

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

Number 3201

Konkoly Observatory
Budapest
10 June 1988

HU ISSN 0374-0676

THE SHORT-PERIOD ECLIPSING BINARY V728 HERCULIS¹

This short-period W UMa system was discovered along with dozens of others by N. E. Kurochkin (1977) from 10° x 10° astrographic plates taken for a study of M92. In Kurochkin's work it is identified as π 2086. The photographic light curve presented by Kurochkin suggests a contact system and we elected to attempt to obtain photoelectric light curves of this relatively bright system.

The system has been observed at the Rothney Astrophysical Observatory with the Rapid Alternate Detection System (RADS) for the past two seasons. The photometry system is a chopping, gated pulse-counting two-star-and-sky device and has been described by Milone et al. (1982) and by Milone and Robb (1983). Partial BVI light curves were obtained during 1986 and complete BVI light curves were obtained in 1987. Because the ephemeris provided by Kurochkin and cited in Kholopov (1985) failed to successfully reproduce the light curve, we applied a modified version of the period-finding program of Jurkevich (1971) to the 1987 season data to obtain a preliminary period: $P = 0.471302$ d. The epoch used was $E_0 = \text{HJD } 2441571.273$, from Kurochkin. The evidence, however, is that the same period can not fit adequately the data from both seasons and the large uncertainty obtaining from the early photographic data is too great to permit a significant q (dP/dt) term to be found. With the above elements, the O-C phases of minima were obtained for each of the wavelengths and weighted means were found. The results are:

<u><HJD></u>	<u>O - C</u>
2446612.868	0.1635 ± 0.0013
613.809	0.1604 ± 0.0018
949.835	0.1357 ± 0.0008

The system will be observed again this season with special attention to observing phases of minima in order to determine if abrupt or continuous changes of the period are involved.

We have also observed the system spectroscopically with the 1.8-m telescope of the Dominion Astrophysical Observatory in Victoria for radial velocity studies. This work has also provided the spectral type of the system: F3 with an estimated uncertainty of 1/10 class. Complete analyses of the system will be published elsewhere.

Student observers who helped to gather the data during the

¹Publications of the Rothney Astrophysical Observatory
Series B No. 12

past two seasons included J. van Leeuwen and D. Thistlethwaite. This work was supported by grants from the Canadian Natural Sciences and Engineering Research Council to EFM, by Student Temporary Employment Programme Grants from the Government of Alberta to EFM and JEP and by the Department of Physics of the University of Calgary, all of which are gratefully acknowledged.

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References:

- Jurkevich, I., 1971, Ap and Sp Sci. 13, 154.
Kholopov, P. N. (ed.-in-chief), 1985, General Catalogue of Variable Stars II. (Moscow: NAUKA Publishing House).
Kurochkin, N. E., 1977, Variable Stars, Supplement 3, No. 15. 201.
Milone, E. F. and Robb, R. M., 1983, PASP 95, 666.
Milone, E. F., Robb, R. M., Babott, F. M., and Hansen, C. H., 1982, Appl. Optics 21, 2992.