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ON THE STARK BROADENING OF Sn III SPECTRAL LINES

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Spectral lines of tin are present in stellar spectra, so that the corresponding data on Stark broadening are of interest for their analysis and modeling, as well as for abundance determination, atmosphere modeling, etc., especially for white dwarfs and A and late B type stars. Our choice of Sn III is additionally motivated by the paper of Ganeev (2023) who stated that for development of techniques for high-order harmonics generation (HHG) in ablated materials is very important diagnostics of laser-induced and other plasmas. He also underline the significance of the metal elements from the fifth period of the periodic table, where also tin belongs, as good targets for optimal laser-induced plasma formation. Consequently, tin may be a promising plasma medium for HHG, particularly when laser-induced breakdown spectroscopy is used. In order to satisfy the need for Stark broadening data of Sn III, we calculated Stark line widths and shifts due to collisions with electrons, protons and ionized tin for 19 Sn III spectral lines, by using the semiclassical perturbation theory. Results are compared with existing theoretical and experimental results.

References

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