THE HERBIG Ae STAR AB AUR: ABSORPTION ON THE LINE OF SIGHT AND CHROMOSPHERIC EMISSION

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Observations of emission lines in AB Aur have been made with the CFHT Reticon, at spectral resolution of 0.2-0.3 A in the red. Hα,He I λ5876, Na I λ5890, Ca II infrared triplet and Paschen lines P 14 to P 16 all are brighter than the nearby continuum. Also, narrow absorption components in K I and Na I confirm the presence of interstellar-nebulosity matter in front of AB Aur, which is embedded in the nebulosity Lynds 1517.

The K I doublet beeing non saturated, the column density of potassium is obtained, and from there a new value of $E(B-V)$, corresponding to the absorption, without circumstellar contribution, on the line of sight. Analysis of the other observed narrow components allow to derive the Ca II column density, and an upper limit for the electron density in the nebulosity; from this last value, it is deduced that AB Aur is near the outer border of Lynds 1517.

Among the stellar emission lines, Hα and the Na I lines present a P Cyg profile. The very weak absorption part in the Na I lines is interpreted as an outflow in the outer part of the envelope, with v = -130 km s^{-1}, smaller than the terminal velocity shown by the Mg II resonance lines (-380 km s^{-1}).

The emission lines are examined following two models of formation recombination and chromospheric emission. Under certain circumstances, He I and Hα can be formed simultaneously by recombination, however, a deep chromosphere seems able to account for He I λ5876, for higher Paschen lines in emission, while higher Balmer lines are in absorption, and also, but with more difficulty, for Ca II infrared triplet in emission, while Ca II resonance lines have only auto reversed emission cores. In this analysis, no effect of the wind of AB Aur in producing the lines is explicitely considered.

Analogies and differences between the 2.5 $M_\odot$ premain sequence star AB Aur and T Tauri stars on one hand, classical Be stars on the other hand, are stressed.

A FAR-INFRARED STUDY OF THE DARK CLOUD CORONA AUSTRINA

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An extended region of the dark cloud Corona Austrina was mapped at 40-50 μm with a 1' resolution, using the CFA/UA 102-cm balloon-borne telescope. Our study showed the presence of only two FIR sources associated with pre-main sequence stars. One source is associated with the Herbig emission line star R CrA (spectral type A5pe) with a bolometric luminosity of 95 $L_\odot$ and a source size of 1!4, and the other with the irregular emission-line variable star TY CrA (spectral type B9e) with bolometric luminosity of 64 $L_\odot$ and a source size of 0!8. The derived luminosities (assuming T_{dust} = 37 °K) are consistent with the spectral types of the associated stars. The spectral distribution of these stars strongly favors the circumstellar dust shell model, with the FIR radiation arising from cool dust (T ∿ 35 °K) in the outer part of the shell. The conclusion of Herbig (1960) and Strom *et al.* (1972) that these stars are in the pre-main sequence stage of their evolution is strengthened by our results. No FIR radiation was found associated with the Herbig-Haro objects, nor from other T-Tauri stars or 2.2 μm sources present in the cloud.

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