

CaII H AND K EMISSION IN THE SECONDARY COMPONENT OF U CEPHEI

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U Cephei ($V = 6.8-9.0$, $P = 2.493$ d) is an eclipsing binary consisting of a B7V primary and a G8III-IV secondary component. This binary is one of the semi-detached Algol systems showing soft X-ray emission which is probably associated with a hot corona surrounding the secondary component (White and Marshall 1983).

We made spectroscopic observations of U Cep with the coude image-tube spectrograph of the 1.9-m telescope at Okayama Astrophysical Observatory on October 14, 1986. We obtained four spectrograms with a dispersion of 16 \AA mm^{-1} covering $\lambda \lambda 3700-4300 \text{ \AA}$ during the primary eclipse. The first two exposures were made in a total eclipse, while the last two were slightly after the third contact. The CaII H and K emission lines appear clearly in all the spectrograms. Figure 1 represents an intensity tracing of one of these spectrograms.

These emission lines have a half width of $\sim 2 \text{ \AA}$, which is consistent with the rotational broadening of the secondary component ($V_{\text{rot}} \sim 95 \text{ km s}^{-1}$). In the four spectrograms, no radial velocity difference is found between the CaII H and K emission lines and the secondary component's absorption lines. Thus, these CaII H and K emission lines are considered due to a chromospheric activity of the secondary component.

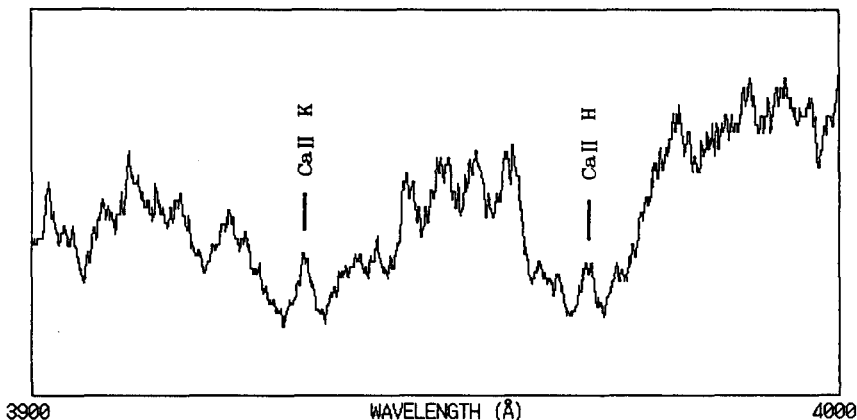


Figure 1: An intensity tracing of the spectrogram of U Cep at phase ~ 0.99 around CaII H and K lines (exposure time ~ 24 min.).

According to the procedures given by Linsky et al.(1979), we obtained the corrected surface fluxes $F'(K_1) \sim 5(+6)$ and $F'(H_1) \sim 4(+6)$ ($\text{erg cm}^{-2} \text{s}^{-1}$) for the secondary component of U Cep.

A full account of this work will be published elsewhere.

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REFERENCES

- Linsky, J.L., Worden, S.P., McClintock, W., and Robertson, R.M.: 1979, *Astrophys. J. Suppl.*, 41, 47.
- White, N.E., and Marshall, F.E.: 1983, *Astrophys. J. Letter*, 268, L117.