.147E-02	0.218E-03	0.279E-02	0.440E-03
	5000000.	0.386E-02	0.257E-04	0.160E-02	0.247E-03	0.289E-02	0.498E-03
K IX 5S 5P	200000.	1.51	-0.523E-01	0.968E-01	-0.603E-01	0.192	-0.118
3448.3 Å	500000.	1.09	-0.504E-01	0.145	-0.901E-01	0.290	-0.182
C = 0.34E+22	1000000.	0.878	-0.469E-01	0.174	-0.108	0.346	-0.218
	2000000.	0.723	-0.413E-01	0.210	-0.129	0.403	-0.261
	3000000.	0.651	-0.363E-01	0.231	-0.140	0.432	-0.283
	5000000.	0.573	-0.298E-01	0.259	-0.151	0.467	-0.310
K IX 3P 4S	200000.	0.923E-03	0.521E-04	0.197E-04	0.496E-04	0.390E-04	0.974E-04
185.4 Å	500000.	0.634E-03	0.664E-04	0.579E-04	0.848E-04	0.116E-03	0.170E-03
C = 0.21E+20	1000000.	0.493E-03	0.617E-04	0.102E-03	0.110E-03	0.205E-03	0.223E-03
	2000000.	0.392E-03	0.586E-04	0.135E-03	0.132E-03	0.269E-03	0.267E-03
	3000000.	0.346E-03	0.546E-04	0.156E-03	0.147E-03	0.306E-03	0.295E-03
	5000000.	0.297E-03	0.466E-04	0.190E-03	0.164E-03	0.363E-03	0.334E-03
K IX 3P 5S	200000.	0.780E-03	0.935E-04	0.562E-04	0.921E-04	0.112E-03	0.180E-03
121.5 Å	500000.	0.562E-03	0.964E-04	0.119E-03	0.135E-03	0.240E-03	0.272E-03
C = 0.43E+19	1000000.	0.450E-03	0.911E-04	0.159E-03	0.162E-03	0.319E-03	0.327E-03
	2000000.	0.366E-03	0.825E-04	0.205E-03	0.191E-03	0.407E-03	0.389E-03
	3000000.	0.325E-03	0.732E-04	0.238E-03	0.209E-03	0.457E-03	0.427E-03
	5000000.	0.280E-03	0.607E-04	0.274E-03	0.229E-03	0.516E-03	0.463E-03
K IX 3P 6S	200000.	0.116E-02	0.195E-03	0.147E-03	0.198E-03	0.294E-03	0.383E-03
103.4 Å	500000.	0.855E-03	0.183E-03	0.249E-03	0.259E-03	0.503E-03	0.523E-03
C = 0.17E+19	1000000.	0.694E-03	0.173E-03	0.317E-03	0.309E-03	0.640E-03	0.623E-03
	2000000.	0.569E-03	0.143E-03	0.398E-03	0.354E-03	0.783E-03	0.717E-03
	3000000.	0.506E-03	0.124E-03	0.458E-03	0.383E-03	0.867E-03	0.784E-03
	5000000.	0.436E-03	0.104E-03	0.538E-03	0.419E-03	0.976E-03	0.858E-03

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 3P 7S	200000.	0.190E-02	0.354E-03	0.347E-03	0.379E-03	*0.697E-03	*0.723E-03
95.3 Å	500000.	0.143E-02	0.337E-03	0.495E-03	0.492E-03	*0.100E-02	*0.993E-03
C = 0.89E+18	1000000.	0.117E-02	0.308E-03	0.639E-03	0.572E-03	*0.127E-02	*0.116E-02
	2000000.	0.959E-03	0.244E-03	0.773E-03	0.671E-03	*0.143E-02	*0.135E-02
	3000000.	0.852E-03	0.213E-03	0.875E-03	0.715E-03	*0.164E-02	*0.146E-02
	5000000.	0.730E-03	0.178E-03	0.102E-02	0.762E-03	*0.184E-02	*0.153E-02
K IX 4P 5S	200000.	0.156E-01	0.116E-02	0.875E-03	0.121E-02	0.174E-02	0.236E-02
446.9 Å	500000.	0.111E-01	0.117E-02	0.172E-02	0.178E-02	0.345E-02	0.359E-02
C = 0.58E+20	1000000.	0.885E-02	0.111E-02	0.224E-02	0.213E-02	0.450E-02	0.431E-02
	2000000.	0.720E-02	0.101E-02	0.288E-02	0.254E-02	0.560E-02	0.515E-02
	3000000.	0.642E-02	0.878E-03	0.327E-02	0.278E-02	0.611E-02	0.558E-02
	5000000.	0.558E-02	0.723E-03	0.383E-02	0.301E-02	0.700E-02	0.617E-02
K IX 4P 6S	200000.	0.983E-02	0.131E-02	0.104E-02	0.136E-02	0.207E-02	0.263E-02
272.3 Å	500000.	0.720E-02	0.122E-02	0.174E-02	0.178E-02	0.351E-02	0.360E-02
C = 0.12E+20	1000000.	0.583E-02	0.115E-02	0.221E-02	0.212E-02	0.443E-02	0.430E-02
	2000000.	0.477E-02	0.952E-03	0.278E-02	0.243E-02	0.546E-02	0.492E-02
	3000000.	0.425E-02	0.817E-03	0.318E-02	0.265E-02	0.597E-02	0.540E-02
	5000000.	0.368E-02	0.687E-03	0.374E-02	0.290E-02	0.665E-02	0.591E-02
K IX 4P 7S	200000.	0.115E-01	0.189E-02	0.189E-02	0.206E-02	*0.380E-02	*0.392E-02
222.3 Å	500000.	0.860E-02	0.180E-02	0.269E-02	0.267E-02	*0.545E-02	*0.540E-02
C = 0.49E+19	1000000.	0.703E-02	0.164E-02	0.348E-02	0.310E-02	*0.691E-02	*0.632E-02
	2000000.	0.577E-02	0.130E-02	0.419E-02	0.365E-02	*0.778E-02	*0.730E-02
	3000000.	0.513E-02	0.113E-02	0.475E-02	0.388E-02	*0.890E-02	*0.793E-02
	5000000.	0.441E-02	0.945E-03	0.556E-02	0.413E-02	*0.101E-01	*0.835E-02
K IX 5P 6S	200000.	0.138	0.124E-01	0.122E-01	0.135E-01	0.243E-01	0.261E-01
873.1 Å	500000.	0.101	0.112E-01	0.189E-01	0.177E-01	0.378E-01	0.358E-01
C = 0.12E+21	1000000.	0.823E-01	0.106E-01	0.237E-01	0.212E-01	0.468E-01	0.426E-01
	2000000.	0.679E-01	0.859E-02	0.300E-01	0.244E-01	0.564E-01	0.497E-01
	3000000.	0.609E-01	0.738E-02	0.328E-01	0.265E-01	0.610E-01	0.529E-01
	5000000.	0.532E-01	0.621E-02	0.382E-01	0.286E-01	0.707E-01	0.585E-01
K IX 5P 7S	200000.	0.723E-01	0.946E-02	0.100E-01	0.106E-01	*0.201E-01	*0.202E-01
507.2 Å	500000.	0.539E-01	0.894E-02	0.142E-01	0.138E-01	*0.284E-01	*0.278E-01
C = 0.25E+20	1000000.	0.441E-01	0.813E-02	0.182E-01	0.160E-01	*0.358E-01	*0.327E-01
	2000000.	0.364E-01	0.638E-02	0.216E-01	0.188E-01	*0.405E-01	*0.373E-01
	3000000.	0.325E-01	0.553E-02	0.247E-01	0.199E-01	*0.457E-01	*0.410E-01
	5000000.	0.282E-01	0.464E-02	0.291E-01	0.213E-01	*0.525E-01	*0.431E-01
K IX 3P 3D	200000.	0.397E-02	-0.184E-04	0.663E-04	-0.900E-05	0.129E-03	-0.177E-04
464.3 Å	500000.	0.258E-02	-0.135E-04	0.165E-03	-0.221E-04	0.324E-03	-0.442E-04
C = 0.34E+21	1000000.	0.191E-02	-0.241E-04	0.245E-03	-0.383E-04	0.483E-03	-0.770E-04
	2000000.	0.146E-02	-0.165E-04	0.307E-03	-0.562E-04	0.613E-03	-0.113E-03
	3000000.	0.127E-02	-0.171E-04	0.333E-03	-0.685E-04	0.662E-03	-0.138E-03
	5000000.	0.109E-02	-0.165E-04	0.364E-03	-0.792E-04	0.721E-03	-0.160E-03
K IX 3P 4D	200000.	0.962E-03	0.171E-04	0.404E-04	0.287E-04	0.793E-04	0.565E-04
147.6 Å	500000.	0.655E-03	0.137E-04	0.769E-04	0.494E-04	0.151E-03	0.993E-04
C = 0.52E+19	1000000.	0.506E-03	0.145E-04	0.102E-03	0.652E-04	0.199E-03	0.132E-03
	2000000.	0.403E-03	0.121E-04	0.128E-03	0.784E-04	0.239E-03	0.158E-03
	3000000.	0.357E-03	0.990E-05	0.147E-03	0.869E-04	0.265E-03	0.176E-03
	5000000.	0.310E-03	0.842E-05	0.170E-03	0.966E-04	0.290E-03	0.195E-03
K IX 3P 5D	200000.	0.128E-02	0.443E-04	0.105E-03	0.850E-04	0.207E-03	0.166E-03
112.4 Å	500000.	0.908E-03	0.397E-04	0.166E-03	0.124E-03	0.328E-03	0.250E-03
C = 0.16E+19	1000000.	0.723E-03	0.368E-04	0.209E-03	0.149E-03	0.402E-03	0.301E-03
	2000000.	0.589E-03	0.273E-04	0.262E-03	0.177E-03	0.479E-03	0.357E-03
	3000000.	0.528E-03	0.240E-04	0.291E-03	0.189E-03	0.521E-03	0.385E-03
	5000000.	0.463E-03	0.210E-04	0.342E-03	0.210E-03	0.572E-03	0.428E-03
K IX 3P 6D	200000.	0.205E-02	0.850E-04	0.259E-03	0.203E-03	*0.514E-03	*0.393E-03
99.6 Å	500000.	0.150E-02	0.880E-04	0.350E-03	0.264E-03	*0.691E-03	*0.534E-03
C = 0.71E+18	1000000.	0.122E-02	0.710E-04	0.435E-03	0.314E-03	0.835E-03	0.636E-03
	2000000.	0.101E-02	0.547E-04	0.531E-03	0.366E-03	0.947E-03	0.735E-03
	3000000.	0.906E-03	0.497E-04	0.600E-03	0.399E-03	0.102E-02	0.802E-03
	5000000.	0.798E-03	0.404E-04	0.680E-03	0.426E-03	0.112E-02	0.867E-03

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 3P 7D	200000.	0.331E-02	0.163E-03	0.516E-03	0.400E-03		
93.3 Å	500000.	0.249E-02	0.164E-03	0.686E-03	0.518E-03	*0.135E-02	*0.105E-02
C = 0.39E+18	1000000.	0.205E-02	0.127E-03	0.823E-03	0.609E-03	*0.154E-02	*0.122E-02
	2000000.	0.171E-02	0.102E-03	0.102E-02	0.686E-03	*0.183E-02	*0.139E-02
	3000000.	0.154E-02	0.902E-04	0.114E-02	0.737E-03	*0.194E-02	*0.150E-02
	5000000.	0.136E-02	0.689E-04	0.130E-02	0.794E-03	*0.209E-02	*0.160E-02
K IX 4P 4D	200000.	0.102	0.481E-03	0.525E-02	0.168E-02	0.103E-01	0.329E-02
1286.4 Å	500000.	0.705E-01	-0.231E-04	0.870E-02	0.296E-02	0.172E-01	0.597E-02
C = 0.40E+21	1000000.	0.552E-01	0.106E-03	0.105E-01	0.404E-02	0.206E-01	0.815E-02
	2000000.	0.445E-01	-0.317E-05	0.125E-01	0.484E-02	0.235E-01	0.978E-02
	3000000.	0.397E-01	-0.178E-03	0.139E-01	0.534E-02	0.253E-01	0.108E-01
	5000000.	0.348E-01	-0.173E-03	0.157E-01	0.601E-02	0.266E-01	0.122E-01
K IX 4P 5D	200000.	0.136E-01	0.358E-03	0.108E-02	0.778E-03	0.214E-02	0.152E-02
345.0 Å	500000.	0.971E-02	0.297E-03	0.165E-02	0.113E-02	0.326E-02	0.229E-02
C = 0.15E+20	1000000.	0.777E-02	0.274E-03	0.205E-02	0.137E-02	0.393E-02	0.276E-02
	2000000.	0.636E-02	0.191E-03	0.253E-02	0.162E-02	0.463E-02	0.327E-02
	3000000.	0.571E-02	0.159E-03	0.284E-02	0.175E-02	0.504E-02	0.355E-02
	5000000.	0.502E-02	0.140E-03	0.330E-02	0.194E-02	0.540E-02	0.392E-02
K IX 4P 6D	200000.	0.133E-01	0.494E-03	0.163E-02	0.125E-02	*0.324E-02	*0.241E-02
247.5 Å	500000.	0.978E-02	0.503E-03	0.219E-02	0.162E-02	*0.431E-02	*0.327E-02
C = 0.44E+19	1000000.	0.795E-02	0.401E-03	0.272E-02	0.193E-02	0.522E-02	0.392E-02
	2000000.	0.658E-02	0.304E-03	0.328E-02	0.224E-02	0.588E-02	0.451E-02
	3000000.	0.593E-02	0.272E-03	0.371E-02	0.245E-02	0.625E-02	0.488E-02
	5000000.	0.523E-02	0.219E-03	0.424E-02	0.262E-02	0.689E-02	0.531E-02
K IX 4P 7D	200000.	0.176E-01	0.818E-03	0.267E-02	0.206E-02		
211.7 Å	500000.	0.132E-01	0.817E-03	0.355E-02	0.266E-02	*0.697E-02	*0.541E-02
C = 0.20E+19	1000000.	0.109E-01	0.625E-03	0.424E-02	0.313E-02	*0.797E-02	*0.625E-02
	2000000.	0.905E-02	0.501E-03	0.524E-02	0.352E-02	*0.945E-02	*0.712E-02
	3000000.	0.818E-02	0.439E-03	0.588E-02	0.379E-02	*0.100E-01	*0.774E-02
	5000000.	0.722E-02	0.333E-03	0.672E-02	0.408E-02	*0.107E-01	*0.822E-02
K IX 5P 5D	200000.	1.11	0.116E-01	0.941E-01	0.405E-01	0.186	0.793E-01
2693.8 Å	500000.	0.799	0.627E-02	0.128	0.600E-01	0.252	0.121
C = 0.89E+21	1000000.	0.646	0.496E-02	0.151	0.722E-01	0.292	0.145
	2000000.	0.534	0.292E-03	0.178	0.853E-01	0.326	0.172
	3000000.	0.482	-0.318E-04	0.194	0.920E-01	0.341	0.185
	5000000.	0.426	0.412E-03	0.225	0.102	0.363	0.204
K IX 5P 6D	200000.	0.109	0.291E-02	0.125E-01	0.859E-02	*0.249E-01	*0.166E-01
660.9 Å	500000.	0.803E-01	0.288E-02	0.165E-01	0.112E-01	*0.323E-01	*0.227E-01
C = 0.31E+20	1000000.	0.657E-01	0.215E-02	0.203E-01	0.134E-01	*0.383E-01	*0.271E-01
	2000000.	0.546E-01	0.148E-02	0.237E-01	0.154E-01	0.432E-01	0.312E-01
	3000000.	0.493E-01	0.136E-02	0.263E-01	0.166E-01	0.455E-01	0.333E-01
	5000000.	0.435E-01	0.107E-02	0.307E-01	0.179E-01	0.504E-01	0.365E-01
K IX 5P 7D	200000.	0.872E-01	0.349E-02	0.126E-01	0.942E-02		
455.3 Å	500000.	0.656E-01	0.344E-02	0.168E-01	0.123E-01	*0.327E-01	*0.248E-01
C = 0.94E+19	1000000.	0.541E-01	0.255E-02	0.197E-01	0.143E-01	*0.373E-01	*0.285E-01
	2000000.	0.452E-01	0.199E-02	0.243E-01	0.161E-01	*0.444E-01	*0.330E-01
	3000000.	0.409E-01	0.175E-02	0.274E-01	0.175E-01	*0.466E-01	*0.357E-01
	5000000.	0.361E-01	0.131E-02	0.312E-01	0.186E-01	*0.499E-01	*0.375E-01
K IX 3D 4P	200000.	0.287E-02	0.395E-04	0.130E-03	0.275E-04	0.255E-03	0.541E-04
260.3 Å	500000.	0.194E-02	0.479E-04	0.230E-03	0.564E-04	0.455E-03	0.113E-03
C = 0.41E+20	1000000.	0.149E-02	0.483E-04	0.287E-03	0.791E-04	0.572E-03	0.160E-03
	2000000.	0.118E-02	0.430E-04	0.329E-03	0.994E-04	0.652E-03	0.200E-03
	3000000.	0.105E-02	0.434E-04	0.355E-03	0.111E-03	0.698E-03	0.225E-03
	5000000.	0.917E-03	0.385E-04	0.385E-03	0.127E-03	0.738E-03	0.257E-03
K IX 3D 5P	200000.	0.226E-02	0.490E-04	0.190E-03	0.477E-04	0.374E-03	0.935E-04
157.0 Å	500000.	0.159E-02	0.577E-04	0.271E-03	0.793E-04	0.540E-03	0.160E-03
C = 0.71E+19	1000000.	0.127E-02	0.576E-04	0.310E-03	0.997E-04	0.617E-03	0.201E-03
	2000000.	0.104E-02	0.542E-04	0.352E-03	0.120E-03	0.689E-03	0.242E-03
	3000000.	0.936E-03	0.488E-04	0.373E-03	0.133E-03	0.716E-03	0.268E-03
	5000000.	0.830E-03	0.415E-04	0.405E-03	0.147E-03	0.747E-03	0.295E-03

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 4D 5P	200000.	0.351E-01	0.364E-03	0.277E-02	0.236E-03	0.547E-02	0.463E-03
571.3 Å	500000.	0.249E-01	0.537E-03	0.388E-02	0.443E-03	0.771E-02	0.894E-03
C = 0.78E+20	1000000.	0.199E-01	0.509E-03	0.444E-02	0.610E-03	0.873E-02	0.123E-02
	2000000.	0.164E-01	0.511E-03	0.505E-02	0.735E-03	0.964E-02	0.149E-02
	3000000.	0.148E-01	0.472E-03	0.538E-02	0.820E-03	0.993E-02	0.166E-02
	5000000.	0.131E-01	0.399E-03	0.592E-02	0.923E-03	0.103E-01	0.188E-02
PERTURBER DENSITY = 1.E+19cm^{-3}							
K IX 3S 3P	200000.	0.664E-01	-0.800E-03	0.649E-03	-0.479E-03	0.125E-02	-0.903E-03
626.3 Å	500000.	0.433E-01	-0.861E-03	0.186E-02	-0.114E-02	0.364E-02	-0.228E-02
C = 0.63E+22	1000000.	0.323E-01	-0.971E-03	0.301E-02	-0.180E-02	0.596E-02	-0.363E-02
	2000000.	0.248E-01	-0.902E-03	0.424E-02	-0.248E-02	0.845E-02	-0.500E-02
	3000000.	0.215E-01	-0.867E-03	0.472E-02	-0.277E-02	0.934E-02	-0.560E-02
	5000000.	0.182E-01	-0.817E-03	0.542E-02	-0.319E-02	0.106E-01	-0.645E-02
K IX 3S 4P	200000.	0.738E-02	0.494E-04	0.304E-03	0.407E-04	0.591E-03	0.767E-04
131.7 Å	500000.	0.499E-02	0.731E-04	0.544E-03	0.905E-04	0.107E-02	0.180E-03
C = 0.10E+21	1000000.	0.384E-02	0.608E-04	0.687E-03	0.133E-03	0.137E-02	0.268E-03
	2000000.	0.305E-02	0.569E-04	0.784E-03	0.177E-03	0.155E-02	0.358E-03
	3000000.	0.271E-02	0.590E-04	0.846E-03	0.197E-03	0.166E-02	0.399E-03
	5000000.	0.236E-02	0.491E-04	0.926E-03	0.224E-03	0.175E-02	0.454E-03
K IX 3S 5P	200000.	0.903E-02	0.159E-03	0.732E-03	0.168E-03	*0.143E-02	*0.315E-03
98.8 Å	500000.	0.635E-02	0.195E-03	0.105E-02	0.293E-03	*0.210E-02	*0.583E-03
C = 0.28E+20	1000000.	0.506E-02	0.191E-03	0.121E-02	0.373E-03	*0.240E-02	*0.754E-03
	2000000.	0.414E-02	0.184E-03	0.136E-02	0.451E-03	*0.267E-02	*0.911E-03
	3000000.	0.373E-02	0.164E-03	0.144E-02	0.496E-03	0.276E-02	0.100E-02
	5000000.	0.330E-02	0.137E-03	0.156E-02	0.551E-03	0.287E-02	0.112E-02
K IX 4S 4P	200000.	1.44	-0.266E-01	0.509E-01	-0.300E-01	0.992E-01	-0.564E-01
1657.9 Å	500000.	0.991	-0.342E-01	0.950E-01	-0.541E-01	0.188	-0.108
C = 0.17E+23	1000000.	0.775	-0.324E-01	0.123	-0.735E-01	0.245	-0.148
	2000000.	0.623	-0.314E-01	0.147	-0.881E-01	0.291	-0.178
	3000000.	0.554	-0.281E-01	0.165	-0.977E-01	0.317	-0.197
	5000000.	0.483	-0.238E-01	0.190	-0.111	0.351	-0.224
K IX 4S 5P	200000.	0.104	0.380E-03	0.759E-02	0.567E-03	*0.148E-01	*0.107E-02
319.4 Å	500000.	0.737E-01	0.337E-03	0.109E-01	0.115E-02	*0.216E-01	*0.229E-02
C = 0.30E+21	1000000.	0.590E-01	0.432E-03	0.123E-01	0.160E-02	*0.245E-01	*0.322E-02
	2000000.	0.484E-01	0.424E-03	0.139E-01	0.197E-02	0.271E-01	0.397E-02
	3000000.	0.436E-01	0.318E-03	0.147E-01	0.218E-02	0.279E-01	0.440E-02
	5000000.	0.386E-01	0.257E-03	0.160E-01	0.247E-02	0.289E-01	0.498E-02
K IX 5S 5P	200000.	15.1	-0.492	0.965	-0.566	*1.89	-1.05
3448.3 Å	500000.	10.9	-0.481	1.45	-0.886	*2.89	-1.76
C = 0.34E+23	1000000.	8.78	-0.460	1.74	-1.08	*3.46	-2.17
	2000000.	7.23	-0.411	2.10	-1.29	*4.03	-2.60
	3000000.	6.51	-0.362	2.31	-1.40	*4.32	-2.83
	5000000.	5.73	-0.298	2.59	-1.51	4.67	-3.10
K IX 3P 4S	200000.	0.923E-02	0.502E-03	0.197E-03	0.472E-03	0.388E-03	0.887E-03
185.4 Å	500000.	0.634E-02	0.650E-03	0.580E-03	0.839E-03	0.116E-02	0.167E-02
C = 0.21E+21	1000000.	0.493E-02	0.611E-03	0.102E-02	0.110E-02	0.205E-02	0.222E-02
	2000000.	0.392E-02	0.585E-03	0.135E-02	0.132E-02	0.269E-02	0.267E-02
	3000000.	0.346E-02	0.545E-03	0.156E-02	0.147E-02	0.306E-02	0.295E-02
	5000000.	0.297E-02	0.466E-03	0.190E-02	0.164E-02	0.363E-02	0.334E-02
K IX 3P 5S	200000.	0.780E-02	0.887E-03	0.561E-03	0.860E-03	*0.112E-02	*0.159E-02
121.5 Å	500000.	0.562E-02	0.926E-03	0.119E-02	0.132E-02	*0.240E-02	*0.263E-02
C = 0.43E+20	1000000.	0.450E-02	0.896E-03	0.159E-02	0.162E-02	*0.319E-02	*0.326E-02
	2000000.	0.366E-02	0.823E-03	0.205E-02	0.191E-02	0.407E-02	0.388E-02
	3000000.	0.325E-02	0.729E-03	0.238E-02	0.209E-02	0.457E-02	0.427E-02
	5000000.	0.280E-02	0.607E-03	0.274E-02	0.229E-02	0.516E-02	0.463E-02
K IX 3P 6S	200000.	0.116E-01	0.179E-02	0.147E-02	0.181E-02		
103.4 Å	500000.	0.855E-02	0.171E-02	0.249E-02	0.252E-02		
C = 0.17E+20	1000000.	0.694E-02	0.168E-02	0.317E-02	0.308E-02		
	2000000.	0.569E-02	0.143E-02	0.398E-02	0.354E-02	*0.783E-02	*0.713E-02
	3000000.	0.506E-02	0.123E-02	0.458E-02	0.383E-02	*0.867E-02	*0.784E-02
	5000000.	0.436E-02	0.104E-02	0.538E-02	0.419E-02	*0.976E-02	*0.858E-02

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 3P 7S	200000.	0.190E-01	0.311E-02	*0.346E-02	*0.331E-02		
95.3 Å	500000.	0.143E-01	0.307E-02	*0.495E-02	*0.475E-02		
C = 0.89E+19	1000000.	0.117E-01	0.295E-02	*0.639E-02	*0.569E-02		
	2000000.	0.959E-02	0.243E-02	*0.773E-02	*0.671E-02		
	3000000.	0.852E-02	0.211E-02	*0.875E-02	*0.715E-02		
	5000000.	0.730E-02	0.178E-02	*0.102E-01	*0.762E-02		
K IX 4P 5S	200000.	0.156	0.110E-01	0.873E-02	0.113E-01	*0.174E-01	*0.209E-01
446.9 Å	500000.	0.111	0.112E-01	0.171E-01	0.175E-01	*0.344E-01	*0.347E-01
C = 0.58E+21	1000000.	0.885E-01	0.109E-01	0.224E-01	0.212E-01	*0.450E-01	*0.430E-01
	2000000.	0.720E-01	0.100E-01	0.288E-01	0.254E-01	*0.560E-01	*0.513E-01
	3000000.	0.642E-01	0.875E-02	0.327E-01	0.278E-01	0.611E-01	0.558E-01
	5000000.	0.558E-01	0.723E-02	0.383E-01	0.301E-01	0.700E-01	0.617E-01
K IX 4P 6S	200000.	0.983E-01	0.120E-01	0.103E-01	0.124E-01		
272.3 Å	500000.	0.720E-01	0.114E-01	0.173E-01	0.174E-01		
C = 0.12E+21	1000000.	0.583E-01	0.112E-01	0.221E-01	0.211E-01		
	2000000.	0.477E-01	0.947E-02	0.278E-01	0.243E-01	*0.546E-01	*0.490E-01
	3000000.	0.425E-01	0.812E-02	0.318E-01	0.265E-01	*0.597E-01	*0.540E-01
	5000000.	0.368E-01	0.687E-02	0.374E-01	0.290E-01	*0.665E-01	*0.591E-01
K IX 4P 7S	200000.	0.115	0.166E-01	*0.189E-01	*0.180E-01		
222.3 Å	500000.	0.860E-01	0.164E-01	*0.269E-01	*0.258E-01		
C = 0.49E+20	1000000.	0.703E-01	0.157E-01	*0.348E-01	*0.309E-01		
	2000000.	0.577E-01	0.129E-01	*0.419E-01	*0.365E-01		
	3000000.	0.513E-01	0.112E-01	*0.475E-01	*0.388E-01		
	5000000.	0.441E-01	0.945E-02	*0.556E-01	*0.413E-01		
K IX 5P 6S	200000.	1.38	0.112	0.121	0.123		
873.1 Å	500000.	1.01	0.105	0.189	0.173		
C = 0.12E+22	1000000.	0.823	0.103	0.237	0.211		
	2000000.	0.679	0.855E-01	0.300	0.244	*0.564	*0.494
	3000000.	0.609	0.733E-01	0.328	0.265	*0.610	*0.529
	5000000.	0.532	0.621E-01	0.382	0.286	*0.707	*0.585
K IX 5P 7S	200000.	0.723	0.827E-01	*0.100	*0.926E-01		
507.2 Å	500000.	0.539	0.810E-01	*0.142	*0.133		
C = 0.25E+21	1000000.	0.441	0.778E-01	*0.182	*0.159		
	2000000.	0.364	0.633E-01	*0.216	*0.188		
	3000000.	0.325	0.548E-01	*0.247	*0.199		
	5000000.	0.282	0.464E-01	*0.291	*0.213		
K IX 3P 3D	200000.	0.397E-01	-0.192E-03	0.662E-03	-0.862E-04	0.128E-02	-0.163E-03
464.3 Å	500000.	0.258E-01	-0.127E-03	0.165E-02	-0.219E-03	0.324E-02	-0.436E-03
C = 0.34E+22	1000000.	0.191E-01	-0.245E-03	0.245E-02	-0.383E-03	0.483E-02	-0.769E-03
	2000000.	0.146E-01	-0.165E-03	0.307E-02	-0.562E-03	0.613E-02	-0.113E-02
	3000000.	0.127E-01	-0.171E-03	0.333E-02	-0.685E-03	0.662E-02	-0.138E-02
	5000000.	0.109E-01	-0.165E-03	0.364E-02	-0.792E-03	0.721E-02	-0.160E-02
K IX 3P 4D	200000.	0.962E-02	0.159E-03	0.403E-03	0.274E-03	0.785E-03	0.515E-03
147.6 Å	500000.	0.655E-02	0.127E-03	0.769E-03	0.489E-03	0.151E-02	0.972E-03
C = 0.52E+20	1000000.	0.506E-02	0.142E-03	0.102E-02	0.651E-03	0.199E-02	0.131E-02
	2000000.	0.403E-02	0.121E-03	0.128E-02	0.784E-03	0.239E-02	0.158E-02
	3000000.	0.357E-02	0.984E-04	0.147E-02	0.869E-03	0.265E-02	0.176E-02
	5000000.	0.310E-02	0.842E-04	0.170E-02	0.966E-03	0.290E-02	0.195E-02
K IX 3P 5D	200000.	0.128E-01	0.388E-03	0.104E-02	0.793E-03	*0.205E-02	*0.146E-02
112.4 Å	500000.	0.908E-02	0.360E-03	0.166E-02	0.121E-02	*0.327E-02	*0.241E-02
C = 0.16E+20	1000000.	0.723E-02	0.352E-03	0.209E-02	0.148E-02	*0.402E-02	*0.300E-02
	2000000.	0.589E-02	0.271E-03	0.262E-02	0.177E-02	*0.479E-02	*0.356E-02
	3000000.	0.528E-02	0.237E-03	0.291E-02	0.189E-02	*0.521E-02	*0.385E-02
	5000000.	0.463E-02	0.210E-03	0.342E-02	0.210E-02	*0.572E-02	*0.428E-02
K IX 3P 6D	200000.	0.205E-01	0.680E-03	*0.257E-02	*0.185E-02		
99.6 Å	500000.	0.150E-01	0.757E-03	*0.350E-02	*0.258E-02		
C = 0.71E+19	1000000.	0.122E-01	0.660E-03	*0.435E-02	*0.312E-02		
	2000000.	0.101E-01	0.541E-03	*0.531E-02	*0.366E-02		
	3000000.	0.906E-02	0.489E-03	0.600E-02	0.399E-02		
	5000000.	0.798E-02	0.404E-03	0.680E-02	0.426E-02	*0.112E-01	*0.867E-02

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 3P 7D	200000.	0.331E-01	0.114E-02				
93.3 Å	500000.	0.249E-01	0.129E-02				
C = 0.39E+19	1000000.	0.205E-01	0.112E-02	*0.823E-02	*0.606E-02		
	2000000.	0.171E-01	0.100E-02	*0.102E-01	*0.686E-02		
	3000000.	0.154E-01	0.881E-03	*0.114E-01	*0.737E-02		
	5000000.	0.136E-01	0.689E-03	*0.130E-01	*0.794E-02		
K IX 4P 4D	200000.	1.02	0.401E-02	0.524E-01	0.160E-01	0.102	0.301E-01
1286.4 Å	500000.	0.705	-0.964E-03	0.870E-01	0.293E-01	0.172	0.585E-01
C = 0.40E+22	1000000.	0.552	0.859E-03	0.105	0.403E-01	0.206	0.813E-01
	2000000.	0.445	-0.588E-04	0.125	0.484E-01	0.235	0.976E-01
	3000000.	0.397	-0.181E-02	0.139	0.534E-01	0.253	0.108
	5000000.	0.348	-0.173E-02	0.157	0.601E-01	0.266	0.122
K IX 4P 5D	200000.	0.136	0.307E-02	0.108E-01	0.726E-02	*0.211E-01	*0.134E-01
345.0 Å	500000.	0.971E-01	0.263E-02	0.165E-01	0.111E-01	*0.325E-01	*0.221E-01
C = 0.15E+21	1000000.	0.777E-01	0.260E-02	0.205E-01	0.137E-01	*0.393E-01	*0.275E-01
	2000000.	0.636E-01	0.189E-02	0.253E-01	0.162E-01	*0.463E-01	*0.326E-01
	3000000.	0.571E-01	0.157E-02	0.284E-01	0.175E-01	*0.504E-01	*0.355E-01
	5000000.	0.502E-01	0.140E-02	0.330E-01	0.194E-01	*0.540E-01	*0.392E-01
K IX 4P 6D	200000.	0.133	0.390E-02	*0.162E-01	*0.113E-01		
247.5 Å	500000.	0.977E-01	0.428E-02	*0.219E-01	*0.158E-01		
C = 0.44E+20	1000000.	0.795E-01	0.370E-02	*0.272E-01	*0.192E-01		
	2000000.	0.658E-01	0.300E-02	*0.328E-01	*0.224E-01		
	3000000.	0.593E-01	0.268E-02	0.371E-01	0.245E-01		
	5000000.	0.523E-01	0.219E-02	0.424E-01	0.262E-01	*0.689E-01	*0.531E-01
K IX 4P 7D	200000.	0.175	0.564E-02				
211.7 Å	500000.	0.132	0.634E-02				
C = 0.20E+20	1000000.	0.109	0.552E-02	*0.424E-01	*0.311E-01		
	2000000.	0.905E-01	0.491E-02	*0.524E-01	*0.352E-01		
	3000000.	0.817E-01	0.428E-02	*0.588E-01	*0.379E-01		
	5000000.	0.721E-01	0.333E-02	*0.672E-01	*0.408E-01		
K IX 5P 5D	200000.	11.1	0.901E-01	0.937	0.379		
2693.8 Å	500000.	7.99	0.457E-01	1.28	0.590	*2.52	*1.17
C = 0.89E+22	1000000.	6.46	0.425E-01	1.51	0.720	*2.91	*1.45
	2000000.	5.34	0.203E-02	1.78	0.853	*3.26	*1.71
	3000000.	4.82	-0.139E-02	1.94	0.920	*3.41	*1.85
	5000000.	4.26	0.412E-02	2.25	1.02	*3.63	*2.04
K IX 5P 6D	200000.	1.09	0.219E-01	*0.124	*0.781E-01		
660.9 Å	500000.	0.803	0.236E-01	*0.165	*0.109		
C = 0.31E+21	1000000.	0.657	0.194E-01	*0.203	*0.134		
	2000000.	0.546	0.146E-01	*0.237	*0.154		
	3000000.	0.493	0.132E-01	0.263	0.166		
	5000000.	0.435	0.107E-01	0.307	0.179	*0.504	*0.365
K IX 5P 7D	200000.	0.871	0.233E-01				
455.3 Å	500000.	0.655	0.261E-01				
C = 0.94E+20	1000000.	0.541	0.222E-01	*0.197	*0.142		
	2000000.	0.452	0.195E-01	*0.243	*0.161		
	3000000.	0.408	0.170E-01	*0.274	*0.175		
	5000000.	0.361	0.131E-01	*0.312	*0.186		
K IX 3D 4P	200000.	0.287E-01	0.392E-03	0.130E-02	0.263E-03	0.252E-02	0.497E-03
260.3 Å	500000.	0.194E-01	0.474E-03	0.230E-02	0.560E-03	0.454E-02	0.112E-02
C = 0.41E+21	1000000.	0.149E-01	0.482E-03	0.287E-02	0.791E-03	0.572E-02	0.159E-02
	2000000.	0.118E-01	0.430E-03	0.329E-02	0.994E-03	0.652E-02	0.200E-02
	3000000.	0.105E-01	0.434E-03	0.355E-02	0.111E-02	0.698E-02	0.225E-02
	5000000.	0.917E-02	0.385E-03	0.385E-02	0.127E-02	0.738E-02	0.257E-02
K IX 3D 5P	200000.	0.226E-01	0.474E-03	0.189E-02	0.452E-03	*0.368E-02	*0.848E-03
157.0 Å	500000.	0.159E-01	0.562E-03	0.271E-02	0.784E-03	*0.539E-02	*0.156E-02
C = 0.71E+20	1000000.	0.127E-01	0.571E-03	0.310E-02	0.995E-03	*0.617E-02	*0.201E-02
	2000000.	0.104E-01	0.541E-03	0.352E-02	0.120E-02	*0.688E-02	*0.242E-02
	3000000.	0.936E-02	0.487E-03	0.373E-02	0.133E-02	0.716E-02	0.268E-02
	5000000.	0.830E-02	0.415E-03	0.405E-02	0.147E-02	0.747E-02	0.295E-02

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 4D 5P	200000.	0.351	0.359E-02	0.276E-01	0.225E-02	*0.538E-01	*0.425E-02
571.3 Å	500000.	0.249	0.534E-02	0.387E-01	0.439E-02	*0.769E-01	*0.878E-02
C = 0.78E+21	1000000.	0.199	0.506E-02	0.444E-01	0.609E-02	*0.873E-01	*0.123E-01
	2000000.	0.164	0.510E-02	0.505E-01	0.735E-02	*0.964E-01	*0.149E-01
	3000000.	0.148	0.472E-02	0.538E-01	0.820E-02	0.993E-01	0.166E-01
	5000000.	0.131	0.399E-02	0.592E-01	0.923E-02	0.103	0.188E-01
PERTURBER DENSITY = 1.E+20cm^{-3}							
K IX 3S 3P	200000.	0.664	-0.731E-02	0.641E-02	-0.425E-02	0.120E-01	-0.711E-02
626.3 Å	500000.	0.433	-0.816E-02	0.185E-01	-0.111E-01	0.362E-01	-0.210E-01
C = 0.63E+23	1000000.	0.323	-0.939E-02	0.301E-01	-0.179E-01	0.596E-01	-0.351E-01
	2000000.	0.248	-0.889E-02	0.424E-01	-0.248E-01	0.845E-01	-0.499E-01
	3000000.	0.215	-0.858E-02	0.472E-01	-0.277E-01	0.934E-01	-0.559E-01
	5000000.	0.182	-0.814E-02	0.542E-01	-0.319E-01	0.106	-0.645E-01
K IX 3S 4P	200000.	0.738E-01	0.435E-03	0.299E-02	0.361E-03	*0.555E-02	*0.602E-03
131.7 Å	500000.	0.499E-01	0.693E-03	0.543E-02	0.873E-03	*0.106E-01	*0.165E-02
C = 0.10E+22	1000000.	0.384E-01	0.574E-03	0.687E-02	0.132E-02	*0.136E-01	*0.258E-02
	2000000.	0.305E-01	0.560E-03	0.784E-02	0.177E-02	*0.155E-01	*0.357E-02
	3000000.	0.271E-01	0.579E-03	0.846E-02	0.197E-02	*0.166E-01	*0.398E-02
	5000000.	0.236E-01	0.489E-03	0.926E-02	0.224E-02	*0.175E-01	*0.453E-02
K IX 3S 5P	200000.	0.903E-01	0.133E-02	*0.710E-02	*0.145E-02		
98.8 Å	500000.	0.635E-01	0.179E-02	*0.105E-01	*0.278E-02		
C = 0.28E+21	1000000.	0.506E-01	0.178E-02	*0.120E-01	*0.365E-02		
	2000000.	0.414E-01	0.179E-02	*0.136E-01	*0.450E-02		
	3000000.	0.373E-01	0.159E-02	*0.144E-01	*0.495E-02		
	5000000.	0.330E-01	0.136E-02	0.156E-01	0.551E-02		
K IX 4S 4P	200000.	14.4	-0.223	0.501	-0.263	*0.935	-0.431
1657.9 Å	500000.	9.91	-0.316	0.948	-0.516	*1.86	-0.959
C = 0.17E+24	1000000.	7.75	-0.304	1.23	-0.723	*2.44	-1.40
	2000000.	6.23	-0.306	1.47	-0.878	*2.91	-1.77
	3000000.	5.54	-0.274	1.65	-0.975	*3.17	-1.96
	5000000.	4.83	-0.236	1.90	-1.11	*3.51	-2.24
K IX 4S 5P	200000.	1.04	0.301E-02	*0.735E-01	*0.501E-02		
319.4 Å	500000.	0.737	0.290E-02	*0.108	*0.110E-01		
C = 0.30E+22	1000000.	0.590	0.395E-02	*0.123	*0.158E-01		
	2000000.	0.484	0.407E-02	*0.139	*0.196E-01		
	3000000.	0.436	0.304E-02	*0.147	*0.217E-01		
	5000000.	0.386	0.255E-02	0.160	0.247E-01		
K IX 3P 4S	200000.	0.923E-01	0.431E-02	0.196E-02	0.411E-02	*0.383E-02	*0.671E-02
185.4 Å	500000.	0.634E-01	0.605E-02	0.579E-02	0.797E-02	*0.115E-01	*0.147E-01
C = 0.21E+22	1000000.	0.493E-01	0.577E-02	0.102E-01	0.108E-01	*0.204E-01	*0.208E-01
	2000000.	0.392E-01	0.571E-02	0.135E-01	0.132E-01	*0.269E-01	*0.266E-01
	3000000.	0.346E-01	0.533E-02	0.156E-01	0.147E-01	*0.306E-01	*0.294E-01
	5000000.	0.297E-01	0.464E-02	0.190E-01	0.164E-01	0.363E-01	0.333E-01
K IX 3P 5S	200000.	0.780E-01	0.707E-02	*0.560E-02	*0.713E-02		
121.5 Å	500000.	0.562E-01	0.816E-02	*0.119E-01	*0.122E-01		
C = 0.43E+21	1000000.	0.450E-01	0.808E-02	*0.159E-01	*0.156E-01		
	2000000.	0.366E-01	0.787E-02	*0.205E-01	*0.190E-01		
	3000000.	0.325E-01	0.700E-02	*0.238E-01	*0.208E-01		
	5000000.	0.280E-01	0.601E-02	*0.274E-01	*0.229E-01		
K IX 3P 6S	200000.	0.115	0.125E-01				
103.4 Å	500000.	0.853E-01	0.138E-01				
C = 0.17E+21	1000000.	0.693E-01	0.142E-01				
	2000000.	0.568E-01	0.132E-01				
	3000000.	0.506E-01	0.115E-01				
	5000000.	0.435E-01	0.103E-01	*0.538E-01	*0.419E-01		
K IX 3P 7S	200000.	*0.187	*0.161E-01				
95.3 Å	500000.	0.140	0.216E-01				
C = 0.89E+20	1000000.	0.115	0.222E-01				
	2000000.	0.948E-01	0.213E-01				
	3000000.	0.843E-01	0.187E-01				
	5000000.	0.723E-01	0.173E-01				

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 4P 5S	200000.	1.56	0.865E-01	*0.867E-01	*0.937E-01		
446.9 Å	500000.	1.11	0.981E-01	*0.171	*0.161		
C = 0.58E+22	1000000.	0.885	0.979E-01	*0.224	*0.206		
	2000000.	0.720	0.955E-01	*0.288	*0.252		
	3000000.	0.642	0.837E-01	*0.327	*0.277		
	5000000.	0.558	0.715E-01	*0.383	*0.301		
K IX 4P 6S	200000.	0.981	0.826E-01				
272.3 Å	500000.	0.719	0.907E-01				
C = 0.12E+22	1000000.	0.582	0.941E-01				
	2000000.	0.477	0.874E-01				
	3000000.	0.425	0.753E-01				
	5000000.	0.367	0.675E-01	*0.374	*0.290		
K IX 4P 7S	200000.	*1.13	*0.849E-01				
222.3 Å	500000.	0.849	0.114				
C = 0.49E+21	1000000.	0.695	0.118				
	2000000.	0.571	0.113				
	3000000.	0.508	0.988E-01				
	5000000.	0.437	0.919E-01				
K IX 5P 6S	200000.	*13.8	*0.760				
873.1 Å	500000.	10.1	0.821				
C = 0.12E+23	1000000.	8.22	0.853				
	2000000.	6.79	0.784				
	3000000.	6.09	0.676				
	5000000.	5.32	0.609	*3.82	*2.86		
K IX 5P 7S	200000.	*7.13	*0.410				
507.2 Å	500000.	5.33	0.557				
C = 0.25E+22	1000000.	4.37	0.574				
	2000000.	3.61	0.550				
	3000000.	3.23	0.481				
	5000000.	2.80	0.450				
K IX 3P 3D	200000.	0.397	-0.175E-02	0.654E-02	-0.765E-03	0.122E-01	-0.128E-02
464.3 Å	500000.	0.258	-0.121E-02	0.165E-01	-0.213E-02	0.322E-01	-0.405E-02
C = 0.34E+23	1000000.	0.191	-0.235E-02	0.245E-01	-0.380E-02	0.483E-01	-0.747E-02
	2000000.	0.146	-0.162E-02	0.307E-01	-0.562E-02	0.612E-01	-0.113E-01
	3000000.	0.127	-0.170E-02	0.333E-01	-0.685E-02	0.662E-01	-0.138E-01
	5000000.	0.109	-0.165E-02	0.364E-01	-0.792E-02	0.721E-01	-0.160E-01
K IX 3P 4D	200000.	0.962E-01	0.117E-02	0.397E-02	0.239E-02	*0.741E-02	*0.391E-02
147.6 Å	500000.	0.655E-01	0.101E-02	0.767E-02	0.465E-02	*0.150E-01	*0.861E-02
C = 0.52E+21	1000000.	0.506E-01	0.121E-02	0.102E-01	0.639E-02	*0.198E-01	*0.123E-01
	2000000.	0.403E-01	0.112E-02	0.128E-01	0.782E-02	*0.239E-01	*0.157E-01
	3000000.	0.357E-01	0.919E-03	0.147E-01	0.867E-02	*0.265E-01	*0.175E-01
	5000000.	0.310E-01	0.828E-03	0.170E-01	0.966E-02	*0.290E-01	*0.195E-01
K IX 3P 5D	200000.	0.128	0.201E-02	*0.102E-01	*0.653E-02		
112.4 Å	500000.	0.906E-01	0.245E-02	*0.165E-01	*0.112E-01		
C = 0.16E+21	1000000.	0.722E-01	0.262E-02	*0.209E-01	*0.144E-01		
	2000000.	0.588E-01	0.236E-02	*0.262E-01	*0.176E-01		
	3000000.	0.527E-01	0.209E-02	*0.291E-01	*0.188E-01		
	5000000.	0.462E-01	0.205E-02	*0.342E-01	*0.210E-01		
K IX 3P 6D	200000.	*0.201	*0.877E-03				
99.6 Å	500000.	0.148	0.398E-02				
C = 0.71E+20	1000000.	0.120	0.367E-02				
	2000000.	0.996E-01	0.418E-02				
	3000000.	0.898E-01	0.389E-02				
	5000000.	0.792E-01	0.384E-02				
K IX 3P 7D	200000.	*0.314	-0.244E-02				
93.3 Å	500000.	*0.239	*0.434E-02				
C = 0.39E+20	1000000.	0.198	0.394E-02				
	2000000.	0.166	0.664E-02				
	3000000.	0.150	0.605E-02				
	5000000.	0.133	0.633E-02				

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 4P 4D	200000.	10.2	0.164E-01	0.513	0.140		
1286.4 Å	500000.	7.05	-0.239E-01	0.867	0.280		
C = 0.40E+23	1000000.	5.52	-0.276E-02	1.05	0.397		
	2000000.	4.45	-0.569E-02	1.25	0.482	*2.35	*0.973
	3000000.	3.97	-0.217E-01	1.39	0.533	*2.52	*1.08
	5000000.	3.48	-0.182E-01	1.57	0.601	*2.66	*1.22
K IX 4P 5D	200000.	1.36	0.137E-01	*0.105	*0.599E-01		
345.0 Å	500000.	0.970	0.158E-01	*0.164	*0.103		
C = 0.15E+22	1000000.	0.775	0.178E-01	*0.205	*0.132		
	2000000.	0.635	0.156E-01	*0.253	*0.161		
	3000000.	0.570	0.131E-01	*0.284	*0.174		
	5000000.	0.501	0.134E-01	*0.330	*0.194		
K IX 4P 6D	200000.	*1.31	*0.272E-02				
247.5 Å	500000.	0.965	0.208E-01				
C = 0.44E+21	1000000.	0.786	0.191E-01				
	2000000.	0.652	0.224E-01				
	3000000.	0.588	0.206E-01				
	5000000.	0.519	0.207E-01				
K IX 4P 7D	200000.	*1.66	-0.145E-01				
211.7 Å	500000.	*1.27	*0.196E-01				
C = 0.20E+21	1000000.	1.05	0.177E-01				
	2000000.	0.879	0.317E-01				
	3000000.	0.796	0.287E-01				
	5000000.	0.705	0.304E-01				
K IX 5P 6D	200000.	*10.8	-0.288E-01				
660.9 Å	500000.	7.95	0.857E-01				
C = 0.31E+22	1000000.	6.50	0.712E-01				
	2000000.	5.42	0.940E-01				
	3000000.	4.89	0.905E-01				
	5000000.	4.33	0.992E-01				
K IX 5P 7D	200000.	*8.29	-0.900E-01				
455.3 Å	500000.	*6.31	*0.610E-01				
C = 0.94E+21	1000000.	5.24	0.510E-01				
	2000000.	4.40	0.116				
	3000000.	3.99	0.106				
	5000000.	3.53	0.118				
K IX 3D 4P	200000.	0.287	0.352E-02	0.127E-01	0.233E-02	*0.237E-01	*0.388E-02
260.3 Å	500000.	0.193	0.450E-02	0.230E-01	0.539E-02	*0.449E-01	*0.102E-01
C = 0.41E+22	1000000.	0.149	0.460E-02	0.287E-01	0.780E-02	*0.570E-01	*0.152E-01
	2000000.	0.118	0.423E-02	0.329E-01	0.992E-02	*0.651E-01	*0.200E-01
	3000000.	0.105	0.428E-02	0.355E-01	0.111E-01	*0.698E-01	*0.224E-01
	5000000.	0.917E-01	0.383E-02	0.385E-01	0.127E-01	*0.738E-01	*0.256E-01
K IX 3D 5P	200000.	0.226	0.402E-02	*0.183E-01	*0.392E-02		
157.0 Å	500000.	0.159	0.518E-02	*0.269E-01	*0.742E-02		
C = 0.71E+21	1000000.	0.127	0.536E-02	*0.309E-01	*0.974E-02		
	2000000.	0.104	0.526E-02	*0.352E-01	*0.119E-01		
	3000000.	0.936E-01	0.475E-02	*0.373E-01	*0.133E-01		
	5000000.	0.830E-01	0.413E-02	0.405E-01	0.147E-01		
K IX 4D 5P	200000.	3.51	0.330E-01	*0.267	*0.199E-01		
571.3 Å	500000.	2.49	0.516E-01	*0.385	*0.421E-01		
C = 0.78E+22	1000000.	1.99	0.493E-01	*0.443	*0.600E-01		
	2000000.	1.64	0.505E-01	*0.505	*0.734E-01		
	3000000.	1.48	0.465E-01	*0.537	*0.818E-01		
	5000000.	1.31	0.398E-01	*0.592	*0.923E-01		
PERTURBER DENSITY = 1.E+21cm^{-3}							
K IX 3S 3P	200000.	6.64	-0.498E-01	0.559E-01	-0.280E-01	*0.843E-01	-0.321E-01
626.3 Å	500000.	4.33	-0.688E-01	0.183	-0.988E-01	*0.349	-0.170
C = 0.63E+24	1000000.	3.23	-0.847E-01	0.300	-0.170	*0.589	-0.316
	2000000.	2.48	-0.814E-01	0.424	-0.244	*0.842	-0.471
	3000000.	2.15	-0.808E-01	0.472	-0.276	*0.933	-0.546
	5000000.	1.82	-0.788E-01	0.542	-0.318	1.06	-0.643

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 3S 4P	200000.	*0.738	*0.258E-02	*0.243E-01	*0.236E-02		
131.7 Å	500000.	0.499	0.590E-02	*0.527E-01	*0.772E-02		
C = 0.10E+23	1000000.	0.384	0.507E-02	*0.681E-01	*0.125E-01		
	2000000.	0.305	0.500E-02	*0.783E-01	*0.173E-01		
	3000000.	0.271	0.539E-02	*0.845E-01	*0.196E-01		
	5000000.	0.236	0.467E-02	*0.926E-01	*0.224E-01		
K IX 3S 5P	200000.	*0.892	*0.323E-02				
98.8 Å	500000.	*0.630	*0.123E-01				
C = 0.28E+22	1000000.	0.502	0.136E-01				
	2000000.	0.412	0.148E-01				
	3000000.	0.371	0.139E-01				
	5000000.	0.329	0.125E-01				
K IX 4S 5P	200000.						
319.4 Å	500000.	*7.32	*0.122E-01				
C = 0.30E+23	1000000.	5.86	0.245E-01				
	2000000.	4.82	0.311E-01				
	3000000.	4.34	0.242E-01				
	5000000.	3.84	0.222E-01				
K IX 3P 4S	200000.	0.922	0.162E-01	*0.186E-01	*0.249E-01		
185.4 Å	500000.	0.633	0.454E-01	*0.577E-01	*0.666E-01		
C = 0.21E+23	1000000.	0.493	0.472E-01	*0.102	*0.987E-01		
	2000000.	0.392	0.489E-01	*0.135	*0.127		
	3000000.	0.346	0.477E-01	*0.156	*0.146		
	5000000.	0.297	0.434E-01	*0.190	*0.164		
K IX 3P 5S	200000.	*0.759	*0.227E-02				
121.5 Å	500000.	0.551	0.434E-01				
C = 0.43E+22	1000000.	0.443	0.543E-01				
	2000000.	0.361	0.574E-01				
	3000000.	0.321	0.553E-01				
	5000000.	0.277	0.524E-01				
K IX 3P 6S	200000.	*0.997	-0.513E-01				
103.4 Å	500000.	*0.775	*0.368E-01				
C = 0.17E+22	1000000.	0.641	0.720E-01				
	2000000.	0.532	0.736E-01				
	3000000.	0.476	0.728E-01				
	5000000.	0.412	0.798E-01				
K IX 3P 7S	200000.						
95.3 Å	500000.	*1.11	*0.543E-02				
C = 0.89E+21	1000000.	*0.956	*0.731E-01				
	2000000.	0.811	0.818E-01				
	3000000.	0.731	0.923E-01				
	5000000.	0.637	0.116				
K IX 4P 5S	200000.	*15.3	-0.293E-01				
446.9 Å	500000.	*10.9	*0.483				
C = 0.58E+23	1000000.	8.75	0.632				
	2000000.	7.13	0.678				
	3000000.	6.36	0.645				
	5000000.	5.53	0.615				
K IX 4P 6S	200000.						
272.3 Å	500000.	*6.65	*0.215				
C = 0.12E+23	1000000.	*5.46	*0.460				
	2000000.	4.52	0.473				
	3000000.	4.04	0.466				
	5000000.	3.52	0.518				
K IX 4P 7S	200000.						
222.3 Å	500000.	*6.89	*0.217E-02				
C = 0.49E+22	1000000.	*5.87	*0.371				
	2000000.	4.96	0.420				
	3000000.	4.47	0.477				
	5000000.	3.90	0.610				

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 3P 3D	200000.	3.97	-0.139E-01	0.563E-01	-0.505E-02	*0.832E-01	-0.583E-02
464.3 Å	500000.	2.58	-0.974E-02	0.162	-0.192E-01	*0.307	-0.333E-01
C = 0.34E+24	1000000.	1.91	-0.220E-01	0.244	-0.365E-01	*0.475	-0.685E-01
	2000000.	1.46	-0.150E-01	0.307	-0.555E-01	*0.610	-0.108
	3000000.	1.27	-0.160E-01	0.333	-0.684E-01	*0.661	-0.136
	5000000.	1.09	-0.160E-01	0.364	-0.791E-01	*0.720	-0.159
K IX 3P 4D	200000.	*0.952	-0.431E-02	*0.327E-01	*0.146E-01		
147.6 Å	500000.	0.650	0.110E-02	*0.748E-01	*0.390E-01		
C = 0.52E+22	1000000.	0.503	0.590E-02	*0.102	*0.586E-01		
	2000000.	0.400	0.620E-02	*0.128	*0.756E-01		
	3000000.	0.355	0.564E-02	*0.147	*0.863E-01		
	5000000.	0.308	0.643E-02	*0.170	*0.962E-01		
K IX 3P 5D	200000.						
112.4 Å	500000.	*0.865	-0.315E-02				
C = 0.16E+22	1000000.	0.694	0.690E-02				
	2000000.	0.569	0.656E-02				
	3000000.	0.511	0.846E-02				
	5000000.	0.450	0.131E-01				
K IX 3P 6D	200000.						
99.6 Å	500000.	*1.30	-0.115E-01				
C = 0.71E+21	1000000.	*1.09	-0.378E-03				
	2000000.	0.915	0.436E-02				
	3000000.	0.832	0.117E-01				
	5000000.	0.741	0.194E-01				
K IX 3P 7D	200000.						
93.3 Å	500000.						
C = 0.39E+21	1000000.	*1.65	-0.967E-02				
	2000000.	*1.43	*0.544E-02				
	3000000.	*1.32	*0.164E-01				
	5000000.	1.19	0.259E-01				
K IX 4P 5D	200000.						
345.0 Å	500000.	*9.30	-0.910E-01				
C = 0.15E+23	1000000.	7.49	0.447E-02				
	2000000.	6.17	0.282E-02				
	3000000.	5.55	0.182E-01				
	5000000.	4.90	0.678E-01				
K IX 4P 6D	200000.						
247.5 Å	500000.	*8.58	-0.103				
C = 0.44E+22	1000000.	*7.15	-0.335E-01				
	2000000.	6.02	-0.344E-02				
	3000000.	5.48	0.405E-01				
	5000000.	4.88	0.907E-01				
K IX 4P 7D	200000.						
211.7 Å	500000.						
C = 0.20E+22	1000000.	*8.82	-0.726E-01				
	2000000.	*7.63	*0.580E-02				
	3000000.	*7.02	*0.611E-01				
	5000000.	6.33	0.113				
K IX 3D 4P	200000.	*2.87	*0.231E-01	*0.103	*0.151E-01		
260.3 Å	500000.	1.93	0.380E-01	*0.223	*0.472E-01		
C = 0.41E+23	1000000.	1.49	0.414E-01	*0.285	*0.733E-01		
	2000000.	1.18	0.383E-01	*0.328	*0.969E-01		
	3000000.	1.05	0.400E-01	*0.355	*0.110		
	5000000.	0.917	0.369E-01	*0.385	*0.126		
K IX 3D 5P	200000.	*2.24	*0.130E-01				
157.0 Å	500000.	*1.58	*0.367E-01				
C = 0.71E+22	1000000.	1.26	0.423E-01				
	2000000.	1.03	0.442E-01				
	3000000.	0.932	0.419E-01				
	5000000.	0.827	0.383E-01				

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
PERTURBER DENSITY = 1.E+22cm^{-3}							
K IX 3S 4P	200000.						
131.7 Å	500000.	*4.86	*0.133E-01				
C = 0.10E+24	1000000.	*3.76	*0.222E-01				
	2000000.	3.00	0.305E-01				
	3000000.	2.67	0.370E-01				
	5000000.	2.32	0.328E-01				
K IX 3S 5P	200000.						
98.8 Å	500000.						
C = 0.28E+23	1000000.						
	2000000.	*3.79	*0.623E-01				
	3000000.	*3.45	*0.652E-01				
	5000000.	3.09	0.605E-01				
K IX 3P 4S	200000.						
185.4 Å	500000.	*6.00	-0.583E-01				
C = 0.21E+24	1000000.	4.73	0.135				
	2000000.	3.78	0.258				
	3000000.	3.35	0.279				
	5000000.	2.88	0.264				
K IX 3P 5S	200000.						
121.5 Å	500000.	*4.11	-0.409				
C = 0.43E+23	1000000.	*3.56	-0.364E-01				
	2000000.	3.03	0.164				
	3000000.	2.74	0.196				
	5000000.	2.41	0.196				
K IX 3P 6S	200000.						
103.4 Å	500000.						
C = 0.17E+23	1000000.	*3.92	-0.202				
	2000000.	*3.64	*0.662E-01				
	3000000.	*3.40	*0.121				
	5000000.	3.08	0.187				
K IX 3P 7S	200000.						
95.3 Å	500000.						
C = 0.89E+22	1000000.						
	2000000.	*4.44	-0.793E-01				
	3000000.	*4.35	*0.324E-01				
	5000000.	*4.09	*0.175				
K IX 3P 4D	200000.						
147.6 Å	500000.	*6.01	-0.106				
C = 0.52E+23	1000000.	*4.73	-0.307E-01				
	2000000.	3.80	-0.342E-02				
	3000000.	3.39	-0.149E-02				
	5000000.	2.96	0.669E-02				
K IX 3P 5D	200000.						
112.4 Å	500000.						
C = 0.16E+23	1000000.						
	2000000.	*4.90	-0.214E-01				
	3000000.	*4.48	-0.587E-02				
	5000000.	4.01	0.230E-01				
K IX 3P 6D	200000.						
99.6 Å	500000.						
C = 0.71E+22	1000000.						
	2000000.						
	3000000.	*6.67	*0.135E-01				
	5000000.	*6.14	*0.350E-01				
K IX 3D 4P	200000.						
260.3 Å	500000.	*18.8	*0.946E-01				
C = 0.41E+24	1000000.	*14.6	*0.232				
	2000000.	11.6	0.260				
	3000000.	10.3	0.293				
	5000000.	9.05	0.280				

PERTURBERS ARE:		ELECTRONS		PROTONS		He III	
TRANSITION	T(K)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)	WIDTH(Å)	SHIFT(Å)
K IX 3D 5P	200000.						
157.0 Å	500000.						
C = 0.71E+23	1000000.						
	2000000.	*9.51	*0.209				
	3000000.	*8.65	*0.219				
	5000000.	7.76	0.208				

divided by the corresponding full width at half maximum. For each value given in Table 1, the collision volume (V) multiplied by the perturber density (N) is much less than one and the impact approximation is valid (Sahal−Bréchot, 1969ab). Values for NV $>$ 0.5 are not given and values for $0.1 < \mathrm{NV} \leq 0.5$ are denoted by an asterisk. Stark broadening parameters for densities lower than tabulated, are linear with perturber density. When the impact approximation is not valid, the ion broadening contribution may be estimated by using quasistatic approach (Sahal−Bréchot 1991 or Griem 1974). In the region between where neither of these two approximations is valid, a unified type theory should be used. For example in Barnard *et al.* (1974), a simple analytical formulas for such a case are given. The accuracy of the results obtained decreases when broadening by ion interactions becomes important.

The discussion of obtained results and the comparison with the theoretical estimates on the basis of regularities and systematic trends (Djeniže and Labat, 1996) will be published in Dimitrijević and Sahal−Bréchot, 1998.

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ТАБЕЛЕ ПАРАМЕТАРА ШТАРКОВОГ ШИРЕЊА СПЕКТРАЛНИХ ЛИНИЈА К VIII И К IX

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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 4 мултиплета К VIII и 30 мултиплета К IX. Резултати су дати у функцији температуре и концентрације пертурбера.