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uvby OBSERVATIONS OF THE ALGOL-TYPE STAR V1156 CYGNI

In a systematical search for positional coincidences between IRAS point sources and Algol-type variables Friedemann and Löwe (1990) found that besides other candidates one component of V1156 Cygni could be surrounded by an accretion disk. It may be the source of the observed infrared excess.

Up to now, for this variable are known only photographic magnitudes. They were published by Wachmann (1966) who discovered the variability of that star.

On December 6 and 7 1990 we carried out uvby photometry of the variable star V1156 Cyg = HBV 430. The observations were collected with the 90 cm telescope of Jena University Observatory at Großschwabhausen observing station.

For technical and observational procedures as well as details of the reduction process see Reimann et al. (1989). Our measurements seem to be the first photoelectric observations of this variable, but in a non-eclipsed phase. We measured additionally the uvby magnitudes and derived colours of three comparison stars given in Table I. It contains photographic magnitudes previously obtained by other authors, too. The sets of magnitudes differ remarkably in a systematic manner from each other.

Table I. Magnitudes of comparison stars

Identification	Wachmann m_{pg}	Woroschilov et al.		present	Sp.type
		V	B	Results V	
a	13.28	12.27	13.08		G3 III ^{*)}
b	13.67	12.84	13.37	13.16	B6 V
c	13.84	12.77	13.56		
d	14.32	13.36	13.96		
e	14.97	13.53	14.38		
f		9.82	10.21	10.05	F1 V
g		10.16	10.70	10.07	B0 V

*) spectral type according to Woroschilov et al. (1969)

For a convenient identification of the stars of interest we give a copy of the finding chart of the variable from Wachmann (1966) in Figure 1. Our two additional comparison stars are labelled by the letters f and g.

Table II. Observations of V1156 Cyg = HBV 430

Julian date	y = V	b-y	m1	c1
2448231.8692	12.715	0.679	0.118	0.801
2448232.7779	12.696	0.671	0.139	0.782

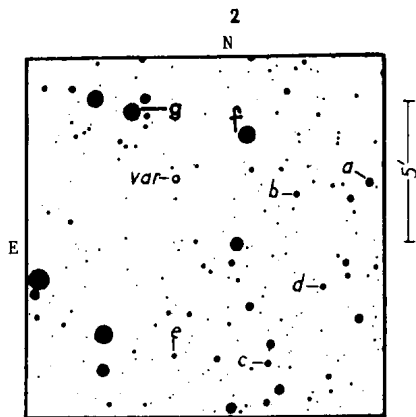


Figure 1

The $y = V$ magnitudes and the colour indices of the variable are given in Table II. The r.m.s. errors for both nights amount to ± 0.018 , ± 0.028 , ± 0.026 , and ± 0.024 in V , $b-y$, m_1 , and c_1 , respectively.

On the basis of our photometric results we derived colour excesses and spectral types for both the three comparison stars (see Table I) and the main component of this Algol-type binary. The photometrically derived spectral type of V1156 Cygni is F3 V and the total reddening amounts to $E(b-y) = 0.426$. Based on these data the distance of V1156 Cygni has been estimated to about 700 pc. This value places the variable inside or behind the dark cloud L815. At present there are only few stars in the neighbourhood (distance $< 1^\circ$) of the line of sight towards V1156 Cygni for which accurate photometric data are known. From them it can be inferred a sharp increase of interstellar reddening from $E(B-V) = 0$ in a distance of $r \approx 350$ pc to $E(B-V) = 0.82$ in $r \approx 1700$ pc. The existing data do not permit to separate the interstellar reddening from a possible circumstellar reddening within the disk.

Further observations in the optical wavelengths region (preferably in the uvby or UBV photometric systems) as well as in the NIR (spectral passbands R, ... , Q) are requested. Among others from the IR data the spectral type of the eclipsing component of the variable may be deduced.

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