Poster

SEMICLASSICAL STARK BROADENING PARAMETERS OF Ar VII SPECTRAL LINES

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Spectral lines of Ar VII have been observed in stellar spectra, for example by Taresch et al. (1997) and Werner et al. (2007) who identified Ar VII lines in some of the hottest known central stars of planetary nebulae, with effective temperatures of 95000 - 110000 K, and in (pre-) white dwarfs, where Stark broadening is very significant. The corresponding Stark broadening data are needed for a reliable analysis and modelling. Since Stark broadening parameters for Ar VII spectral lines are completely missing in the existing literature, we have calculated full widths at half maximum intensity and shifts of 16 spectral lines of Ar VII, for broadening by electron, proton, and He III impacts. For calculations, the semi-classical perturbation approach in the impact approximation has been used (see e.g. Sahal-Bréchot et al. 2014). The atomic structure has been calculated with the Bates and Damgaard approximation (Bates and Damgaard 1949). The results are provided for a set of temperatures varying from 20 000 K to 500 000 K and for a set of electron densities. The obtained results will be included in the STARK-B database (http://stark-b.obspm.fr) which is a part of the Virtual Atomic and Molecular Data Center (VAMDC - http://www.vamdc.org/).

References

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