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Poster

QUANTUM-MECHANICAL CALCULATIONS OF Ar XVI LINE WIDTHS

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Stark broadening and atomic data calculations have been developed for the most recent years, especially atomic and line broadening data for highly ionized ions of argon. The Lithium iso-electronic sequence ions are of considerable importance in astrophysical confined plasmas, and many of their emission lines are frequently observed in solar flares [1]. These ions are of additional interest in fusion reactors, such as TEXTOR specially the fifteen-time ionized argon (Ar XVI) [2].

The aim of the present work is to perform calculations of Stark broadening for 10 lines for the Ar XVI ion. Calculations have been performed at electron density $N_e = 10^{20}$ cm^{-3} for electron temperature varying from 7.5×10^5 to 7.5×10^6 K. Calculations have been performed using our quantum mechanical approach [3,4]. No Stark broadening results in the literature to compare with. So, our results come to fill this lack of data.

Along our calculations, radiative atomic data (energy levels, line strengths, oscillator strengths and radiative decay rates) for this ion have been calculated using the University College London (UCL) codes (SUPERSTRUCTURE, DISTORTED WAVE, JAJOM). Our Ar XVI results have been compared with other results and good agreement has been found.

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