

Short talk

COLLISIONAL BROADENING OF Na I IN METAL-RICH WHITE DWARFS - BEYOND THE SINGLE PERTURBER APPROXIMATION

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Ultracool stellar atmospheres show absorption by alkali resonance lines severely broadened by collisions with neutral perturbers. In the coolest and densest atmospheres, such as those of T dwarfs, Na I and K I broadened by molecular hydrogen and helium can come to dominate the entire optical spectrum, which has been successfully modelled with accurate interaction potentials in the adiabatic theory, computing line profiles from the first few orders of a density

expansion of the autocorrelation function. Observations of some white dwarfs indicate absorption due to Na I subject to even higher perturber densities than in brown dwarfs. We find that the line profile under such conditions is strongly determined by multiple-perturber interactions at short distances and can no longer be reproduced by a density expansion, but requires calculation of the full adiabatic profile. We present the first model atmosphere calculations using such profiles and compare them to observed spectra of ultracool, metal-rich white dwarfs.

Short talk

**PHYSICAL PROPERTIES OF THE BLR REGION:
BP vs. CLOUDY CALCULATIONS**

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In order to estimate the electron temperature of the Broad Line Region (BLR) of Active Galactic Nuclei (AGN) one can apply a simple Boltzmann-plot (BP) method to the broad Balmer lines (Popović 2003, 2006). We study here the applicability of the BP method by using the photoionization code CLOUDY. We consider different gas densities and ionizing flux values in order to obtain a situation where the population of upper levels of neutral hydrogen follows the Saha-Boltzmann distribution.