

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

Number 1006

Konkoly Observatory  
Budapest  
1975 June 10

FLARE ACTIVITY ON UV CETI, 1975.01

We report observations in the U-band of flare activity on UV Ceti between January 3 and January 8, 1975. The observations were originally planned to provide concurrent optical coverage for an experiment to observe flares of UV Ceti with X-ray equipment aboard the ANS satellite (Grindlay, 1974).

Although cloudy weather permitted only 3.7 hours of monitoring, 17 events were recorded with a 60 cm reflector above a detection limit of  $U_{\text{det}} = 15.0$ . Data for individual flares are listed in Table 1, following a format used on earlier occasions (Kunkel 1968, 1973).

The level of activity is determined from the incidence statistic  $U_0$  in the event rate equation

$$R(U) = \exp [a (U - U_0)] \text{ hr}^{-1}$$

the lower value of  $U_0$  indicating greater activity. Although the value of the coefficient  $a$  may be observed to vary from sample to sample, experience with observations reported so far (Kunkel 1975) is that a unique value of  $a$  applies to flare activity of all stars for the flares typically observed. This value is close to unity, and for a given sample of flares the estimate of  $a$  approaches this limit as the sample size increases. A simultaneous solution for both  $a$  and  $U_0$  yields  $a = 0.8 \pm 0.2$  and  $U_0 = 13.0 \pm 0.2$ , implying that stronger events dominate the sample. Solving for  $U_0$  alone, with  $a = 1.06$ , the value that best represents the 800 flares recorded for the years 1966-1971 (Kunkel, 1975) gives  $U_0 = 13.35 \pm 0.20$ . This activity is nearly double that for the 1966-1971 period, for which  $U_0 = 14.0$ .

TABLE 1  
FLARE ABSTRACT

Monitoring times						
Date	Intervals					
75 01 05	01 <sup>h</sup> 21 <sup>m</sup> 4 - 02 <sup>h</sup> 11 <sup>m</sup> 0					
75 01 06	01 49.6 - 02 27.3					
75 01 07	01 05.9 - 02 16.4					
75 01 08	01 09.0 - 02 15.8					

  

FLARES OBSERVED							
Date	U.T.	Airmass	U (Peak)	T.5	Durations		Notes
					T.2	T.1	
75 01 05	01 <sup>h</sup> 26 <sup>m</sup> 95	1.16	14.77	0.90	3.0	-	
	01 53.32	1.25	15.32	0.16	-	-	
75 01 06	01 50.5	1.23	12.16	0.26	4.3	6.8	
	01 56.3	1.26	13.97	0.06	-	-	
	02 04.81	1.29	14.80	0.8	-	-	
	02 09.26	1.31	14.78	0.11	0.45	-	
	02 13.30	1.32	14.08	0.47C	1.50C	-	
	02 14.81	1.33	14.71	0.07	0.20U	-	
	02 23.18	1.42	14.06	0.27C	0.40	-	
	02 24.54	1.42	<12.4	0.2 U	-	-	Peak lost
02 25.02	1.42	13.18	0.32	1.16	1.19		
75 01 07	01 21.08	1.17	14.50	0.05	0.07	1.0U	
	01 39.66	1.22	14.73	0.18	0.08	-	
	01 55.53	1.26	15.21	0.30	1.00U	-	
	01 58.14	1.28	15.40	1.6	2.0	-	
	02 05.65	1.31	14.92	0.1	0.3	0.4	
	02 09.09	1.33	14.08	0.08	0.19	0.26	
75 01 08	01 17.56	1.17	< 9.9	6.80U	11.12U	-	Peak lost
	01 55.69	1.28	14.14	0.16C	0.18C	-	
	02 08.23	1.33	13.97	0.09	0.14	-	

Note: C signifies complex flare form  
U signifies uncertainty greater than ten percent.

As the data of Table 1 show, the bulk of the flares here reported occurred on the nights of January 6 and January 7. On the remaining nights, which account for about half of the total observing time, only five flares were recorded. It seems probable, therefore, that the enhanced activity noted on two nights represents a sporadic fluctuation, and we feel that our data warrant no conclusion regarding possible long term changes in the level of flare activity in UV Ceti.

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