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A FLARE ON THE CONTACT BINARY CN And

About twenty years ago a large flare event was observed on the prototype contact binary W UMa by Kuhi (1964). Similar events have been reported on 44i Boo (Eggen, 1948), U Peg (Huruhata, 1952) and VW Cep (Egge and Pettersen, 1982). This is the first event of this kind to be reported for CN And. This star is an eclipsing binary, classified to be in contact, showing asymmetric light curve (Kałuzny, 1983). The orbital period is 11^h06^m. The absolute magnitude is about $3^m.41$ at maximum light (Dworak, 1975).

The photoelectric observations were made with the 106 cm telescope at Yunnan Observatory using an integrating photometer on the night 25/26 November, 1981. Data were taken through a yellow filter with the effective wavelength 5420Å. BD+39°0069 and BD+39°0076 were used as the comparison star and the check star, respectively. The sequence of the observation was: sky-background-comparison star-variable star- sky-background. Integration time of each measure is 16 seconds. The check star was measured at intervals of 30 minutes. The possible error of the magnitude difference between the check star and the comparison star is $\pm 0^m.007$. The magnitude differences between the variable star and the comparison star were corrected for differential extinction and were transformed to the standard UBV system.

Figure 1 shows portions of the light curve, observed in the V filter. The light curve of the flare itself, corrected for the effects of eclipses is shown in Figure 2. The flare is detected from about phase 0.21 to about phase 0.24. The total duration of the flare is about 22 minutes. The flare rises to half of the peak value in 4 minutes, and decays to one half of the peak value in 14 minutes. The magnitude of the peak value of the flare is about $0^m.11$. The obvious dispersion of the light curve from phase 0.18 to 0.30 seems to show that also some activity on CN And occurs before and after the flare.

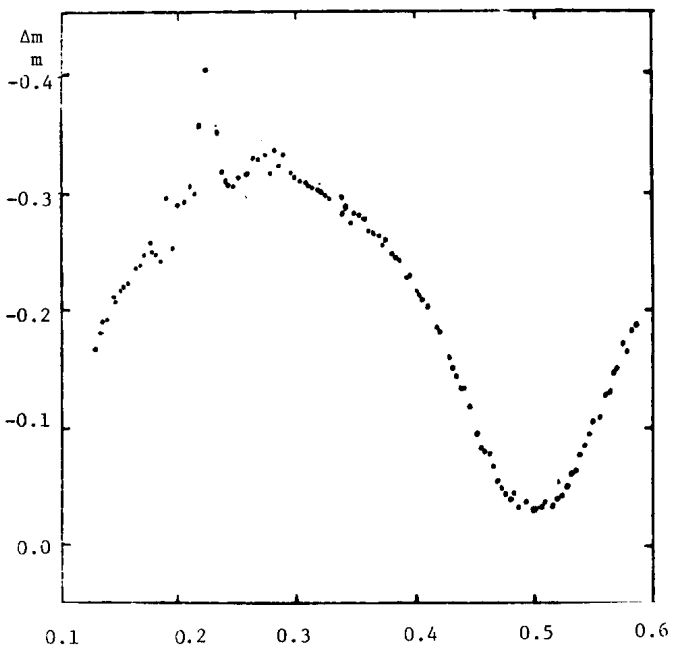

Figure 1 : a portion of light curve on CN And displaying a flare

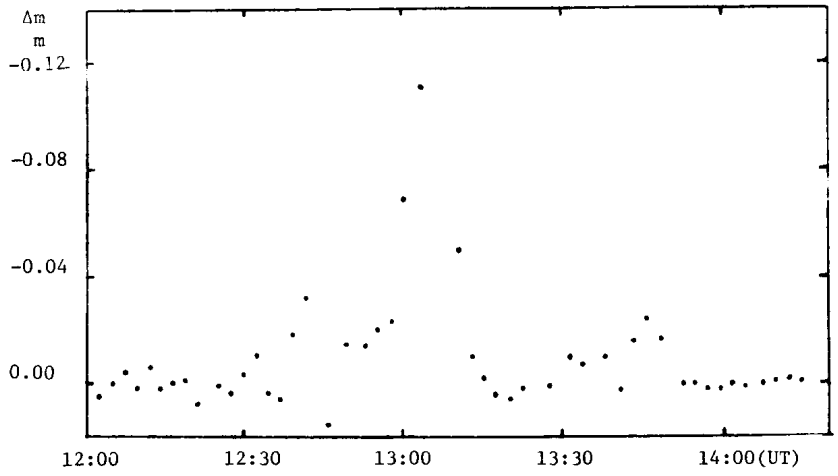

Figure 2 : a flare on CN And at V wavelength

Adopting the absolute magnitude of $3^{m}.41$ for CN And (Dworak, 1975), we estimate 1.5×10^{33} erg/s(V) for the peak fluxes of the flare. Integrating numerically under the light curve we obtain for the total energy during the flare 8.8×10^{35} erg(V).

YANG YU-LAN and LIU QING-YAO
Yunnan Observatory, Academy Sinica
Kunming, P.O. Box 110
People's Republic of China

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