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INFORMATION BULLETIN ON VARIABLE STARS

PHOTOELECTRIC OBSERVATIONS OF THE FLARE STAR UV CET

Continuous photoelectric monitoring of the flare star
UV Ceti has been carried out at the Stephanion Astronomical
Station (λ=-22°49'44" φ=+37°45'15") during the period of co-
operative optical observations of this star proposed by the
IAU Working Group on Flare Stars i.e. October 11-27, 1971
(Andrews et al.1971) using the 30-inch Cassegrain reflector of
the Department of Geodetic Astronomy, University of Thessalo-
niki. Observations have been made with a Johnson dual chan-
nel photoelectric photometer in the B color of the interna-
tional UBV system. The telescope and photometer will be de-
scribed elsewhere. Here we mention only that the transforma-
tion of our instrumental ubv system to the international UBV
system is given by the following equations:

V=v+2.094+0.022 (b-v), B-V=0.837+1.005 (b-v), U-B=-1.179+0.993 (u-b).

The monitoring intervals in UT as well as the total moni-
toring time for each night are given in Table 1. Any interrup-
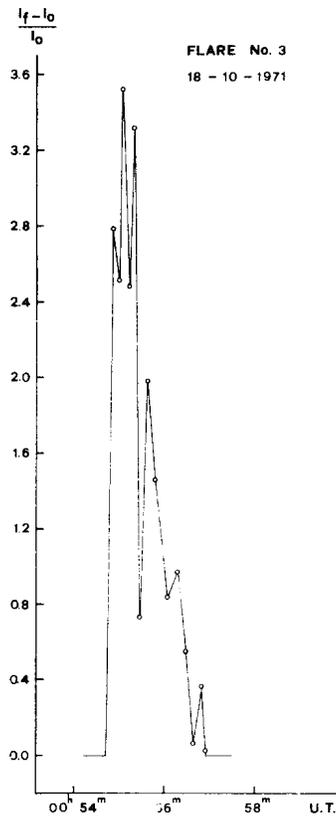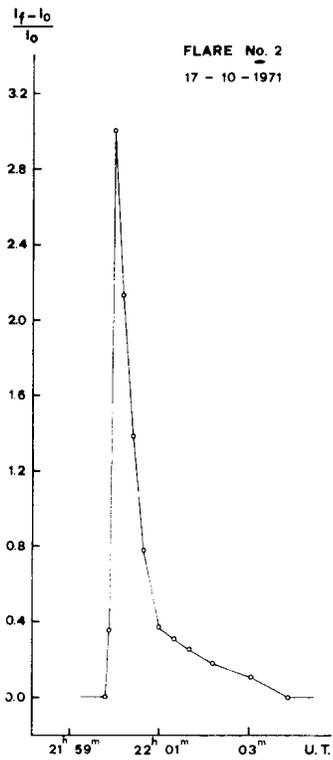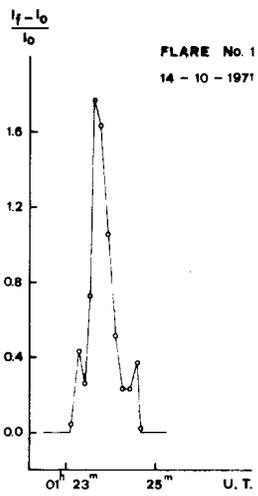tion of more than one minute has been noted.

During the 29,6 hours of monitoring time 6 flares were
observed the characteristics of which are given in Table 2.
For each flare following characteristics (Andrews et al.1971)
are given: a) the date and universal time of flare maximum, b)
the duration before and after 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 pre-
sent, $P= \int (I_f - I_o)/I_o dt$, e) the increase of the apparent mag-
nitude 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 our instrumental system,
f) the standard deviation of random noise fluctuation σ mag =
=2.5 $\log(I_o+\sigma)/I_o$ and g) the air mass. The light curves of the
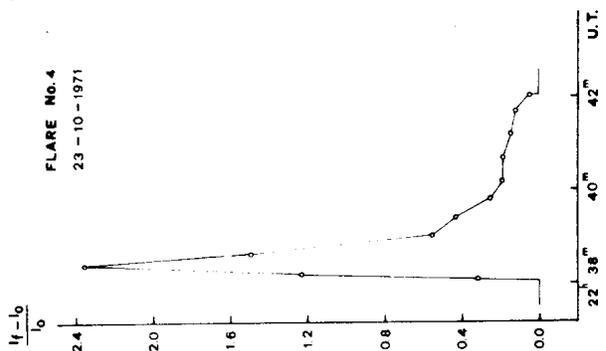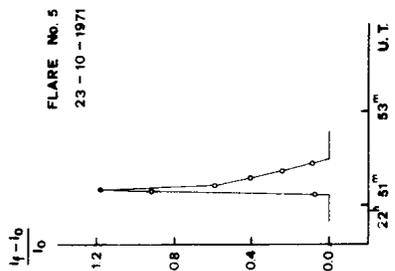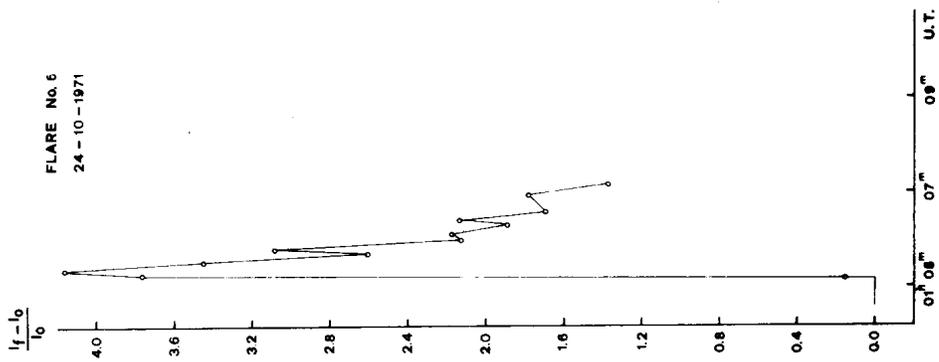observed flares in the b color are shown in Figs. 1-6.

TABLE 1

Monitoring intervals (UT)

Date 1971 Oct.	Monitoring intervals	Total Monitoring Time
11 - 12	22^h11^m-22^h20^m, 2224-2235, 2243-2255, 2258-2309, 2314-2326, 0011-0025, 0033-0037.	1^h13^m
13 - 14	2055-2106, 2109-2119, 2123-2134, 2145-2157, 2200-2210, 2214-2223, 2326-2333, 2347-2358, 0004-0016, 0019-0030, 0039-0044, 0050-0101, 0103-0115, 0118-0127, 0129-0135, 0139-0151, 0154-0209, 0211-0240.	3^h23^m
15 - 16	2119-2139, 2143-2157, 2159-2220, 2225-2231, 2232-2242, 2244-2301, 2303-2315, 2318-2321, 2328-2341, 2350-0010, 0014-0024.	2^h26^m
17 - 18	2113-2130, 2132-2152, 2155-2216, 2221-2239, 2242-2300, 2311-2326, 2331-2345, 2351-0008, 0012-0016, 0047-0103, 0111-0120.	2^h49^m
19	2215-2234, 2239-2250.	30^m
20	2226-2228.	02^m
21 - 22	2042-2100, 2103-2119, 2124-2130, 2147-2205, 2211-2229, 2233-2252, 2258-2315, 2319-2340, 2344-2350, 0016-0034, 0037-0050, 0102-0120, 0125-0145, 0149-0210, 0213-0232.	4^h02^m
22 - 23	2047-2105, 2109-2132, 2149-2200, 2214-2225, 2229-2254, 2258-2320, 2327-2339, 2342-2346, 2355-0007.	2^h18^m
23 - 24	2122-2130, 2136-2156, 2158-2219, 2221-2245, 2249-2311, 2313-2332, 2336-2355, 0008-0023, 0026-0042, 0048-0111, 0125-0127.	3^h09^m
25 - 26	2036-2100, 2102-2122, 2124-2144, 2154-2215, 2217-2237, 2240-2331, 2337-0000, 0002-0018, 0023-0042, 0047-0107, 0110-0130, 0132-0153, 0157-0220.	4^h58^m
26 - 27	2016-2037, 2041-2101, 2105-2124, 2129-2151, 2153-2216, 2218-2240, 2246-2310, 2311-2335, 2337-0000, 0004-0049, 0051-0137, 0138-0145.	4^h46^m
	Total	29^h36^m

TABLE 2

Characteristics of the flares observed

Flare No.	Date 1971 Oct.	U.T. maximum	t_b min.	t_a min.	Duration min.	$(I_f-I_o)/I_c$ maximum	P min.	Δm mag.	σ mag.	Air mass
1	14	$01^h23^m.6$	0.6	1.0	1.6	1.78	0.85	1.11	0.14	2.65
2	17	22 00.0	0.2	3.7	3.9	3.00	1.94	1.50	0.18	1.79
3	18	00 55.1	0.4	1.8	2.2	3.51	4.15	1.64	0.15	2.48
4	23	22 38.4	0.3	3.6	3.9	2.36	1.63	1.31	0.07	1.81
5	23	22 51.3	0.1	0.6	0.7	1.19	0.35	0.85	0.11	1.84
6	24	01 05.4	0.2	?	?	4.17	?	1.78	0.07	3.04

FLARE No. 1
14 – 10 – 1971

FLARE No. 2
17 – 10 – 1971

FLARE No. 3
18 – 10 – 1971

FLARE No. 6
24 – 10 – 1971

$\dfrac{I_f - I_o}{I_o}$

4.0 3.6 3.2 2.8 2.4 2.0 1.6 1.2 0.8 0.4 0.0

01ʰ06ᵐ 07ᵐ 08ᵐ U.T.

FLARE No. 5
23 – 10 – 1971

$\dfrac{I_f - I_o}{I_o}$

1.2 0.8 0.4 0.0

22ʰ51ᵐ 53ᵐ U.T.

FLARE No. 4
23 – 10 – 1971

$\dfrac{I_f - I_o}{I_o}$

2.4 2.0 1.6 1.2 0.8 0.4 0.0

22ʰ38ᵐ 40ᵐ 42ᵐ U.T.

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