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Hα EMISSION IN THE ECLIPSING WHITE DWARF V471 Tau (BD+16°516)

Spectroscopic observations of the eclipsing white dwarf V471 Tauri (BD+16°516) were obtained at the coudé focus of the Mt. Wilson 2.5 meter telescope during the 1975-76 season. The exposures were taken on IIa-D emulsion plates with the 81 cm camera in combination with an S25 cathode Varo image tube at a dispersion of 6.5 Å/mm.

Hα emission was detected on the plate obtained JD 2442702.89. The phase of the binary orbit at mid exposure was ~0.524, following the elements of Young and Lanning (1975). The two hour exposure is weak and the Hα feature broadened by orbital motion (Period ~12.5 hours) making a study of the line impractical. An additional plate on JD 2442800.71, phase ~0.212, showed marginal evidence of Hα in emission.

Cester and Pucillo (1976) have suggested the presence of circumstellar matter around V471 Tau from a study of the photometric variability of the binary. Photometric observations by one of us (HHL) confirm those obtained by Cester and Pucillo. These data, together with the detection of Hα emission presented here, and the period variations noted by Young and Lanning, may add support to their hypothesis. Photometric variations on time scales of 30-60 days have been observed by HHL suggesting the occurrence of chromospheric activity, and may indicate the source of the Hα emission. Emission of singly ionized Calcium presumed to result from a transient event has also been observed by Young and Nelson (1972). Unfortunately, no simultaneous photometric and spectroscopic observations have succesfully been obtained during any of these events.

Coordinated spectroscopic (CaII and Hα) and photometric observations are clearly needed to determine the nature of the observed emission and photometric variability.

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