

COMMISSION 27 OF THE I. A. U.
 INFORMATION BULLETIN ON VARIABLE STARS

NUMBER 363

Konkoly Observatory
 Budapest
 1969 July 9

PHOTOELECTRIC OBSERVATIONS OF THE FLARE STARS YZ CMi
 AND AD Leo

YZ CMi

In testing the feasibility of monitoring flare stars with an interference filter which passes the Calcium K line, a flare of YZ CMi was completely recorded during the period of co-operative observations of this star.

The filter, purchased for another purpose, is a Baird-Atomic Type S/UV with a maximum transmission of 57% at 3938Å and a half-peak bandwidth of 70Å as measured by Baird-Atomic, Inc. Except for this filter, the photoelectric setup was as described in I.B.V.S. No.329. Immediately prior to monitoring, a comparison was made between this filter and a broad-band U filter (Corning 7-54). At that time, 6^h02^mUT, the 53% illuminated moon was 20°7' above the horizon. Use of the K-line filter decreased the measured flux from YZ CMi to 26% of that passed by the U filter; whereas, the background sky was reduced to only 8%. Photon noise was, of course, increased by restricting the bandpass. Also, to better follow rapid flares, the time constant (to 1/e) of the photometer was not increased but allowed to remain at about 1 3/4 sec. Thus, the intensity curve, illustrated in Fig.1, shows sharp noise fluctuations with a standard deviation estimated to be 26% of the star's deflection. Expressed in magnitudes, as recommended in I.B.V.S. No.326, σ (mag) is 1.46.

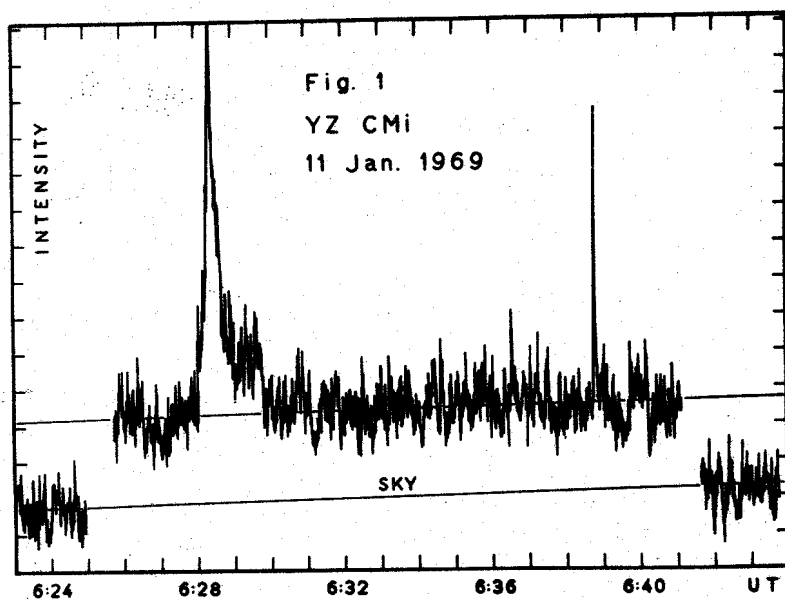
The flare at 6^h28^m4 UT caused the pen to just touch the stop at the edge of the chart. The peak at 6^h38^m8, which looks like a noise spike, would be of interest if it were stellar. No spurious event (as from a flashlight, switch, etc.) was noted at that moment, but electronic noise cannot be discounted. Table I summarizes the characteristics of

Table I. YZ CMi

11 Jan 1969		Durations before and after maximum		Integrated intensity	Air mass	Altitude of 22½° day moon
UT	Δm	t_b	t_a	P		
6 ^h 28 ^m 4	1.84	0 ^m 4	2 ^m 6	2 ^m 2	1.29	25°5'
6 ^h 38 ^m 8	1.60	*	*	0 ^m 15	1.30	27°5'

* Total duration of 10 sec. Rise time between 1 and 3 sec.

these two peaks. Integrated intensity is computed according to the recommendation in I.B.V.S. No.326; however, Fig.1 is a direct copy of the photometer chart. The sky was clear and the seeing fair all night.



Coverage on 11 January 1969 totaled only 1.368 hours and was distributed as follows: 6^h12^m0-6^h22^m2, 6^h25^m7-6^h41^m1, 6^h44^m6-7^h02^m0, 7^h06^m0-7^h21^m4, 7^h25^m6-7^h49^m3 UT. To establish a reliable background level at this low signal/noise and with the rising moon, interruptions to measure sky were relatively long and frequent. No comparison star was measured on this first night of observations. Further observations planned during the 11-25 January co-operative period were prevented by bad weather.

AD Leo

Participation in the monitoring of AD Leo during the 11-24 February 1969 co-operative period was also limited to one night. Observations on two nights in March extended

Table II. Magnitude Differences between the Comparison Star and AD Leo using 3903-3973Å Filter

14 Feb. 1969		16 March 1969		23 March 1969	
UT	$m_c - m_v$	UT	$m_c - m_v$	UT	$m_c - m_v$
6 ^h 00 ^m	1.28	4 ^h 01 ^m	1.33:	4 ^h 52 ^m	1.53
		4 38	1.40	5 17	1.75
		6 29	1.31	6 ^h 10 ^m	1.49:
		7 ^h 21 ^m	1.45		

the coverage to 5,397 hours. No flares were observed during this brief patrol. For each session the sky was clear and moonless, the K-line filter was used exclusively, and dif-

Table III. Coverage of AD Leo during 1969

Date	\bar{m} (mag)	UT Coverage
14 Feb.	2.37	6 ^h 01 ^m 4-21 ^m 0, 6 ^h 42 ^m 0-54 ^m 6, 6 ^h 58 ^m 2-7 ^h 09 ^m 0, 7 ^h 18 ^m 0-35 ^m 3, 7 ^h 39 ^m 0-52 ^m 6, 7 ^h 57 ^m 7-8 ^h 11 ^m 2, 8 ^h 28 ^m 7-8 ^h 49 ^m 1.
16 Mar.	1.62	4 ^h 04 ^m 6-18 ^m 0, 4 ^h 20 ^m 7-35 ^m 2, 4 ^h 38 ^m 8-5 ^h 01 ^m 1, 5 ^h 03 ^m 4-21 ^m 7, 5 ^h 24 ^m 0-49 ^m 3, 5 ^h 51 ^m 9-6 ^h 14 ^m 5, 6 ^h 30 ^m 5-40 ^m 0, 6 ^h 49 ^m 3-57 ^m 0, 7 ^h 01 ^m 0-7 ^h 15 ^m 5.
23 Mar.	1.87	4 ^h 55 ^m 5-5 ^h 14 ^m 8, 5 ^h 17 ^m 6-45 ^m 0, 5 ^h 47 ^m 4-6 ^h 08 ^m 6.

ferential photometry was performed with respect to the comparison star suggested in I.B.V.S. No.326.

Mt. Cuba Observatory
University of Delaware

RICHARD B.HERR