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CONTINUOUS PHOTOELECTRIC OBSERVATIONS OF EV Lac
DURING THE 1973 INTERNATIONAL PATROL

The flare star EV Lac was observed photoelectrically with the 30 cm Cassegrain reflector at Oslo Solar Observatory, ($\lambda=0^h43^m02^s$, $\phi=+60^\circ12'30''$, $h=585$ m) which is operated by the Institute of Theoretical Astrophysics, University of Oslo. The observing session lasted August 22 - September 4, 1973, in accordance with the program of the IAU Working Group on Flare Stars (1).

The monitoring was performed in the B-band as described in (2), and included the light from both components of the system. A detailed presentation of the monitoring intervals is found in Table 1, noting all interruptions exceeding one minute. The third column contains weighted mean values with respect to time of σ/I_0 . A total coverage of 21.83 hours resulted in 2 observed flares, the physical characteristics of which are presented in Table 2.

Values in the instrumental system are denoted with b. The transformation to the standard Johnson system was performed with mean transformation and extinction coefficients (3). The colours needed for this computation are taken from the three-colour observations of flare no.2 at September 3, UT 20^h23^m . The value of $L(B)$ needed for calculation of $W(B)$ is taken from (4).

Flare no. 2 started at UT $20^h18^m15^s$, and the rise phase was measured until amplitude $\Delta m_b = 0.64$ magnitude was reached. By accident a sky measurement was performed for the next 30 seconds. Thus we lost the first maximum, which from our observations occurred at UT $20^h19^m05^s \pm 13^s$.

30 seconds after ending the sky measurement a secondary maximum appeared. The values in Table 2 refer to this maximum. 10 seconds before UT 20^h21^m a very slight rise was noticed, and

at UT 20^h23^m a definite rise set in. This rise is also indicated by the U measurements performed in 1 minutes intervals from UT 20^h23^m10^s and lasting 5 - 8 seconds. In the V band measurements it started at UT 20^h23^m30^s and lasted for 10 - 15 seconds with intervals of about 1 minute. There are no significant rise in the V band at the time of the last light increase. Due to U and V measurements the last rise was not fully monitored.

At UT 20^h42^m the star had not yet completely reached its pre-flare intensity level.

When computing the energy released in flare no. 2, the gaps in the light curve were bridged by linear interpolation. The energy values given are therefore lower limits.

A reduction to one component may be obtained by using the relation given by (5).

The light curves were constructed from 5 seconds means. The smoothed curves in the instrumental b-colour are presented in the figures.

We are indebted to observator R. Brahe for giving us the opportunity to use the equipment at the observatory.

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B.N. ANDERSEN B.R. PETERSEN
Institute of Theoretical Astrophysics
University of Oslo
P.O. Box 1029, Blindern,
Oslo 3. Norway.

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Table 1
Coverage of EV Lac

1973	Detailed Coverage (UT)	$\left\langle \frac{\sigma}{I_0} \right\rangle$	Time
Aug.			
21.	21 ^h 40 ^m -22 ^h 20 ^m , 2237-2255, 2258-2339, 2348-2400	0.07	111 ^m
22	0001-0018, 0020-0030, 0112-0123, 0138-0147, 0149-0157.	0.08	55
23	2037-2048, 2050-2110, 2127-2131, 2135-2210, 2212-2344, 2351-2400.	0.07	171
24	0100-0122, 0124-0130, 0132-0145. 2103-2117, 2119-2311, 2314-2326, 2338-2400.	0.09 0.06	41 160
25	0001-0031, 0046-0140, 0142-0200. 2105-2126, 2128-2141, 2144-2220, 2222-2306, 2309-2336, 2342-2400.	0.06 0.06	102 159
26	0000-0108, 0122-0144, 0146-0200.	0.06	104
27	2029-2052, 2057-2120, 2127-2135, 2232-2306, 2332-2336.	0.11	92
28	0024-0033, 0045-0052, 0103-0119, 0135-0212.	0.09	69
Sep.			
3	2006-2032, 2033-2049, 2102-2204, 2210-2226, 2321-2333.	0.06	131
4	0016-0020, 0033-0037, 0042-0103, 0108-0205, 0211-0221, 0223-0236, 0237-0243.	0.07	115

Total coverage: 21^h50^m

Table 2.
Physical Characteristics of the Observed Flares

Flare No.	Date 1973	t_{\max} UT	Duration (min)		Max. intensity			P (min)	Air mass (10^{32} erg)
			τ_b	τ_a	$\frac{I_{o+f}-I_o}{I_o}$	$\Delta m(B)$ (mag)	$\frac{\sigma}{I_o}(b)$		
1	Aug. 22	00 ^h 21 ^m 29 ^s	0.2	5.5	b:0.35 B:0.40	0.37	0.07	b:0.55 B:0.74	1.041 2.2
2	Sept. 3	20 19 50	-	~23	b:1.03 B:1.38	0.94	0.08	b:7.40 B:10.00	1.168 3.0

