Ab Initio Calculations of Ca V Stark Broadening Parameters

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Abstract

We have determined Stark broadening parameters for 7 Ca V multiplets by using the semiclassical perturbation approach. The calculations have been performed *ab initio*, since energy levels and oscillator strengths are calculated using SUPERSTRUCTURE code.

The obtained results are presented as a function of temperature, for perturber density of 10^{17} cm^{-3}. In order to provide Stark broadening data for the most important charged perturbers in stellar atmospheres, electron-, proton-, and ionized helium-impact full halfwidths and shifts have been calculated.

There is no other theoretical or experimental Stark broadening data for Ca V for comparison and new Stark broadening parameters calculations and measurements will be of interest to for comparison with our calculations.

The Geometry of the Broad Line Region of Active Galactic Nuclei

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Abstract

It is well known that the structure of the broad line region (BLR) of active galactic nuclei (AGN) can be very complex. Different models have been proposed to explain the kinematics of the BLR (e.g. disk, spherical region, bi-conical outflows, etc.), but none so far has provided a self-consistent framework for explaining the observed properties of the broad emission line (BEL) profiles. We will discuss here the problems of the geometry of the BLR and give some possible scenarios, such as the possibility that an accelerating outflow can affect the BEL profiles. Moreover, we will present the case of the variable AGN NGC 4151, where the outflow model can well describe the line profiles in different epochs.