INFLUENCE OF DIELECTRONIC RECOMBINATION OF Mg II IN THE IR CONTINUUM OF Be STARS

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We are investigating the significance of the process of dielectronic recombination of ionized metals in relation to certain types of infrared excesses, as observed in Be stars. Physical conditions (T_e and N_e) in specific regions of the stellar envelopes permit the recombination of Mg II through dielectronic recombination. Since Mg II is mainly in the ground state, electronic capture produces Mg I atoms in autoionizing levels above the first ionization level; the lifetime of some of these levels being large enough has to allow bound-bound transitions to lower levels. In orden to evaluate the contribution of this atomic process to the stellar infrared flux, we calculate the emissivity in the lines. To accomplish this, we solve the statistical equilibrium equations for the physical conditions in the envelope, and computed transition probabilities of free-bound and bound-bound transition. To check our results with observations, we took into account the response functions of the filters used. The calculations were carried out for the different stellar parameters and for different conditions in the envelope, characterized by T_e, N_e and distance to the central star of the region where recombination takes plase. Our results indicate that the global emission depends upon stellar and envelope parameters but the shape of the IR excess (as shown by observations) depends on the atomic configurations selected to perform the calculations.

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ULTRAVIOLET SPECTRA AND LIMB DARKENING OF ACCRETION DISKS

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The UV emission of accretion disks was synthesized for a grid of optically thick models that cover the high-M nova-like regime, aiming to quantify the effect of limb darkening in the integrated and radially resolved spectrum of the disk. The steady-state disk is assumed geometrically thin and its structure is solved for a set of concentric rings where a plane-parallel atmosphere calculation is performed. Such atmosphere is in hydrostatic equilibrium using the depth-dependent gravity while the depth-dependent viscosity varies as a power law of the mass column density above depth. The 'disk' equations and the radiative transfer equation are solved iteratively in LTE by the complete linearization method. Once the temperature and density are self-consistently modeled, the radiative transfer equation is solved by the general spectral synthesis program SYNSPEC (Hubeny et al. CCP 7, 20, 30, 1994). It can be seen from our results that the continuum limb darkening effect is larger at outer disk radii and for low white dwarf masses, reflecting the temperature and gravity variations in the disk. It also increases at low mass transfer rates up to a typical value of 2.5^m for $i = 83°$. However, at high mass transfer rates onto massive white dwarfs, negligible effects are expected over *most* of the disk, even for an inclination of 72°. Gross systematic trends in the Lyman line profiles can be seen. The line width increases with i while the core depth increases as the white dwarf mass decreases. Another sequence is seen in the Lyman line width as a function of the mass transfer rate; the larger, the narrower the lines. In general, the level of the continuum adjacent to the blue wing of Lyγ is a good indicator of the mass transfer rate for the whole mass range. This simulation shows that the limb darkening is an important effect, especially in the UV, and should be taken into account when the overall or local emission of accretion disks in CV's is modeled and compared with observations. Supported in part by NASA grant NAGW-3171.

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THE LITHIUM K GIANT STARS

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The mechanism of Li enrichment in some otherwise normal K giants is not known. A few of them have Li abundances even larger then the "cosmic" Li abundance, giving to these stars a status of important possible Li sources in the Galaxy. A special attention was paid to the far infrared properties (FIR) of these Li rich giants, because, as we have found, the majority of them has important and extended circumstellar shells, that seems to distinguish them from ordinary K giants. Based on the observed FIR properties of K giant stars, we

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