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 STRONTIUM ION Sr V SPECTRAL LINES IN HOT WHITE DWARF ATMOSPHERES

R. Aloui[1], H. Elabidi[2,3] and Sylvie Sahal-Bréchot[4]

[1] *University of Tunis, ENSIT, Laboratoire de Spectroscopie et Dynamique Moléculaire, Tunis, Tunisia*
[2] *Umm Al-Qura University, Deanship of the Common First Year, Makkah Almukarramah, KSA*
[3] *University of Carthage, FSB, Laboratoire de Spectroscopie et Dynamique Moléculaire, Zarzouna, Tunisia*
[4] *Sorbonne Université, Observatoire de Paris, Université, PSL, CNRS, LERMA, F-92190 Meudon, France*

E-mail: rihabaloui88@gmail.com, haelabidi@uqu.edu.sa, sylvie.sahal-brechot@obspm.fr

Stark broadening and atomic data calculations have been developed for the most recent years, especially atomic and line broadening data for highly ionized ions. The aim of the present work is to perform calculations of Stark broadening for ten Sr V lines recently discovered in the UV spectrum of the hot white dwarf RE 0503−289, which have never been detected before in hot white dwarfs (Rauch et al. 2017). The recent discovery of new Sr V lines encourages us to provide their Stark broadening to enrich the databases and to be used in the interpretations of the observed spectra. No Stark broadening results in the literature to compare with. So, our results come to fill this lack of data.

Calculations have been performed at electron density $N_e = 10^{17}$ cm^{-3} and for electron temperature varying from 10^4 to 10^5 K. Calculations have been performed using our quantum mechanical approach (Elabidi et al. 2004, 2008). Along our calculations, radiative atomic data (energy levels, line strengths, oscillator strengths and radiative decay rates) for this ion have been calculated using the UCL codes (SUPERSTRUCTURE, DW, JAJOM). Stark broadening results, together with atomic radiative data, are useful for non-local thermodynamic equilibrium (NLTE) stellar-atmosphere modelling.

References

Elabidi, H., Ben Nessib N., Sahal- Bréchot S., J.: 2004, *Phys. B: At. Mol. Opt. Phys.*, **37**, 63.

Elabidi, H., Ben Nessib, N., Cornille, M., Dubau, J., Sahal-Bréchot, S.: 2008, *J. Phys. B: At. Mol. Opt. Phys.*, **41**, n° 025702.

Rauch, T., et al.: 2017, *A&A*, **606**, A105.