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HD 201416 = BD +48° 3289 : A NEW VARIABLE IN CYGNUS

HD 201416 was used as one of the comparison stars in the course of photoelectric observations of Nova Cygni 1975 with the 60 cm reflector of the Loiano Astronomical Station (Cacciari et al. 1976). The observations were made on five nights during a period ranging from October 1975 to June 1976.

Having as comparison stars HD 201612 and HD 201599, this star shows small variations in yellow light with a mean amplitude of about 0.02 magnitudes.

The observations have been corrected for differential extinction using both the principal and the second order coefficient determined for each night.

In Table I the mean magnitudes in the UBV Standard System are given.

The observed times of minima are presented in Table II; a least square solution yields the following elements:

$$\text{Min} = \text{J.D. } 2442692.557 + 0^{d}.248331 \cdot E. \qquad (1)$$

There is a weak evidence which suggests the existence of two kinds of equidistant minima, but this result has to be confirmed. If it is not true, the period must be halved and the cycles number doubled (in column 2). In column 3 of Table II residuals obtained with the elements (1) are given.

The light curve in the instrumental system is shown in Fig.1. The observations have been ordered using the phase computed with (1) and must be read as HD 201599 minus HD 201416; different symbols label different nights.

In order to have a better idea of the variation, the observations made on J.D. 2442692 are shown in Fig.2.

A similar variation is not evident in B and U light, and

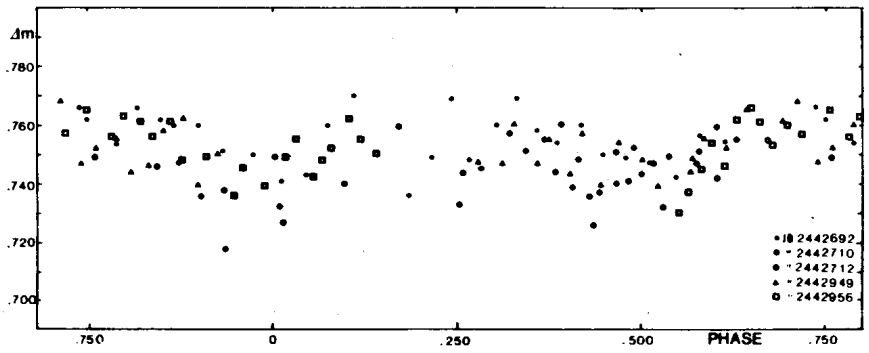
Δm
.780
.760
.740
.720
.700
.750
0
.250
.500
PHASE
.750
2442692
2442710
2442712
2442949
2442956

Fig. 1

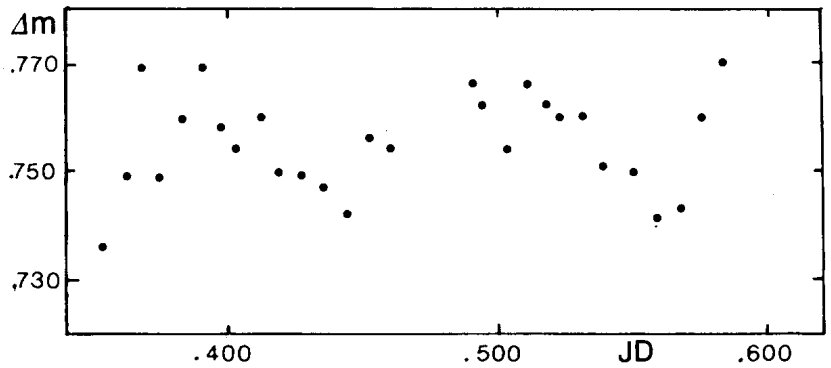
Δm
.770
.750
.730
.400
.500
JD
.600

Fig. 2

this fact may only partially be due to a greater scatter of the data.

On J.D. 2442956 the mean value of the difference of magnitude between the comparison star and the variable is $0^m.03$ greater than the other ones, thus the data of this night have been normalized to the mean value of the other nights.

If the spectral type G5 III determined by Bouigue (1959) is correct, then the definition of the type of variability presents some problems. A reasonable hypothesis might be that the star is an ellipsoidal variable.

In order to have a better insight on this star, a spectroscopic investigation will be started with the new 152 cm telescope.

Table I

Star	α (1900)	δ (1900)	V	B-V	U-B	Sp
HD 201416	$21^h\ 4^m.3$	$+48^\circ\ 27'$	7.78	+1.02	+.61	G5 III
HD 201599	21 5.5	+46 52	7.00	+ .39	-.01	F2
HD 201612	21 5.6	+48 20	8.57	- .11	-.25	AO

Table II

T	E	O-C
2442692.437	-0.5	$+0^d.004$
692.555	0.	-0.002
710.428	72.	-0.009
712.304	79.5	+0.003
712.424	80.	+0.001
949.458	1034.5	+0.003
956.530	1063.	-0.003

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