

COMMISSION 27 OF THE I. A. U.
 INFORMATION BULLETIN ON VARIABLE STARS
 Number 1866

Konkoly Observatory
 Budapest
 1980 November 13
 HU ISSN 0374-0676

AN INTERESTING PHENOMENON OF THE
 FLARE STAR BD+22°3406

Continuous photoelectric monitoring of the flare star BD+22°3406 has been carried out at Kottamia Observatory-Egypt ($\lambda=31^{\circ}49'30''$, $\varphi=+29^{\circ}55'54''$, $H=476\text{m}$) as a continuation of flare stars' programme started at Stephanion Observatory-Greece. The observations were made in the B-colour. The description of the telescope and the connected equipments will be described elsewhere.

During the photoelectric patrol observations of this flare star, a sudden decrease of its brightness followed by increase of its brightness have been registered. We can call this decrease of brightness anti-flare. The star, after the decrease and increase in brightness has become again stable. Here we give the parameters of the flare and anti-flare phenomenon. Table I gives the date of observations, monitoring intervals in U.T., total monitoring time and the standard deviation of random noise fluctuation $\sigma(\text{mag}) = 2.5 \log (I_0 + \sigma) / I_0$ for different times (U.T.) of the corresponding monitoring intervals.

Table I

Date	Monitoring intervals (U.T.)	Total monitoring time	$\sigma(\text{mag})$
1980			
May			
25	00 ^h 42 ^m - 01 ^h 46 ^m	01 ^h 04 ^m	0.03
25-26	22 ^h 47 ^m -23 ^h 22 ^m , 23 ^h 24 ^m -00 ^h 08 ^m , 00 11 -00 35.	01 43	0.04, 0.08, 0.04
27-28	22 53 -23 14, 23 43 -00 24, 00 29 -01 08, 01 12 -01 48.	02 17	0.00, 0.20, 0.11, 0.06
29-30	22 22 -23 16, 23 18 -23 37, 23 40 -23 51, 23 53 -00 51, 00 54 -00 57, 00 59 -01 20.	02, 46 ^m	0.04, 0.00, 0.02, 0.05, 0.04, 0.06
	Total	07 ^h 50 ^m	

Table II
Characteristics of the flares and anti-flares observed

No.	Flare Date 1980 May	U.T. max	T_b min.	T_a min.	D min.	$\frac{I_f - I_0}{I_0}$ max.	P min.	Δ_m mag	σ mag	air mass
1.A	25	01 ^h 07 ^m 20	0.20	0.10	0.30	-0.46	†	-0.67	†	1.03
1.B	25	01 11.72	3.20	2.10	5.30	+0.41	+2.48	+0.37	0.03	1.04
1.C	25	01 38.04	0.20	3.30	3.50	+0.55	†	+0.48	†	1.07
2.A	28	00 04.41	1.40	0.10	1.50	-0.54	†	-0.84	†	1.01
2.B	28	00 05.69	0.20	0.50	0.70	-0.42	-0.40†	-0.59	0.02†	1.04
3.	29	22 22.48	0.40	1.30	1.70	+0.76	+0.35	+0.61	0.04	1.01

Table II gives the characteristics of each flare and anti-flare (Andrews et al., 1969) : the date and U.T. of flare maximum and anti-flare minimum, the duration before and after the maximum or minimum (t_b , t_a , respectively), as well as the total duration of the flare and anti-flare (D), the value of the ratio $(I_f - I_0)/I_0$ corresponding to flare and anti-flare extremum, where I_0 is the intensity deflection less sky background of the quiet star and I_f is the total intensity deflection less sky background of the star plus flare or anti-flare, the integrated intensity of the flare and anti-flare over its total duration, $p = \int [(I_f - I_0)/I_0] dt$, the increase or decrease of the apparent magnitude of the star at flare maximum or anti-flare minimum $\Delta m(b) = 2.5 \log(I_f/I_0)$, where b is the blue magnitude of the star in the instrumental system, the standard deviation of random noise fluctuation $\sigma(\text{mag}) = 2.5 \log(I_0 + \sigma)/I_0$ during the quiet-state phase immediately preceding the beginning of the flare or anti-flare, and the air mass at flare or anti-flare.

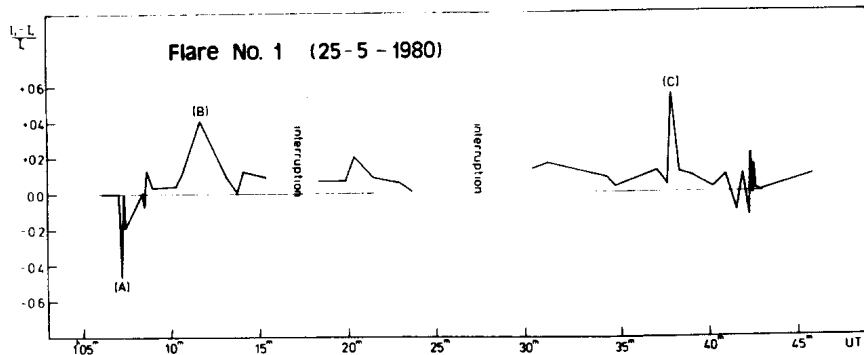


Figure 1

The light curves of the observed flares and anti-flares in the b colour are shown in Figs. 1-3.

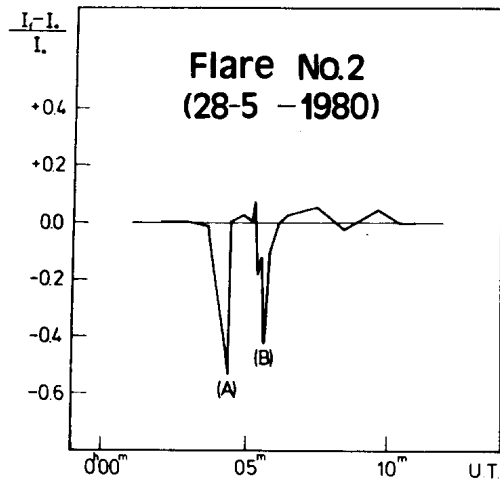


Figure 2

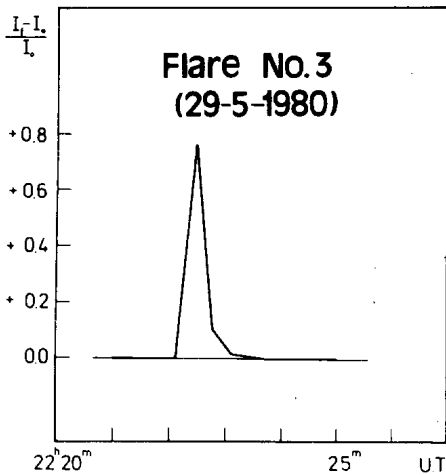


Figure 3

F.M. MAHMOUD, M.A. SOLIMAN
 Helwan Institute of Astronomy and
 Geophysics, Egypt

Reference:

Andrews, A.D., Chugainov, P.F., Gershberg, R.I., and Oskanian,
 V.S., 1969, I.B.V.S. No. 326