

needed for stellar plasma research and modelling, as well as for a number of research topics in plasma physics. The obtained data will be used to investigate the influence of Stark broadening of spectral lines in stellar atmospheres.

CALCULATION OF STARK BROADENING OF SEVERAL Ne I LINES FOR ASTROPHYSICAL PURPOSES

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Neon lines are present in stellar spectra and due to its high cosmic abundance, as well as to the fact that carbon burning in stellar interiors produces oxygen-neon-magnesium cores, this element is particularly interesting for astrophysical plasma research, including the Stark broadening of lines in its spectrum. For example the Solar abundance of neon is the largest after H, He, O and C. Here, we will investigate Stark broadening of neon spectral lines within the series $2p^5 3p^2 [5/2]_3 - 2p^5 nd^2 [7/2]_4$. The new Stark broadening parameters will be determined using the semiclassical perturbation approach and the impact approximation. The obtained results will be used for the investigations of regularities and systematic trends of Stark broadening parameters within a spectral series and for the investigation of the influence of Stark broadening in stellar spectra.