

COMMISSION 27 OF THE I. A. U.  
INFORMATION BULLETIN ON VARIABLE STARS

Number 3213

Konkoly Observatory  
Budapest

8 July 1988

HU ISSN 0374-0676

B A V Mitteilungen Nr. 48

TWO-COLOUR LIGHT CURVES AND PRELIMINARY ELEMENTS  
FOR CV Dra, DD Dra

We report upon preliminary results of our photoelectric observations of two variable stars in Draco. The instrument used was the fully-automatic driven 0.35 m Schmidt-Cassegrain telescope at F. Agerer's private observatory. The photometer was equipped with an EMI 9781B tube and Schott filters BG12(1mm) +GG385(2mm) for the B and GG495(1mm) for the V colour. The size of the diaphragm was 32". All measurement operations were performed fully automatic and controlled by a microcomputer programmed in FORTH (cf. Agerer, 1988).

CV Draconis

CV Dra = BV 341 = BD +57°1776 (8.8) = HD 159559 (F5) was discovered by Strohmeier and Knigge (1960) as a short period variable, with the range 9<sup>m</sup>5 -10<sup>m</sup>1 (pg). No further details were given. Nikulina (1961) thereupon investigated this star on sky-patrol plates. However, she could not confirm any periodicity and classified the star as a rapid irregular variable. With these data CV Dra was included for the first time in the 4th edition of the GCVS (Kholopov *et al.*, 1985). Recently, J.Fabregat (Locher, 1988) communicated two times of minimum light observed visually by him which prompted us to put CV Dra on our observation program.

SAO 030449 (A2) was chosen as the comparison star and SAO 030426 (K5) as a control star. According to our observations during eight nights CV Dra is an eclipsing binary of W-UMa type. From five photoelectric minima observed by us (Agerer and Lichtenknecker, 1988) and the two visual minima we derive preliminary elements as:

$$\text{Min I} = \text{JD } 2447305.437 + 0^{\text{d}}617617^{\text{h}}\text{E} .$$

The amplitudes in V are 0<sup>m</sup>43 resp. 0<sup>m</sup>40 for Min I and Min II. The B and V light curves, with  $\Delta_{\text{mag}}$  in the instrumental system, are shown in Fig. 1. Minimum II appears to be marginally displaced against phase 0.5.

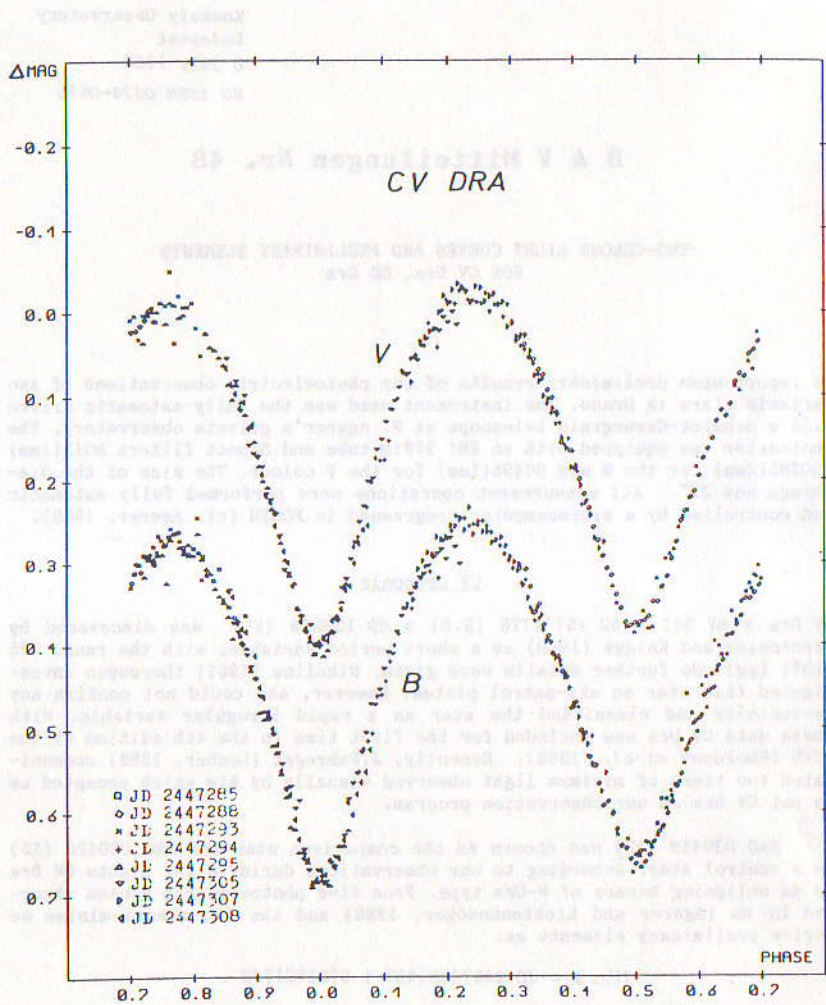


Figure 1

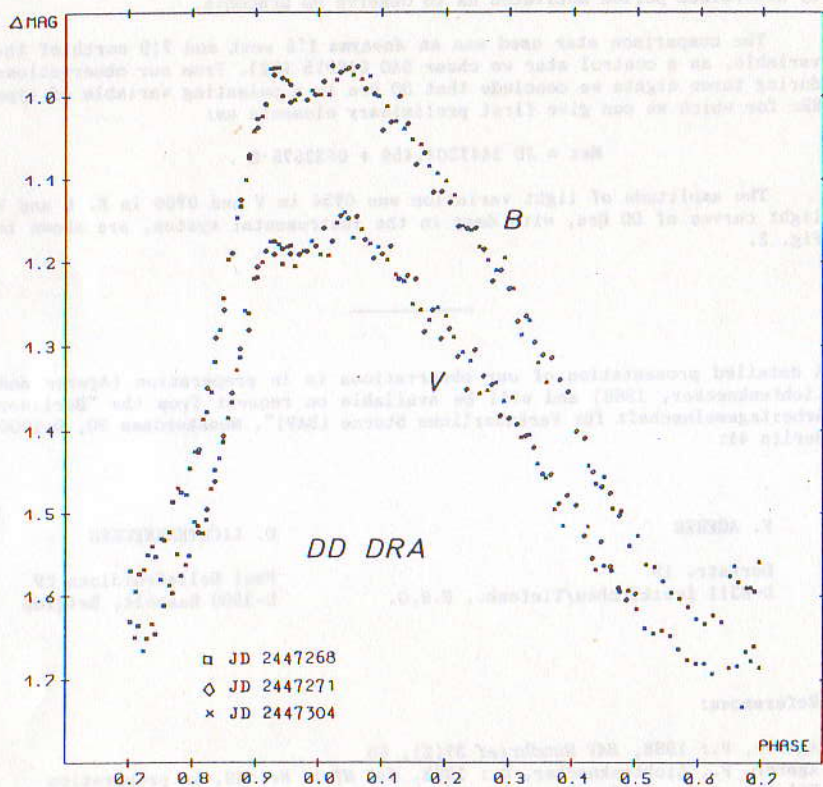


Figure 2

DD Draconis

DD Dra = BV 234 was discovered by Strohmeier (1958) as variable in the limits 11<sup>m</sup>2-12<sup>m</sup>0 (pg) and classified as a long period variable. However, on reconsideration Filatov (1960) stated that it is really an eclipsing binary. From nine photographic plate minima (i.e. epochs of faint light) he derived the elements  $\text{Min} = \text{JD } 2431587.248 + 0.784 \cdot E$ . This very inaccurately determined period motivated us to observe DD Draconis.

The comparison star used was an *Anonyma* 1:5 west and 7:9 north of the variable, as a control star we chose SAO 018015 (K2). From our observations during three nights we conclude that DD Dra is a pulsating variable of type RRc for which we can give first preliminary elements as:

$$\text{Max} = \text{JD } 2447304.459 + 0.32675 \cdot E .$$

The amplitude of light variation was 0<sup>m</sup>.54 in V and 0<sup>m</sup>.66 in B. B and V light curves of DD Dra, with  $\Delta\text{mag}$  in the instrumental system, are shown in Fig. 2.

A detailed presentation of our observations is in preparation (Agerer and Lichtenknecker, 1988) and will be available on request from the "Berliner Arbeitsgemeinschaft für Veränderliche Sterne (BAV)", Munsterdamm 90, D-1000 Berlin 41.

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