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COLORIMETRIC OBSERVATIONS OF γ Ori

During the synchronous photographic observations of stellar flares in the Orion region in the UB ν - system, carried out in 1980 by the multiexposure method with three telescopes (40" and 21" Schmidt cameras of the Byurakan observatory and 28" Maksutov camera of the Abastumani observatory), we detected a variation in the brightness of the star γ Ori. Our synchronous observations covered about two months. About the method of these observations, concerning the emulsions used, the precision of synchronization and the method of photographic photometry of our plates, is already published (Mirzoyan et al., 1983). Some observations had been made in Abastumani observatory in UB ν RI spectral bands before 6 April 1981. For the study of some characteristics of this star our old observations have also been used. All these observations cover about 14 years.

γ Ori is known as a Mira Ceti type variable with a period of $P = 271.3^d$, and the amplitude of light variation (Kholopov et al., 1985) is

$$m(\text{pg}) = 4.5^m$$

The photographic magnitudes were obtained with the Iris microphotometer "Askania" and with the MF 4 of Byurakan and Abastumani observatories respectively. For these measurements standard stars of Orion sequence 1 were used (Andrews, 1970). The mean error of our measurements is about 0.2^m .

For the reconstruction of light curve of γ Ori the observational data for 155 nights were used. Figure 1 shows the brightness variation of γ Ori in the photographic (pg) lights.

On the base of the obtained results the following interesting facts may be pointed out:

1. The period of light variation of γ Ori is

$$P = 270.5^d \pm 0.2^d .$$

2. It was shown that the colour (U-B) of γ Ori was very blue before and after the minimum

$$(U-B) \ll 0,$$

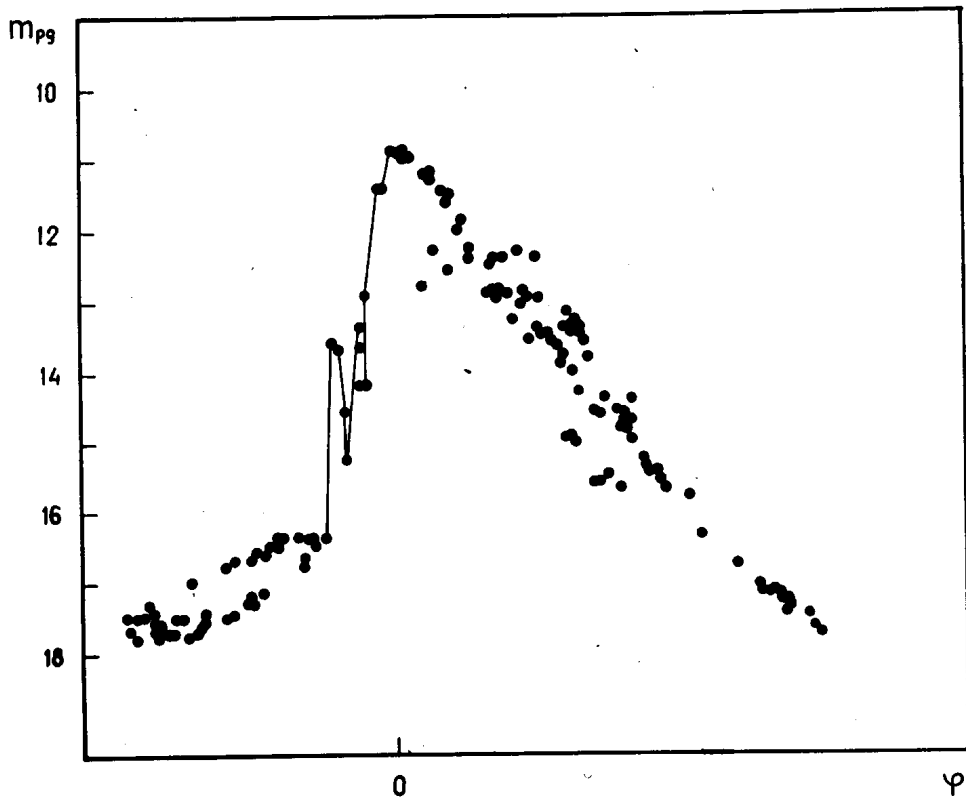


Figure 1. The light curve of Y Ori

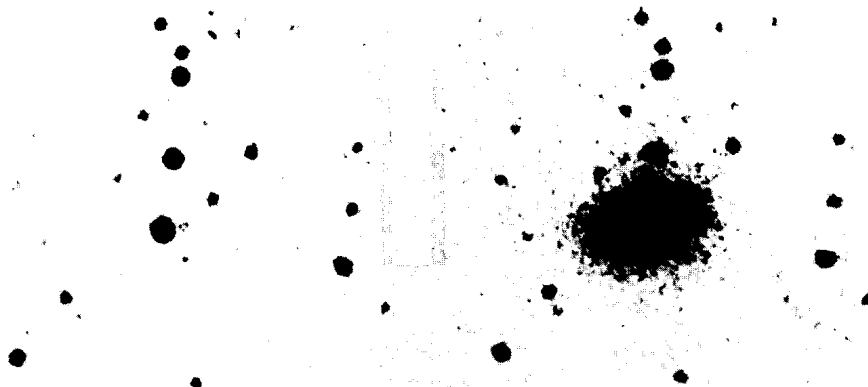


Figure 2a. Y Ori in red light near the minimum on 17 December 1982

Figure 2b. Y Ori in red light near the maximum on 3 February 1983

while near the maximum of brightness it was very red

$$(U-B) = +1.4^m .$$

Almost the same result was pointed out by Mendoza (1967).

3. Our observations give us a possibility to determine the limits of brightness variations of Y Ori in UBVR bands of spectra. Table I includes these results.

Table I

	U	B(pg)	V	R	I
m(min)	$\geq 13.0^m$	17.5^m	$\geq 14.7^m$	$> 11.1^m$	$> 8.0^m$
m(max)	≤ 12.5	10.9	≤ 9.3	≤ 6.8	≤ 6.0
Δm	≥ 5.5	6.6	≥ 5.4	≥ 4.3	≥ 2.0

4. The existence of nebulosity around Y Ori near the maximum brightness in red lights has to be mentioned. Our observations in red lights cover the interval between 2 and 11 February 1983. For the same nights we have some plates in U and B lights. On these plates there is no nebulosity around the star. In red lights we have two plates obtained in December 1982. On these plates the star is in minimum. Figure 2a and b shows Y Ori in red light before and during the maximum brightness.

N.D. MELIKIAN	R.Sh. NATSVLISHVILI	MASSIMO DELLA VALLE
Byurakan Observatory Armenian SSR, USSR	Abastumani Observatory Georgia, USSR	Institute of Astronomy, Padova University, Italy

References:

- Andrews, A.D., 1970, Bol. Obs. Tonantzintla, 5, 195.
- Kholopov, P.N., Samus, N.N., Frolov, M.S., Goranskij, V.P., Gorynya, N.A., Kazarovets, E.V., Kireeva, N.N., Kukarkina, N.P., Kurochkin, N.E., Medvedeva, G.I., Perova, N.B., Rastorguev, A.S., Shugarov, S. Yu., 1985, General Catalogue of Variable Stars, Vol. 2, Nauka
- Mendoza, V., 1967, Bol. Obs. Tonantzintla, 4, 28.
- Mirzoyan, L.V., Chavushian, H.S., Melikian, N.D., Natsvlshvili, R.Sh., Hambarian, V.V., Brutian, G.H., 1983, Astrofizika, 19, 725.