

POSSIBLE BINARY NATURE OF THE EMISSION-LINE VARIABLE
OBJECT V 1329 CYGNI (= HBV 475)

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The peculiar emission-line object V 1329 Cyg was discovered by Kohoutek (1969), who detected in his objective-prism spectrograms an increasing brightness and the presence of emission lines. High dispersion spectra revealed more than 200 emissions of hydrogen, helium, ionized metals and forbidden lines of oxygen, neon, etc. (Crampton et al., 1970; Andrillat, 1970). The object exhibits the composite spectrum of a hot early-type component and a cold M-type star. Its time evolution in a two-colour diagram is seen in Fig. 1.

In 1964, V 1329 Cyg increased its brightness suddenly by more than 3^m (Arhipova, Mandel, 1975). The light curve between 1891 and 1973 has been reconstructed by Stienon et al. (1974), who suggested that there are periodic decreases of brightness with an amplitude of about 2.3^m and a period of (959 ± 2 days). They proposed that the decreases are caused by eclipses. However, Arhipova and Mandel (1975) found amplitude variations of only 1^m with a period of about 580^d. They claimed that the 959^d period is spurious. We have searched for periodicities in Stienon's et al. (1974) data by using a code written by Dr. P. Harmanec, which is an adapted version of Morbey's (1973) method. The period interval searched for the best fit reached from 380^d to 1000^d and the eight best periods found are listed in Table 1.

Thus our periods H, F and C are quite close to those suggested by Soviet and American authors. The periods in Table 1 are, however, interrelated in the ratios of small integers (See Table 2).

Thus, it is hard to say which period in Table 1 has some physical meaning and which is a mathematical artifact.

Table 1.

Reference	Period (days)	Sum of Differences (arbitrary units)
A	727.4	50
B	723.9	50
C	963.2	53
D	734.4	54
E	942.2	56
F	576.5	57
G	385.0	58
H	578.7	59

Table 2.

Period References	Approximate Ratio
H, F : G	3 : 2
A, B, D : F, H	5 : 4
C : F, H	5 : 3
E : B	4 : 3

It is possible that the solution will be found through spectroscopy. Between May 30, 1970 and November, 1976, we have obtained 22 spectrograms at the D.A.O., Asiago and Ondřejov Observatories with dispersions ranging from 6 to 280 \AA mm^{-1} . There seem to be variations in the radial velocities of the hydrogen emissions with a period close to 960^d. We hesitate, however, to draw any definite conclusion at the moment, since most of our spectrograms have rather low dispersions and show large distortions which are caused by the image intensifier used; the corresponding radial velocities are therefore subject to large errors. If further spectroscopy and photometry should confirm the periodical variations, the most probable explanation seems to be that the symbiotic object V 1329 Cyg is a binary.

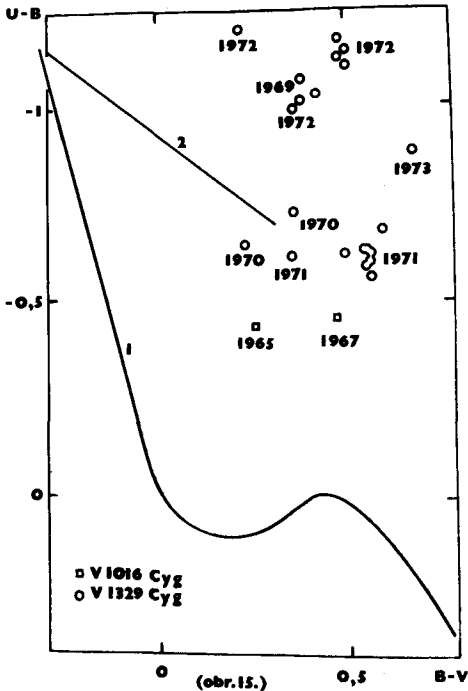


Fig. 1. The track of V 1329 Cyg in a two-color diagram in the years 1969-1973 (open circles). Squares belong to V 1016 Cyg. Curves 1 and 2 represent the main-sequence and the reddening line, respectively.

Acknowledgement

Part of the work was done while J.G. was a guest at the Remeis Observatory, Bamberg. We wish to thank Dr. A. Mammano who kindly supplied us with some of the spectrograms, and Dr. P. Harmanec for permission to use his computer code.

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