PHOTOELECTRIC OBSERVATIONS OF THE FLARE STAR YZ CMi IN 1976

Continuous photoelectric monitoring of the flare star YZ CMi
has been carried out at the Stephanion Observatory ($\lambda=-22°49'44"$,
$\varphi=+37°45'15"$) during the year 1976, 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 interna-
tional 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:

$$V = v_0 + 0.042(b-v)_0 + 2.278,$$
$$(B-V) = 0.706 + 1.043(b-v)_0,$$
$$(U-B) = -2.550 + 1.490(u-b)_0.$$

The monitoring intervals in UT as well as the total monitor-
ing time for each night are given in Table I. Any interruption of
more than one minute has been noted. In the fourth column of Ta-
ble I the standard deviation of random noise fluctuation $\sigma(mag) =
2.5 \log(I_0+\sigma)/I_0$ for different times (UT) of the corresponding
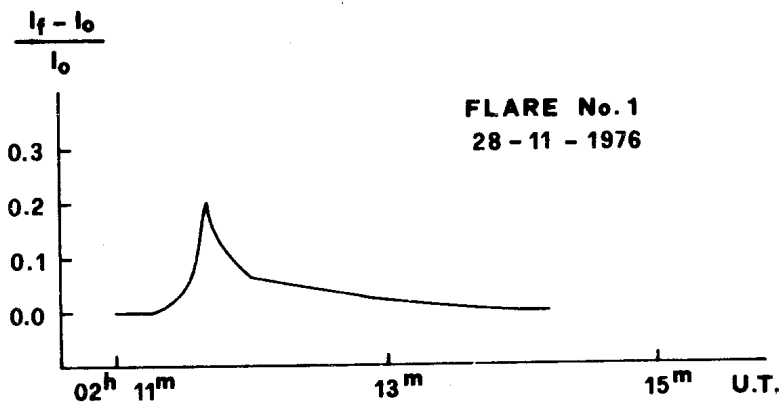monitoring intervals is given.

During the 4.53 hours of the monitoring time one flare was
observed the characteristics of which are given in Table II. For
this 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 $(I_f-I_0)/I_0$ corresponding of flare maximum, where I_0 is the
intensity deflection less sky background of the quiet star and

Date 1976 Nov	Monitoring intervals (U.T.)			Total Monitoring Time	σ(U.T.)
28	00^h54^m-01^h32^m,	01^h34^m-02^h20^m,	02^h22^m-03^h13^m.	2^h15^m	$0.05(01^h23^m),0.04(02^h09^m),$ $0.04(02\ 51\ ).$
30	$00\ 12\ -00\ 56,$ $01\ 36\ -01\ 59,$	$00\ 58\ -01\ 20,$ $02\ 02\ -02\ 15,$	$01\ 27\ -01\ 33,$ $02\ 25\ -02\ 54.$	$2\ 17$	$0.05(00\ 40\ ),0.06(01\ 13\ ),$ $0.06(01\ 52\ ),0.05(02\ 39\ ).$

TOTAL 4^h32^m

T A B L E   II

Characteristics of the Flare 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	Air mass
	1976 Nov.									
1	28	$02^h11^m.67$	0.38	2.33	2.71	0.20	0.12	0.20	0.04	1.22

FLARE No.1
28 - 11 - 1976

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, $p =$
$\int (I_f - I_0)/I_0 dt$, e) the increase of the apparent magnitude of the
star at flare maximum $\Delta m(b)=2.5 \log(I_f/I_0)$, where b is the blue
magnitude of the star in the instrumental system, f) the standard
deviation of random noise fluctuation $\sigma(mag)=2.5 \log(I_0+\sigma)/I_0$
during the quietstate phase immediately preceding the beginning
of the flare and g) the air mass at flare maximum. The light
curve of the observed flare in the b colour is shown in Fig.1.

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