

STARK BROADENING OF Xe VIII SPECTRAL LINES IN WHITE DWARFS

M. S. Dimitrijević^{1,2}, Z. Simić¹, A. Kovačević³ and S. Sahal-Bréchet²

¹*Astronomical Observatory, Volgina 7, 11060 Belgrade, Serbia*

²*LERMA, Observatoire de Paris, UMR CNRS 8112, UPMC,
92195 Meudon Cedex, France*

³*Department for Astronomy, Faculty for Mathematics, Studentski Trg 16,
11000 Belgrade, Serbia*

*E-mail: zsimic@aob.bg.ac.rs, mdimitrijevic@aob.bg.ac.rs,
andjelka@matf.bg.ac.rs, sylvie.sahal-brechet@obspm.fr*

Within the semiclassical perturbation approach, using the impact approximation, we have determined theoretically Stark broadening parameters in function of temperature and perturber density for 60 Xe VIII multiplets and particular spectral lines when it is necessary. In addition to electron-impact full halfwidths and shifts, Stark broadening parameters due to proton-, and doubly charged helium ion-impacts have been calculated, in order to provide Stark broadening data for the important charged perturbers in stellar atmospheres. Stark broadening data for Xe VIII are of interest for the problem of investigation of atomic processes at electromagnetically driven strong shock waves. Moreover, such data are of interest and for plasma modelling and determination of chemical abundance of xenon, in white dwarfs, where lines of highly ionized Xe have been observed. The obtained results are also of interest for virtual observatories and will be included in the database STARK-B (<http://stark-b.obspm.fr/>) and Virtual Atomic and Molecular Data Center VAMDC (VAMDC - <http://www.vamdc.eu/>).