XV Serbian Conference on Spectral Line Shapes in Astrophysics, June 9 - 13, 2025, Niš, Serbia
Book of Abstracts, Eds. P. Marziani, M. S. Dimitrijević, L. Č. Popović and Đ. Savić
Astronomical Observatory Belgrade, Special Issues No. 2
https://doi.org/10.69646/15scslsa20

ON THE STARK BROADENING OF N V SPECTRAL LINES

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Spectral lines of N V are present in white dwarf spectra, where the collisions with charged particles are important, so that the corresponding data on Strak broadening are of interest for identification, analysis and synthesis of N V lines in their spectra, as well as for abundance determination of nitrogen etc. An additional stimulation for the choice of N V spectral lines is their interest for proton-boron fusion. Namely, in investigations of p-B fusion target is often BN (see e.g. Margarone et al., 2014), so that Stark broadening data for spectral lines of nitrogen ions are of interest for investigation, modelling and diagnostics of proton-boron fusion plasma. In order to satisfy such needs we calculated, using the semiclassical perturbation theory (Sahal-Bréchot et al., 2014), Stark broadening parameters for 30 N V spectral lines, broadened by collisions with alpha particles, B III, B IV, B V and B VI ions, for a grid of temperatures and densities. Stark broadening parameters of these lines, broadened by collisions with electrons, protons and ionized helium, have been calculated in Dimitrijević and Sahal-Bréchot (1992), but only up to $T = 500.000$ K what is not enough for the p-B fusion experiments (see e.eg. Magee et al., 2023). Here, we also extended these calculations to higher temperatures of interest for p-B fusion. Here we will present the obtained results and discuss their applications.

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Acknowledgments: This work has been supported with a STSM visit grant for M.S.D. within the framework of COST Action CA21128-PROBONO "Proton Boron Nuclear Fusion: From Energy Production To Medical Applications", supported by COST (European Cooperation in Science and Technology—www.cost.eu).