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CW Leo = IRC+10216 HAS RETURNED TO A HIGH LIGHT LEVEL

The dust-enshrouded variable carbon star CW Leo, best known as the infrared source IRC+10216 has been monitored in photographic red R(0.64) and infrared I(0.81) bands with the Schmidt telescope of the Radioastrophysical observatory. In addition to the Mira-type light variation a conspicuous long-term secondary variation was found. Due to the secondary variation the star faded by two magnitudes during 1974-1978 and remained at such a low light level up to 1986 (Alksnis et al., 1987). Further observations have shown that the star gradually brightened and in the season 1988/89 again reached the high light level in the photographic infrared.

According to all our I(0.81) observations the light curve elements for the periodic component are:

$$\text{Max J.D.} = 2441738 + 635^{\text{d}} \cdot \text{E}$$

The corresponding light curve for the periodic component is shown in Figure 1,

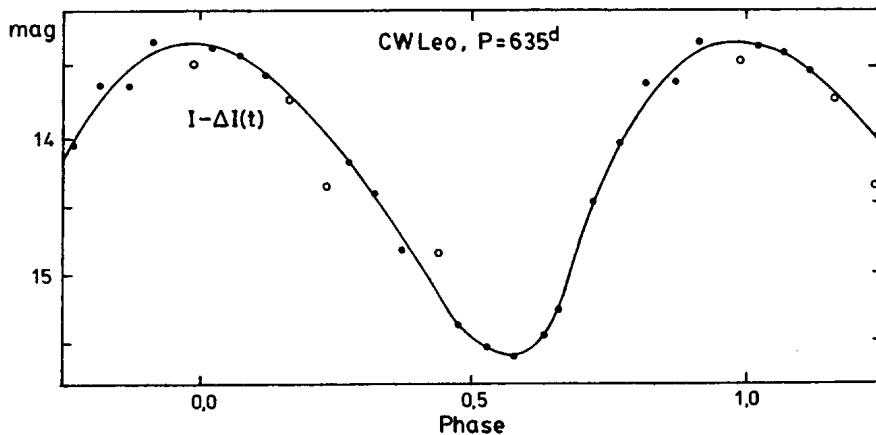


Figure 1. The curve of the periodic component of the light variation in photographic infrared I(0.81). Observed values (I) corrected for the secondary variation $\Delta I(t)$ and averaged over 0.05 phase intervals (filled circles) or single observations (open circles) vs. phase calculated according to the elements given in the text.

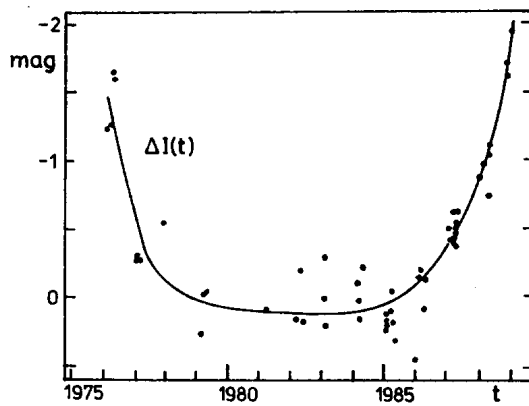


Figure 2. The curve of the secondary component of the light variation in I(0.81): deviation in mag of individual observed I(0.81) values from the curve of the periodic component (Fig.1) vs. time

and for the secondary component in Figure 2.

Similarly, in the red region, the secondary component of the light variation shows the brightening, although the high light level as observed about 15 years ago the star has not yet reached.

Possibly, during the last 15 years CW Leo has gone through a full cycle of the secondary variation. It seems important to study this object in other wavelength regions at this stage of high light level.

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Reference:

Alksnis, A., Alksne, Z., Ozolina, V., Začs, L. 1987, Investigations of the Sun and red stars, No.26, p.31.