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PHOTOELECTRIC OBSERVATIONS OF THE FLARE STAR YZ CMi IN 1974, 1975

Continuous photoelectric monitoring of the flare star YZ C Min has been carried out at the Stephanion Observatory ($\lambda = -22^{\circ}49'44''$ $\varphi = +37^{\circ}45'15''$) during the years 1974, 1975 using the 30-inch Cassegrain reflector of the Department of Geodetic Astronomy, University of Thessaloniki. Observations have been made with a Johnson dual channel photoelectric photometer in the B colour of the international UBV System. The telescope and photometer will be described elsewhere. Here we mention only that the transformation of our instrumental ubv system to the international UBV system is given by the following equations:

$$\begin{aligned}V &= v_o - 0.018(b-v)_o + 2.297 \\(B-V) &= 0.886 + 1.004(b-v)_o \\(U-B) &= -1.818 + 0.974(u-b)_o.\end{aligned}$$

The monitoring intervals in UT as well as the total monitoring time for each night are given in the Tables Ia, Ib. Any interruption of more than one minute has been noted. In the fourth column of Tables Ia, Ib the standard deviation of random noise fluctuation $\sigma(\text{mag.}) = 2.5 \log(I_o + \sigma)/I_o$ for different times (UT) of the corresponding monitoring intervals is given.

During the 18.93 hours of monitoring time 6 flares were observed the characteristics of which are given in Table II. For each flare following characteristics (Andrews et. al. 1969) are given: a) the date and universal time of flare maximum, b) the duration before and after the maximum (t_b and t_a , respectively), as well as the total duration of the flare, c) the value of the ratio $(I_f - I_o)/I_o$ corresponding to flare maximum, where I_o 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, d) the integrated intensity of the flare over its total duration, including pre-flares, if present, $p = \int (I_f - I_o)/I_o dt$, e) the increase of the apparent magnitude of the star at flare maximum $\Delta m(b) = 2.5 \log(I_f/I_o)$, where b is the blue magnitude of the star in the instrumental system, f) the standard deviation of random noise fluctu-

Table Ia

Monitoring intervals in 1974

Date	Monitoring intervals (U.T.)	Total Monitoring Time	σ (U.T.)
1974			
October			
24	01 ^h 52 ^m -02 ^h 21 ^m ,02 ^h 24 ^m -02 ^h 53 ^m ,	0 ^h 58 ^m	0.04(01 ^h 54 ^m),0.04(02 ^h 20 ^m), 0.04(02 52).
26	01 29 -01 56 ,01 59 -02 25 ,02 27 -02 31 , 02 34 -02 38 ,02 40 -02 50 .	<u>1^h21^m</u>	0.04(01 30),0.04(02 00), 0.03(02 37).
	TOTAL	2 ^h 19 ^m	

Table Ib

Monitoring intervals in 1975

Date	Monitoring intervals (U.T.)	Total Monitoring Time	σ (U.T.)
1975			
January			
4-5	22 ^h 24 ^m - 22 ^h 56 ^m ,23 ^h 13 ^m -23 ^h 44 ^m ,23 ^h 48 ^m -00 ^h 19 ^m , 00 27 -00 52 ,01 06 -01 29 ,01 35 -01 43 , 01 46 -02 05 ,02 08 -02 32 ,02 45 -02 57 , 02 59 -03 17 ,03 20 -03 27 ,03 33 -03 49 , 03 52 -04 00 ,04 11 -04 18 .	4 ^h 21 ^m	0.03(22 ^h 34 ^m),0.04(23 ^h 28 ^m), 0.05(23 56),0.05(00 39), 0.05(01 20),0.06(01 50), 0.08(02 15),0.08(03 01), 0.10(03 35).
5-6	22 43 -23 27 ,23 30 -23 59 ,00 02 -00 26 , 00 38 -01 18 ,01 10 -01 29 ,01 33 -01 39 , 01 42 -01 53 ,02 08 -02 25 ,02 28 -02 48 , 02 51 -03 02 ,03 05 -03 20 ,03 23 -03 32 , 03 36 -03 40 ,03 44 -03 51 ,03 53 -04 01.	4 14	0.03(23 56),0.03(00 07), 0.04(00 50),0.04(01 16), 0.06(01 50),0.04(02 11), 0.05(02 54),0.08(03 29).
6-7	22 36 -23 03 ,23 06 -23 35 ,23 39 -24 00 , 00 00 -00 07 ,00 18 -00 59 ,01 01 -01 21 , 01 23 -01 29 ,01 31 -01 50 ,01 51 -02 07 , 02 18 -02 49 ,02 52 -03 09 ,03 12 -03 20 , 03 22 -03 45 ,03 43 -03 56 ,03 58 -04 06 .	4 46	0.03(22 53),0.02(23 20), 0.03(23 50),0.03(00 37), 0.03(01 05),0.03(01 54), 0.04(02 27),0.05(03 01), 0.06(03 38).
7-8	22 37 -23 11 ,23 14 -23 44 ,23 47 -24 00 , 00 00 -00 18 ,00 29 -00 38 ,00 40 -00 56 , 00 58 -01 34 ,01 37 -02 08 ,02 18 -02 36 , 02 37 -02 47 ,02 51 -03 00 ,03 01 -03 23 , 03 26 -03 55 .	3 16	0.05(22 43),0.04(23 10), 0.03(23 42),0.03(00 17), 0.04(00 56),0.04(01 31), 0.04(02 07),0.05(02 45), 0.07(03 22),0.06(03 55).
	TOTAL	16 ^h 37 ^m	

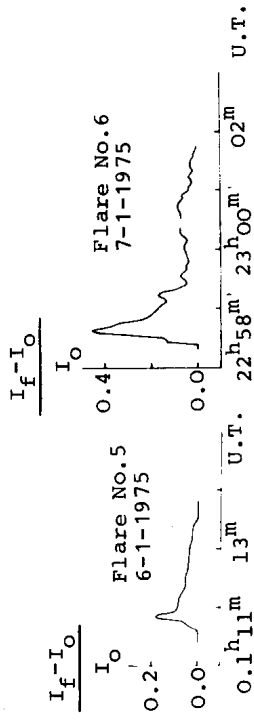
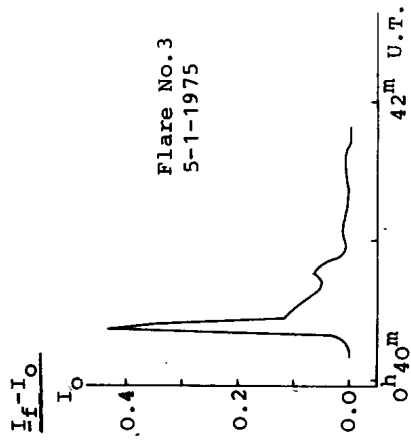
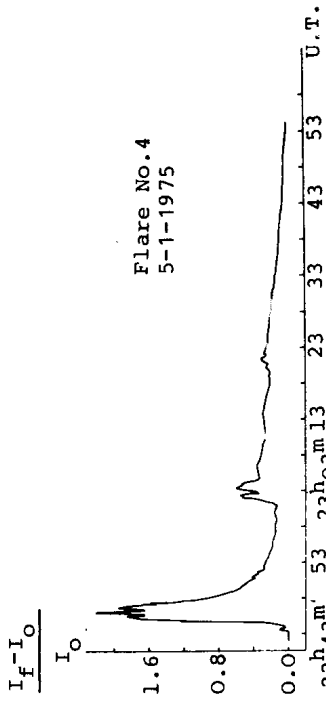
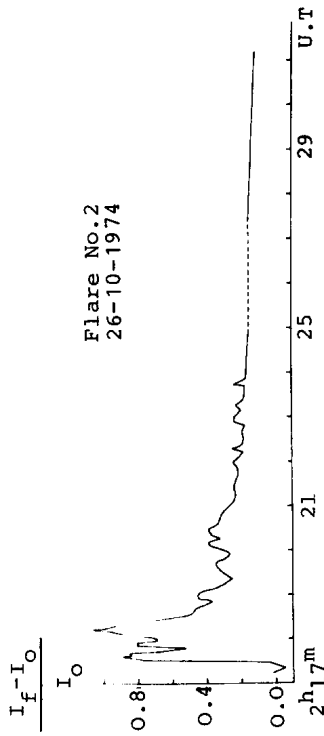
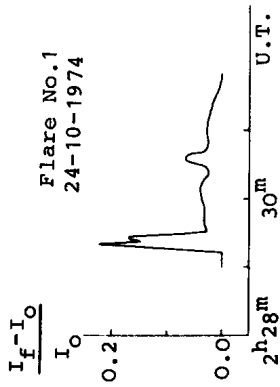


Table II

Characteristics of the Flares Observed

Flare No.	Date	U.T. max.	t_b min.	t_a min.	Duration min.	$(I_f - I_o)/I_o$ max	P min.	Δm mag.	σ mag.	Air mass
1974										
October										
1	24	02 ^h 29 ^m .21	0.12	2.24	2.36	0.22	0.11	0.22	0.04	1.33
2	26	02 18.24	0.78	12.94	13.72	1.06	2.79	0.79	0.04	1.34
1975										
January										
3	5	00 ^h 40 ^m .37	0.12	1.32	1.44	0.43	0.07	0.39	0.05	1.29
4	5	22 46.20	3.10	67.20	70.30	2.21	18.97	1.27	0.03	1.22
5	6	01 11.80	0.20	1.80	2.00	0.18	0.10	0.18	0.04	1.38
6	7	22 58.63	0.24	3.08	3.32	0.46	0.33	0.41	0.04	1.21

ation $\sigma(\text{mag}) = 2.5 \log(I_o + \sigma)/I_o$ during the quiet - state phase immediately preceding the beginning of the flare and g) the air mass at flare maximum. The light curves of the observed flares in the b colour are shown in Figs.1-6.

M.E. CONTADAKIS, G. KAREKLIDIS
 L.N. MAVRIDIS, D.C. STAVRIDIS
 Department of Geodetic Astronomy
 University of Thessaloniki

Reference:

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