XIII SERBIAN CONFERENCE ON SPECTRAL LINE SHAPES IN ASTROPHYSICS
August 23-27, 2021, Belgrade, Serbia
Book of Abstracts, Eds. A. Kovačević, L. Č. Popović and S. Simić
Astronomical Observatory Belgrade, 2021

Progress Report

STARK BROADENING OF B I SPECTRAL LINES

Milan S. Dimitrijević[1,2], Magdalena D. Christova[3] and Sylvie Sahal-Bréchot[2]

[1]*Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia*
[2]*LERMA, Observatoire de Paris, Université PSL, CNRS, Sorbonne Université, 92190 Meudon, France*
[3]*Department of Applied Physics, Technical University-Sofia, 1000 Sofia, Bulgaria*
E-mail: mdimitrijevic@aob.rs, mchristo@tu-sofia.bg, sylvie.sahal-brechot@obspm.fr

This study is a continuation of our previous work on the Stark broadening parameters of boron spectral lines. In Dimitrijević et al. (2016), Stark broadening parameters, widths and shifts due to collisions with electrons, protons and He II ions have been calculated for 157 B IV multiplets and in Christova and Dimitrijević (2019) and Christova et al. (2019) regularities and systematic trends within B I spectral series have ben examined. Here, we calculated widths and shifts due to collisions with electrons, protons and He II ions for 66 multiplets of neutral boron using the semiclassical perturbation theory (Sahal-Bréchot, 1969ab; Sahal-Bréchot et al. 2014). The range of temperatures is from 2 500 K to 50 000 K and electron density values are within the range 10^{11} – 10^{19} cm^{-3}. The obtained Stark broadening parameters have been used to examine the importance of Stark broadening mechanism in stellar atmospheres.

References

Christova, M., Dimitrijević, M. S.: 2019, *AIP Conference Proceedings*, **2172**, 110001.
Christova, Magdalena; Dimitrijević, Milan S.; Sahal-Bréchot, Sylvie: 2019, *Atoms*, **7**, 80.
Dimitrijević, M. S., Christova, M., Simić, Z., Kovačević, A., Sahal-Bréchot, S.: 2016, *Mon. Not. R. Astron. Soc.*, **460**(2), 1658.
Sahal-Bréchot, S.: 1969a, *Astron. Astrophys.*, **1**, 91.
Sahal-Bréchot, S.: 1969b, *Astron. Astrophys.*, **1**, 322.
Sahal-Bréchot, Sylvie; Dimitrijević, Milan S.; Ben Nessib, Nabil: 2014, *Atoms*, **2**, 225.