

CALCULATION OF STARK BROADENING PARAMETERS OF S II MULTIPLETS AND STELLAR MODELS ANALYSIS

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The electron-impact broadening data are needed for various problems in astrophysics and physics, as e.g. for diagnostic and modeling of laboratory and stellar plasma, investigation of its physical properties, stellar abundance, opacity and luminosity calculations, and nuclear processes in stellar interiors. These investigations provide us with useful information for modeling of stellar evolution. Electron-, proton-, and helium-ion-impact broadening parameters for ionized sulfur (S II) multiplets $3p^23d\ ^4F - 3p^2(^3P)4p\ 4D^o$ (560.611 nm) and $3p^24s\ ^4P - 3p^2(^3P)4p\ 4D^o$ (542.864 nm) calculated using semiclassical perturbation method and modified semiclassical method (MSE) are given. Energy levels for these calculations have been taken from NIST Atomic Spectra Database Levels Data, while for the needed oscillator strengths, Bates-Damgaard method has been used together with the tables of Oertel and Shomo. Also, we include analysis of Stark widths (FWHM) and Doppler width for these S II multiplets as a function of atmospheric layer temperatures for 8 atmospheric models and 7 values of model gravity.