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PHOTOELECTRIC OBSERVATIONS OF EV Lac
DURING THE 1972, SEPTEMBER 1-15 INTERNATIONAL PATROL

Photoelectric observations of EV Lac were carried out at the McDonald Observatory in coincidence with the observation campaign organized by the I.A.U. Working Group on Flare Stars of Comm. 27. The multicolor high speed photometer described by Nather and Warner (1971), fed by a 75 cm cassegrain reflector, was used. This photometer allows to obtain a rapid succession of photon count measurements in four sequential colors by means of an automatically rotating wheel. Four holes are provided in the rotating wheel to locate filters. This system proves to be suitable for good color determination at peak light only for relative slow flares. Moreover, each filter change requires 0.25 sec, so that the effective integration time for each of the four colors is 0.25 sec less than those quoted in Table 1.

A standard set of filters matching the UBV system was used: Corning 9863 (U), Corning 5030 + Shott GG13 (B) and Corning 3384 (V). No filters were located in the fourth filter hole. The corresponding photon counts are referred to in this Bulletin as U, B, V and NF.

A blue sensitive photomultiplier tube (RCA 8575) was operated cooled at -75°C . During the 12.4 hours of patrol four flares were observed, two of which were not detectable in V light.

In Table 1 the time coverage and in Table 2 the flare characteristics are given. Note that the NF characteristics are comparable with the B ones because of the relative high blue sensitivity of the photomultiplier tube. The accompanying figure shows a plot of the detected photon counts which refers to flares No.1 and 2.

The colors at flare maximum are consistent with those observed by Cristaldi and Rodonò (1973) with a synchronous three color photometer.

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References:

Cristaldi, S., Rodonò, M. 1973, Astron. Astrophys. Suppl. (in press).
Nather, R.E., Warner, B. 1971, Monthly Notices Roy. Astr. Soc. 152, 209.

Table 1

Date 1972	Colors Integration time (sec)	Coverage (UT)	Total coverage
Sep. 5	NF/1, U/1, B/1, V/1	0334-0515,0528-51, 0618-21,0626-0830	251 ^m
7	NF/1, U/2, B/1, V/1	0454-0746,0755-0806, 0811-29	205
9	NF/1, U/2, B/1, V/1	0436-0639,0653-0711	141
10	NF/1, U/2, B/1, V/1	0417-0532,0536-0647	146

Table 2 (*)

N	Date (1972 Sep.)	t_{\max} (UT)	Light	d_b	d_a	$(I_f/I_o)_{\max}$	P	U-B	B-V	Sky
1	5	06:53 ^m .2	U	0.3	2.5	1.96	1.60	-0.86	-	clear
			B	0.3	1.3	0.33	0.19			
			V	-	-	(not detectable)				
			NF	0.3	0.8	0.26	0.14			
2	5	07/02.9	U	3.0	23.0	2.00	11.10	-0.66	+0.55	clear
			B	3.0	23.0	0.41	3.04			
			V	3.0	23.0	0.16	1.37			
			NF	3.0	23.0	0.36	2.74			
3	9	05:39.7	U	2.1	24.0	0.54	0.42	-1.32	-	foggy
			B	2.1	24.0	0.07	0.06			
			V	-	-	(not detectable)				
			NF	2.1	24.0	0.07	0.06			
4	9	06:04.3	U	0.3	1.5	0.83	0.63	-0.94	+0.90	cirrus
			B	0.3	24.0	0.13	0.12			
			V	0.3	24.0	0.07	0.05			
			NF	0.3	24.0	0.14	0.10			

(*) For explanation of symbols see IBVS no. 525

For multiple flares, the t_{\max} , d_a , d_b and $(I_f/I_o)_{\max}$ values refers to the highest peak, while the P value includes pre- and post-maximum activity, whatever, during the given flare.

