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FLARES OF UV CETI, 1970

Continuous U-band photoelectric photometry of UV Ceti was obtained between October 27th and November 3rd, 1970, with the 60 cm reflector of the Cerro Tololo Interamerican Observatory. In 29.06 hours of monitoring a total of 233 events were recorded against a detection limit (Kunkel 1973) equal to or better than $U_{lim} = 17.0$.

The procedure for processing the data are identical to those used on earlier occasions (Kunkel 1968, 1970a, 1970b, 1973). The phenomena identified on the chart records are listed in Table 2. The table heading gives some pertinent stellar data, as well as the monitoring intervals with no interruptions exceeding a duration of one minute. In the main body of the table are given the date (column 1) and U.T. (column 2) of each event, as well as the air-mass (column 3), the U-magnitude at peak light, referred to comparison stars (column 4), the durations T_q at fractions q of peak light (columns 5 - 8), and the logarithms of the decay rate in magnitudes per minute, measured at one and at three magnitudes below peak light (columns 9, 10). Uncertainties greater than 10 percent or 0.1 magnitudes are denoted with the letter U following an entry. The letter C is used to denote complex events of possibly multiple peaks or other difficulty, for which the measured parameter could not be determined with the normally anticipated confidence.

The data are judged to be at least 95 percent complete in a region bounded by the detection limit (Kunkel 1973) $U_{det} = 15.7$ and $T_{0.5} > 0.03$ minutes. The 178 events lying within this region have been used to determine the event rate coefficients in

$$R(U) = \exp [a (U - U_0)] \text{ events hr}^{-1}$$
$$a = 1.14 \pm 0.09$$
$$U_0 = 14.11 \pm 0.08$$

Compared with results of earlier epochs we find no compelling evidence for change in the level of activity, thus confirming a result of Oskanian and Terebizh (1971). A rise in the activity of UV Ceti reported earlier (Kunkel 1973) appears to be at most part of fluctuation generally present in flare activity. At present the data are still too

sparse to exclude cyclic activity or a slow trend, however.

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References:

- Kunkel, W.E. 1968, I.B.V.S., No. 315.
1970a, I.B.V.S., No. 442.
1970b, I.B.V.S., No. 462.
1973, Ap.J.Suppl., 25, 1.
Oskanian, V.S. and Terebizh, V. Yu. 1971, Astrofizika 7, 83.

MONITORING TIMES (U.T.)

DATE	INTERVALS			
70 10 27	02 38.1 - 04 02.7	04 29.2 - 05 14.5	06 04.8 - 06 03.0	
70 10 28	01 58.8 - 03 04.5	.	.	.
70 10 29	00 51.8 - 07 55.6	.	.	.
70 10 30	02 55.3 - 06 51.0	.	.	.
70 11 01	06 47.3 - 07 45.0	.	.	.
70 11 02	02 43.9 - 06 45.7	.	.	.
70 11 03	04 46.6 - 07 37.3	.	.	.

TOTAL SAMPLE DURATION (HRS) 29.06

FLARES OBSERVED

DATE	U.T.	AIRMASS	U (PEAK)	DURATIONS				DECAY RATE		
				T(.5) (5)	T(.2) (6)	T(.1) (7)	T(.05) (8)	J=1 (9)	J=3 (10)	
70 10 27	02 38.07	1.076	15.26	0.050	0.160					
	02 48.24	1.070	15.91	0.3	U					
	02 54.13	1.062	16.16	0.650						
	02 59.70	1.057	14.51	0.65	3.2	4.8		0.29		
	03 12.52	1.044	13.74	0.06	0.13	0.8		1.11	-0.7 U	
	03 24.68	1.035	15.68	0.27						
	03 28.01	1.033	15.78	0.45						
	03 30.94	1.031	15.19U	0.17						
	03 33.36	1.030	15.45U	0.7	2.0					
	03 38.83	1.027	15.78U	4.						
	03 51.85	1.024	14.96	0.7	3.0			0.1		
	04 02.40	1.022	14.26	0.17	0.33	0.65	3.	U	1.22	
	04 22.93	1.025	15.33	0.08	0.14U					
	04 31.61	1.029	14.13	0.09	0.2	0.42	0.8	U	1.56	
	04 36.56	1.031	15.48	0.25						
	05 03.44	1.052	14.82	0.40	1.2	U				
05 04.37	1.054	14.27	0.20	0.35	0.5	U		0.65		
06 49.34	1.297	15.46	0.17							
07 04.22	1.360	15.13	0.04	0.4	U					
07 25.10	1.410	14.27	0.06	0.13				1.06		
07 38.27	1.555	13.70	0.13	0.27	0.5	2.4	U	1.55		
07 50.03	1.654	13.04	0.24	0.75	1.9	3.3		0.40	-0.030	
70 10 28	02 05.62	1.138	14.74U	0.13	0.9	2.6	U			
	02 20.30	1.108	14.39	0.05	0.55	2.2	3.3			
	02 27.00	1.100	16.62	1.0						
	02 28.54	1.094	15.17	0.2	0.7	2.2				
	02 52.63	1.061	15.82	1.7	3.8					
	03 02.19	1.050	15.54	0.7	2.8					
	03 06.31	1.046	15.84	0.23	1.0					
	03 12.98	1.040	16.25	0.2						
	03 17.26	1.037	14.85	0.04	0.35	1.1				
	03 25.91	1.031	13.53	0.7	0.18	0.6	U	1.5	1.49	-0.34

DATE (1)	U.T. (2)	AIRMASS (3)	U (PEAK) (4)	DURATIONS				DECAY RATE	
				T(.5) (5)	T(.2) (6)	T(.1) (7)	T(.05) (8)	J=1 (9)	J=3 (10)
	03 38.33	1.026	15.27	0.07	0.2	0.7 U			
	03 52.92	1.023	14.54	0.15	0.73	1.3 U		0.63	
	03 55.74	1.023	14.92	0.07	0.1 U				
	03 57.38	1.022	15.36	0.10	0.7 U				
	03 59.59	1.022	14.83	0.24					
	04 07.04	1.023	15.62	0.14					
	04 20.93	1.026	16.26	1.2					
	04 34.71	1.032	15.55	0.13					
	05 02.07	1.055	12.89	0.13	0.37	0.52	1.7	0.57	- .11U
	05 07.64	1.061	14.15	0.05					
	05 28.14	1.089	15.87	0.35					
	05 41.60	1.119	13.54	0.05	0.25	0.78	1.75	1.49	
	06 02.26	1.157	13.54	0.28	0.47	0.60	0.87	0.57	0.36U
	06 13.19	1.185	15.95	9.2					
	06 26.04	1.224	15.75U	0.24U					
	07 05.55	1.389	13.38	0.26	2.15	2.70	3.86U	0.85	
	07 21.43	1.471	15.25	0.27U	0.47U				
	07 29.60	1.521	15.61	0.12U					
	07 50.64	1.679	14.81	0.15	0.50U				
	07 57.65	1.741	14.87	0.13U					
	07 59.38	1.760	13.85	0.18U	0.88U	1.95U		0.3	
	08 02.77	1.790	14.78	0.07U	0.20U				
70 10 29	01 23.20	1.247	14.82	0.20	0.70U			0.34U	
	01 28.09	1.230	15.60	0.20U	0.30U				
	01 32.44	1.217	15.50	0.28U	0.50U				
	01 36.98	1.205	15.45	0.30U	0.70U			0.39	
	01 49.74	1.167	15.34	0.11U	0.31U				
	01 52.20	1.159	15.21	0.06U	0.26U				
	01 57.77	1.147	14.33	0.06	0.15U			0.61	
	02 12.23	1.115	14.12	0.10	0.42U	1.05U		0.85	
	02 26.93	1.091	15.68	0.07U					
	02 31.81	1.083	15.53	0.15U					
	02 44.29	1.066	15.20	0.09	0.40U	0.90U			
	02 54.47	1.054	15.64C	0.09C					
	02 59.42	1.049	14.44	0.11	0.35	0.50U	0.70U	0.63	0.71U
	03 09.32	1.039	16.16	.64	.96	1.1 U			
	03 24.10	1.031	15.96	0.10	0.11U			1.29	
	03 28.40	1.029	15.74	0.07	0.16U			0.26U	
	03 50.22	1.028	15.21	0.10U	0.19U			1.01U	
	03 51.23	1.028	14.72	.06	.42	.80		60	
	03 52.62	1.027	14.71C	0.18C	0.48	0.77U			
	03 54.84	1.026	15.77	.14U	.15U				
	03 55.74	1.026	15.42	.18	.60			.29	
	03 49.00	1.027	16.90U	4. U					
	03 50.42	1.027	15.42	0.20U	0.44U			.52	
	04 26.32	1.030	13.46	0.12	0.19	0.30	0.48U	0.27	
	04 35.43	1.036	15.96	.20U	.42U				
	04 37.81	1.037	16.18	.30	.55U				
	04 41.45	1.040	15.65	.07	.12U	.16U		5.6 U	
	04 44.26	1.042	14.33	0.04	0.16U	0.38U		0.49	
	04 45.63	1.043	16.08	.08U	.35U	.55U		.71U	
	04 53.34	1.050	14.42	.11	.64U	1.20	1.54	.92U	
	05 00.14	1.058	15.70	0.15U	0.46U				
	05 03.57	1.061	15.42	.21	.52	.76U		.57U	

DATE (1)	U.T. (2)	AIRMASS (3)	U (PEAK) (4)	DURATIONS				DECAY RATE	
				T(.5) (5)	T(.2) (6)	T(.1) (7)	T(.05) (8)	J=1 (9)	J=3 (10)
	05 12.15	1.071	15.31	0.12	0.37U	0.49U		0.50	
	05 28.86	1.077	15.20	0.11	.30U	.43U		.79	
	05 34.16	1.106	15.56	0.16U					
	05 35.14	1.108	14.23	0.10	0.22	0.25U	0.27U	0.94	
	05 37.54	1.113	15.42	.23U	.33U				
	05 39.01	1.115	14.64	0.08U	0.23U	0.50U		0.84U	
	05 39.33	1.117	13.32	0.03	0.09	0.20U	0.36	1.71	0.65U
	05 55.57	1.154	12.12	0.40	1.20			0.21	
	06 04.39	1.174	13.10	0.80	2.59U			0.42	
	06 18.11	1.214	14.55	0.10U	.38C			1.37	
	06 18.52	1.214	14.87	.56	1.74			.09	
	06 26.23	1.237	16.00	.20	.30U			.94U	
	06 39.25	1.283	15.67U	.12	.26U				
	06 44.55	1.307	16.16	.16U	.30U				
	06 50.79	1.333	15.01	0.10	0.16			1.35U	
	07 14.15	1.454	15.12U	.28U	.66U				
	07 27.93	1.535	14.59	0.02	0.05	0.07		2.04U	
	07 30.61	1.555	14.46	0.04C	0.30C	0.55C			
	07 32.57	1.569	15.27	.25	.57U			0.45U	
	07 37.78	1.606	15.75	0.07U					
	07 38.85	1.614	15.74	0.06U	0.18U			0.04	
	07 43.55	1.654	15.07U	.40C					
	07 48.70	1.696	15.01	0.11	0.25U			0.11	
70 10 30	03 00.53	1.044	15.36	0.08	0.13U				
	03 05.59	1.040	15.47	.14	.30U	.46U		.79U	
	03 07.82	1.038	13.79	0.16	0.47U	1.04U	1.56U	1.26	
	03 13.18	1.035	15.91	.10U	.26U				
	03 15.24	1.034	15.36	0.05	0.1			3.58	
	03 32.54	1.025	15.23U	.20	.70U				
	03 42.65	1.023	15.19	.27U	.59U			.55	
	03 46.10	1.023	13.65	0.06	0.26U	0.75U	1.16U	1.53	
	03 48.10	1.023	14.74	.41	1.07	1.48U		.27	
	03 51.32	1.022	14.54	.30	1.44U	2.05U			
	03 54.10	1.022	15.04	0.27U	0.9 U				
	04 01.06	1.023	15.12	.10	.32U	0.47U		0.66	
	04 05.59	1.024	15.46	.15U	.25U				
	04 26.48	1.034	15.14	0.18	0.4 U			0.69	
	04 38.71	1.041	10.62	0.66	2.00U			0.18	
	04 47.71	1.049	13.51	2.11				0.38	
	04 52.94	1.054	14.74	.06	.17				
	04 55.38	1.057	15.00	.11	.18U				
	05 10.80	1.074	15.82	0.12U					
	05 16.86	1.083	15.19	0.07U	0.15U				
	05 20.44	1.090	15.08	0.75	1.43U			0.18U	
	05 27.51	1.102	14.89	0.06	0.28U				
	05 29.17	1.104	14.72	.80	2.5 U			0.15	
	05 41.15	1.127	14.88	0.04	0.07U				
	05 41.90	1.129	14.90	.20	.52	.70	.83U	0.59	
	05 47.11	1.140	15.24	0.06	0.16			0.84	
	05 48.65	1.145	14.80	0.04	0.06			1.62	
	05 50.69	1.149	14.93	.23	0.6	0.78U	0.80U	0.35	
	05 54.11	1.157	15.21	.07	.17U				
	05 57.42	1.167	14.71	0.12	0.53U	0.8 U		0.5	
	05 59.85	1.172	13.06	.08U	.16U				

DATE (1)	U.T. (2)	AIRMASS (3)	U (PEAK) (4)	DURATIONS				DECAY RATE	
				T(.5) (5)	T(.2) (6)	T(.1) (7)	T(.05) (8)	J=1 (9)	J=3 (10)
	06 02.31	1.179	15.43	0.1 U	0.15U				
	06 10.15	1.202	15.22	.34	.06U			0.25	
	06 12.68	1.208	15.36C	.65U	.60U				
	06 13.08	1.244	15.30U	.04	.08U				
	06 16.49	1.220	15.50	.08	.10	.12		1.79	
	06 21.27	1.223	15.65	.24	.32	.33U		1.01	
	06 34.79	1.283	15.34	.23U	.74U	1.05U			
	06 47.64	1.337	15.59	.23U	.37U	0.39U		0.64	
70 11 1	06 49.32	1.384	15.39	.10	.23U				
	06 59.58	1.436	15.46	.06	.15U			1.86	
	07 03.61	1.459	15.52	.08U	.18U				
	07 04.80	1.465	15.49	.11U	.24U				
	07 07.83	1.483	15.33	.08U	.18U			1.06	
	07 19.34	1.562	16.09	.08U	.16U				
	07 21.12	1.576	15.20	0.05	0.13U	0.22U		1.1	
	07 24.13	1.595	14.85	0.03	0.04	0.05U		1.53	
	07 25.09	1.606	15.38	0.22	0.42	0.54U		0.53	
	07 27.58	1.621	15.71	.09U	.26	.34U			
	07 39.59	1.722	14.71	0.05	0.18U	0.29U		0.92	
70 11 2	02 48.68	1.045	16.18	0.12	0.14U				
	02 51.78	1.042	15.66	0.03	0.1 U				
	03 04.02	1.034	15.83	0.07	0.12	0.13			
	03 16.06	1.027	15.46	.06	.19U				
	03 17.58	1.027	15.66	0.07	0.1	0.14U			
	03 23.14	1.025	16.02	.14	.34				
	03 39.09	1.022	16.02	.05U	.17U			1.26	
	03 40.39	1.022	13.62	0.11	0.27	0.47	0.67	1.15	0.54U
	03 41.76	1.022	15.52	0.05	0.13				
	03 48.43	1.023	13.26	0.31	0.45	0.7	1.06	0.72	0.43
	03 54.91	1.024	15.92	0.07	0.19U				
	03 55.99	1.025	14.03	.32	1.16	1.67	2.02	0.79	0.26
	04 00.67	1.026	14.18	0.13	0.40	0.80U	1.04U	0.82	
	04 02.74	1.026	16.40	.60	.80U				
	04 09.43	1.029	15.52	.10	.18U	.26U		1.26	
	04 12.97	1.031	13.96	0.11	0.33	0.70U	1.04U	0.64	0.36U
	04 22.92	1.038	18.18	.15	.21U				
	04 30.12	1.043	14.81	0.04	0.11	0.2		1.63	
	04 37.70	1.049	15.10	0.05	0.38			1.04	
	04 49.68	1.062	15.80	0.08	0.18U				
	05 04.68	1.084	16.06	.16	.24	0.27U		1.9	
	05 12.12	1.095	16.03	0.12	0.24				
	05 16.22	1.102	15.82	.16	.25	0.29U			
	05 18.34	1.106	15.82	.07	.13				
	05 28.00	1.125	15.88	0.03	0.07	0.11			
	05 36.77	1.143	15.86	0.16U	0.3 U			1.06	
	05 40.28	1.152	14.75	.20	.75	1.00	1.16	0.42U	
	05 44.26	1.161	15.84	0.13U	0.35U				
	05 42.42	1.169	14.55	.20	.30	0.33U	0.35U	1.90	
	05 47.27	1.169	15.59	0.06	0.06				
	05 51.07	1.180	15.75	0.15U	0.45U			0.8	
	05 55.61	1.194	15.48	0.06	0.15U				
	05 56.90	1.196	15.64	.09	0.13U	0.14U		1.66	
	05 59.47	1.208	15.31	0.24	0.35U	0.66U		0.76	

DATE (1)	U.T. (2)	AIRMASS (3)	U (PEAK) (4)	DURATIONS				DECAY RATE	
				T(.5) (5)	T(.2) (6)	T(.1) (7)	T(.05) (8)	J=1 (9)	J=3 (10)
	06 04.93	1.227	14.72	0.15	0.28				
	06 08.01	1.237	15.52	0.1 U	0.16U				
	06 09.82	1.240	14.40	0.06	0.13	0.16		1.42	
	06 11.44	1.247	14.52	.25	.82	1.17U	1.36U	0.1	
	06 12.72	1.250	15.64	0.15	0.20				
	06 13.45	1.254	15.52	0.10	0.2				
	06 25.61	1.295	15.57	1.72	2.00				
	06 29.18	1.307	15.41	.16	.38U			1.15	
	06 32.86	1.324	15.36	.14	0.3	0.42		0.92	
	06 34.82	1.332	15.14	0.11	0.16			1.59	
70 11 3	04 47.83	1.066	12.50	0.11	0.28	0.35	0.38	1.15	1.18
	04 55.66	1.077	15.97	.07	0.14				
	05 02.25	1.086	15.73	.44	.80U				
	05 06.86	1.094	15.65	.24	.40U	.46U			
	05 09.54	1.097	15.87	.20U	0.30				
	05 28.44	1.136	16.18	.14	.30U				
	05 37.52	1.157	15.64	0.17	0.47	0.62U			
	05 39.73	1.161	13.52	0.14	0.53	1.43	2.	1.40	
	05 45.78	1.177	15.99	.20	.40U				
	05 54.15	1.199	12.36U	0.37U	1.62U				
	06 00.34	1.220	15.85	.10	.28				
	06 06.83	1.240	14.76	0.1	0.3	0.45		0.8	
	06 10.37	1.250	15.64	0.05	0.1	0.11U			
	06 13.53	1.261	16.41	.84	1.04U				
	06 13.91	1.310	12.59	.13U					
	06 26.06	1.311	12.83	0.24	0.4 U			0.71	
	06 38.23	1.360	15.31	0.86	0.08				
	06 42.62	1.379	15.63	0.04	0.08				
	06 47.65	1.415	14.40	0.02	0.08U	0.15U			
	06 51.49	1.431	14.71	0.05	0.11			1.12	
	06 51.67	1.431	15.76	0.16	0.17				
	06 52.00	1.436	15.11	0.1	0.12				
	07 03.86	1.508	15.42	0.12	0.23				
	07 04.31	1.515	14.87	0.20	0.33				
	07 10.12	1.548	15.70	0.09	0.1				
	07 14.97	1.584	15.81	0.09	0.11				
	07 15.55	1.591	15.98	0.1	0.13U				
	07 20.67	1.629	15.50	0.04	0.08U				
	07 34.01	1.741	15.69	0.08	0.1 U				
	07 34.01	1.741	15.69	0.08	0.1 U				
	07 34.52	1.750	15.94	0.08U	0.12U				
	07 36.64	1.769	15.93	0.09	0.12U				