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FLARE ACTIVITY OF V914 Sco

V914 Sco (= CSV2851) was shown to be a BY Dra-type variable (Busko, Quast and Torres, 1977), with a B amplitude of about 0.15 mag and probable period of 2.69 days. Herbig (1977) called attention to its duplicity, quoting an M3eV spectral type for the brighter component and M4eV for the fainter one. We estimated, based on photoelectric scans with small diaphragm, a difference of about 2 mag in the visual for the two components.

In 4 nights between April and June 1980, the star was monitored photoelectrically in the U band with the 1.6m telescope of Brazilian Astrophysical Observatory. A photometer with DC strip chart recording was used. Both components of the pair were included in the diaphragm.

Following the precepts of Kunkel (1973), flare light was referred not to the quiescent state of the star, which is poorly determined in ultraviolet, but to suitable comparison stars. The rate of occurrence of flares of peak magnitude less than U can be described by $R = \exp(U-U_o)$, with the parameter U_o being a measure of the level of flare activity.

Table I - Coverage

JD 2444000+	U.T. From - To
352.5	$6^h16^m.0 - 7^h27^m.0$, $7^h28^m.4 - 8^h\ 0^m.4$
358.5	5 22.0 - 5 49.0, 5 50.1 - 6 30.3, $6^h50^m.5 - 7^h02^m.1$, 7 04.4 - 7 23.2, 7 24.6 - 7 38.0, 7 39.8 - 8 03.2, 8 04.5 - 8 16.9, 8 18.3 - 8 22.0
365.5	4 41.2 - 5 01.8, 5 02.8 - 5 53.2, 5 54.3 - 6 15.5, 6 16.7 - 6 56.5, 6 57.6 - 8 00.2
380.5	3 53.3 - 3 57.0, 4 00.0 - 4 14.0, 4 15.5 - 4 46.6, 4 47.8 - 5 10.2, 5 11.3 - 5 25.5, 5 26.5 - 6 05.3

In a total coverage time of 9.54 hours, 28 events with $U_{peak}<16.5$ were observed. Tables I and II summarize the data. The meaning of the symbols is the same as in Busko and Torres (1976). A value of $U_o = 14.6 \pm 0.2$ can be derived from this sample, using only the events above the completeness threshold $U_{faint} = 15.2$ (Figure 1).

There is no published trigonometric parallax for this star. If we adopt a distance modulus of 0.5 mag supposing it to be a main sequence star, we obtain an absolute value for the activity $M_{u,o} = 14.1$.

Table II - Event Data

JD 2444000+	Sec z	U	$T_{0.5}$ (min)	$T_{0.2}$ (min)	Obs
352.765	1.048	13.86	.65		
.800	1.088	13.39	.40	4.u	
.772	1.053	15.72u	1.u		L
.814	1.116	15.49u	1.u		L
358.733	1.043	15.07	2.1		
.740	1.045	15.58	3.3u		
.746	1.047	14.33	.20	1.3	
.751	1.049	15.26	.16		
.756	1.053	15.96u	.15u		L
.762	1.059	13.94	.54		I
.789	1.098	16.44u	.7u		L
.826	1.200	14.94	.90		
.830	1.217	15.93	.36		
.825	1.197	14.91	1.28		
365.699	1.045	12.75	1.32	5.12	
.708	1.043	15.76	.4u		L
.720	1.044	14.35	2.8u		
.76u	1.074	15.44			L
.776	1.111	13.17	1.5		
.789	1.141	16.03u	3.1u		L
.806	1.198	14.87	.50		
.808	1.205	14.19	.20		
.813	1.223	15.43	1.4u		I
.819	1.250	15.05	> .90		I
.824	1.272	14.97	1.40		
380.667	1.043	15.93u	>2.1		I
.673	1.043	16.46	3.1		
.709	1.066	13.61	3.0	5.6	D

Even if we assume that the activity is equally divided between the two components, this would be a high activity at this spec-

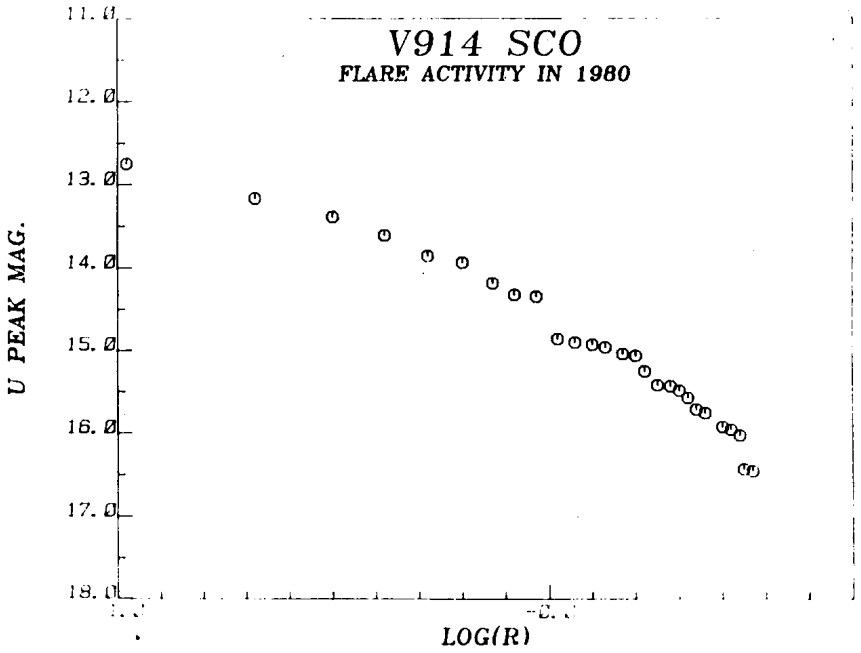

Figure 1: Cumulative rate of occurrence (in hr^{-1}) of flares brighter than magnitude U in V914 Sco.

tral type, although the activity of BY Dra stars is in general high (Busko and Torres, 1978). Such a high activity has been found only in Gliese 182 (de la Reza, Torres and Busko, 1981).

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