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PHOTOELECTRIC OBSERVATIONS OF THE FLARE STAR YZ CMi

Continuous B-band photometry of flare activity of YZ CMi was carried out as a collaborative observing programme of the flare stars. The star was monitored on the Sampurnanand 104-cm reflector equipped with a refrigerated EMI 6094S photomultiplier, for a total of 24^h39^m spread over 7 nights during December 1975. The stellar intensity was measured against sky back ground only, without observing any comparison star.

The actual monitoring intervals are given in Table I and the flare characteristics of all the 12 recorded flares are given in Table II. The light curves in relative intensity scales versus Universal Time are given in Figs. 1-12. All the flares are combinations of spike and slow events. In case of flare No.3, which is a very rapid event, the peak could not be covered for a small interval due to instrumental limitations. Flare No.6 is a combination of two spike events which could not be separated.

The areas under the light curves were planimeted to derive a measure of the total energy radiated by a flare. The quiescent state luminosity in B band is taken to be 2.061×10^{29} ergs/sec.

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Reference:

Cristaldi, S. and Rodono, M., 1973, Astron.Astrophys.Suppl.10,47

Table I
Monitoring Intervals
(Times rounded off to nearest minute of U.T.)

Date	Monitoring Intervals
Dec. 1975	
2	20 ^h 01 ^m - 22 ^h 48 ^m , except for 6 breaks totalling 10 minutes.
4	18 53 - 22 52, except for 5 breaks totalling 6 minutes.
6	19 02 - 21 11, except for 4 breaks totalling 7 minutes.
7	18 54 - 23 27, except for 8 breaks totalling 30 minutes.
8/9	18 51 - 19 23, except for 1 break totalling 1 minute.
	19 39 - 20 26
	20 41 - 20 51, except for 1 break totalling 1 minute.
	21 08 - 00 02, except for 5 breaks totalling 10 minutes.
9/10	18 51 - 22 03, except for 4 breaks totalling 6 minutes.
	22 19 - 23 04, except for 1 break totalling 3 minutes.
	23 18 - 00 12, except for 2 breaks totalling 4 minutes.
10/11	18 54 - 00 22, except for 12 breaks totalling 16 minutes.

Table II

Characteristics of the Flares on YZ CMi (dm 4.5e; V=11.24; B-V=1.58)

Flare No.	Date Dec. 1975	Flare duration (in minutes)		$\frac{I_{0+f}}{I_0}$	Δm_B	$\frac{\sigma}{X_S}$	P (min)	F(z)	Energy released at flare max 10^{29} ergs/s	Total emission during the event 10^{30} ergs
		Before max. t_b	After max. t_a							
1	2 20 ^h 13 ^m 54 ^s	0.55	5.25	1.277	.265	.013	0.243	1.192	2.63	3.01
2	2 22 12 00	0.70	8.00	1.196	.194	.001	0.516	1.119	2.46	6.39
3	6 19 53 00	0.85	22.00	1.915	.705	.045	2.575	1.203	3.94	31.84
4	8 18 59 40	1.30	3.80	1.150	.151	.012	0.450	1.330	2.37	5.56
5	8 23 31 40	1.13	6.53	1.194	.192	.010	0.773	1.320	2.46	9.56
6	9 20 08 51	0.27	4.00	1.183	.182	.010	0.925	1.15	2.43	11.43
	20 13 20	0.25	6.00	1.267	.256	.010	-	1.15	2.61	
7	9 20 58 45	0.25	2.10	1.243	.236	.012	0.112	1.24	2.56	1.38
8	9 21 22 30	0.65	7.50	1.125	.127	.025	0.331	1.11	2.32	4.09
9	9 23 45 10	0.80	1.15	1.121	.124	.013	0.092	1.39	2.30	1.13
10	10 18 00 25	0.57	8.6	1.985	.746	.015	1.070	1.30	4.09	13.31
11	10 21 58 05	0.45	3.9	1.194	.192	.012	0.875	1.134	2.46	10.82
12	10 22 19 45	0.15	1.15	1.328	.307	.012	0.193	1.164	2.73	2.39





