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B, V, R, I LIGHT CURVES OF AD CANCRI

The very short period eclipsing binary system AD Cnc (SVS 1277) was discovered by Kurochkin (1960). He classified it as an RR Lyrae type variable with a period of  $0^d.146373$ . Efremov et al. (1964) correctly identified AD Cnc as a W Ursae Majoris type system. The system's spectral type is KO (G. Herbig, 1961). Millis (1972) determined 19 B,V standard magnitudes on the system covering about 60% of one complete cycle. The General Catalog of Variable Stars (1968 and 1985), citing unpublished manuscripts of Kurochkin, list two ephemerides,

JD Hel Min. I =  $2441363.8063 + 0^d.2771724E$   
in the third edition and

JD Hel Min. I =  $2443192.430 + 0^d.28273824E$   
in the fourth edition. Although the second ephemeris gives better results, both produce large residuals (O-Cs) when applied to the present observations.

The present observations were made on the nights of January 28 - February 1, 1987, inclusive. The 36" #2 reflector at Kitt Peak National Observatory was used with standard B,V,R,I filters in the Cousins system (Bessell 1976) with a dry-ice-cooled RCA 31034a Ga-As photomultiplier tube. The coordinates of the check (BD +10°1866), comparison and variable star are given in Table I. The comparison star has no catalogue identification. Approximately 700 observations were obtained at each effective wavelength.

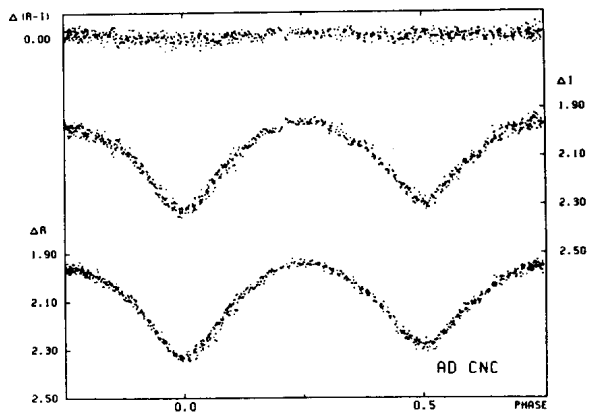
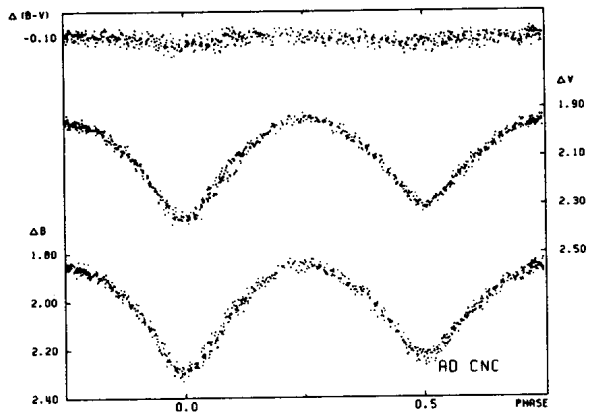


Fig. 1 - Light curves of AD Cnc defined by the individual observations.

Table I

Star	R.A. (1950)	Dec. (1950)
AD Cnc	8 <sup>h</sup> 43 <sup>m</sup> 38 <sup>s</sup>	10°31'02"
Comparison	8 <sup>h</sup> 43 <sup>m</sup> 15 <sup>s</sup>	10°29'44"
Check	8 <sup>h</sup> 42 <sup>m</sup> 54 <sup>s</sup>	10°30'01"

The five epochs of minimum light listed in Table II were determined from the observations made during three primary and two secondary eclipses. An iterative technique based on the Hertzsprung method (1928) was used.

Table II

JD Hel. 2440000+	Minimum	Cycles	(O-C)
46823.7661	I	-11.0	-0.0005
46823.9082	II	-10.5	0.0002
46826.8769	I	0.0	0.0001
46827.7244	I	3.0	-0.0006
46827.8670	II	3.5	0.0007

These times of minimum light along with Kurochkin's recent epoch (GCVS 1985) were introduced into a least squares solution to obtain the following ephemeris:

$$\text{JD Hel Min. I} = 2446826.8767 + 0.28273731E$$

This ephemeris was used to calculate the O-Cs in Table II and the phases of the present observations.

The B, V, R and I light curves of AD Cnc defined by the individual observations are shown in Figure 1 as  $\Delta m$  versus phase. The analysis of the observations is underway.

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## References:

- Bessell, M. S. 1976, Pub. Astron. Soc. Pac. 88, 557.  
Efremov, Y. N., Kholopov, P. N., Kukarkin, B. V. and Sharov, A. S. 1964,  
I.B.V.S. No. 75.  
GCVS 1968, 3(2).  
GCVS 1985, 4(1).  
Herbig, G. 1961, private communication to Moscow Var. Star Bureau.  
Hertzsprung, E. 1928, Bull. Astron. Inst. Neth. 4, 179.  
Kurochkin, N. E. 1960, Astron. Circ. USSR 210, 25.  
Millis, R. L. 1972, I.B.V.S. No. 649.