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PHOTOELECTRIC OBSERVATIONS OF BY Dra IN 1984-85

Photoelectric monitoring of BY Dra was carried out in 7 nights during 1984-85 using the 60 cm telescope of the National Astronomical Observatory, Rozhen, Bulgaria and the 1 m and the 50 cm telescopes of the Piszkestető mountain station of the Konkoly Observatory, Hungary. The observations in Rozhen were obtained in U light using 1 to 10 sec integration times. Alternating UBV measurements at Piszkestető were made with 20 sec integrations in each colour. The total monitoring time was $7^{\text{h}}51^{\text{m}}10^{\text{s}}$. The time intervals covered are given in Table I. The comparison star used was BD + 51^o2408 = HD 172268 (K5).

Table I

Colour	Time intervals
U	2445919.3606-.3705, .3834-.4007, .4037-.4066, .4107-.4299, .4342-.4438, .4465-.4489
U	2445923.4084-.4112, .4134-.4209, .4229-.4325, .4342-.4418, .4435-.4548, .4648-.4736, .4757-.4874
U	2445925.4617-.4693, .4711-.4803, .4820-.4891
UBV	2445932.3666-.3700, .3752-.3786, .3841-.3875, .4070-.4131, .4182-.4243, .4298-.4358, .4409-.4470, .4521-.4556, .4673-.4733, .4791-.4852, .4905-.4965, .5045-.5075
UBV	2446211.4440-.4505, .4566-.4631, .4694-.4758, .4830-.4894
U	2446214.4348-.4369, .4379-.4408, .4422-.4447, .4467-.4490, .4499-.4522, .4530-.4559, .4566-.4588, .4596-.4624, .4632-.4661, .4668-.4688, .4696-.4726, .4739-.4763, .4771-.4794, .4801-.4826, .4835-.4859, .4880-.4900, .4908-.4932, .4938-.4963, .4973-.4993, .5001-.5006
UBV	2446271.4287-.4359, .4438-.4482, .4491-.4532, .4604-.4692, .4767-.4854, .4929-.5015, .5088-.5129

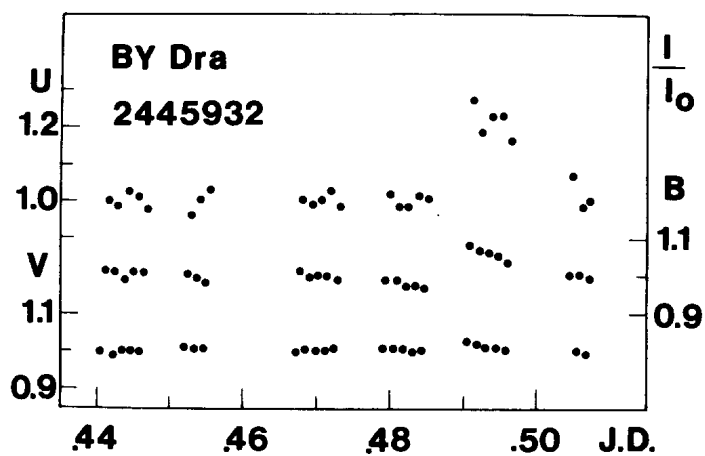


Figure 1: Flare of BY Dra

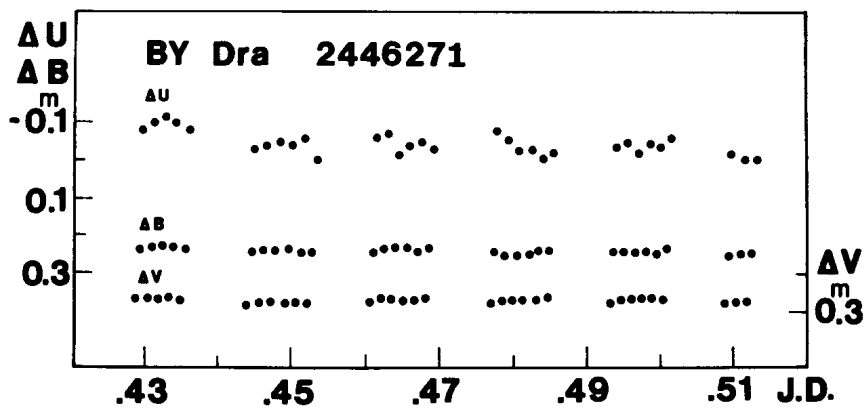


Figure 2: UVB observations of BY Dra

One flare event was recorded in 19/20 August, 1984 at Konkoly Observatory in UBV light. The intensity curves of the flare are drawn in Figure 1 together with the preceding one hour quiescent light. The flare showed the following characteristics:

Time of maximum: 2445932.4905

$\frac{I}{I_0}$ (max.): 1.28 (U), 1.09 (B), 1.035 (V)

Max. amplitudes in magn.: 0^m.26 (Δ U), 0^m.12 (Δ B), 0^m.04 (Δ V)

Standard deviations of the observations: 0^m.032 (U), 0^m.012 (B), 0^m.007 (V)

Since no observation was made after the flare declined the duration of the flare event \approx 36 min. is probably underestimated.

On an other night, 24/25 July, 1985 = 2446271, when 32 U,B and V measurements were taken, the observations had the following standard deviations; 0.031 (U), 0.006 (B), 0.005 (V). Similarly to those observations taken at 19/20 August, 1984, the scatter in the ultraviolet light is extremely high. At the mountain station of the Konkoly Observatory when the sky is reasonably good, in the case of a similar bright star (but without chromospheric activity) the typical scatter in the ultraviolet light is under 0.02 magn.

Therefore we concluded that we observed some intrinsic variation (see Figure 2). Butler et al. (1986) observed UV Cet in LE X-ray (EXOSAT) and in Hy and found almost continuous microflaring in both wavelenghts, on time-scales from tens of seconds to several minutes. Our observations of BY Dra show similar features in the ultraviolet light which, similarly to those events observed in UV Cet by Butler et al.(1986), is very probably a manifestation of the continuous chromospheric activity, namely microflaring.

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Reference:

Butler, C.J., Rodono, M., Foing, B.H., Haisch, B.H., 1986, Armagh Observatory Preprint Series No. 24, submitted to Nature