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FLARE STARS IN ORION

The search for flare stars in stellar aggregates, associations and young stellar clusters has been going on at the Byurakan Astrophysical Observatory for about 20 years (Chavushian et al., 1979; Melikian, 1981; Mirzoyan, 1964; Natsvlshvili and Melikian, 1980). Among other aggregates, observations of the Orion nebula region have been made, as well. During 102 hours of effective observational time 28 flares have been detected, 19 of those being detected on new flare stars. Some results concerning these observations, especially the results of the synchronous UBV observations have already been published (Mirzoyan et al., 1981, 1983). In general, these observations were carried out with the 40" and 21" Schmidt telescopes of the Byurakan Observatory. The method of observations was the common one of multiple and equal exposures of 5 or 10 minutes.

In the present paper the data about the observed flares (see Table I) and the identification charts for the 19 new flare stars (see Figure 1) are given.

The following data are presented in the respective columns of Table I:

1. The Byurakan number of the flare star (N);
2. Parenago's number (NP);
3. Haro's number (NH);
- 4.-5. Coordinates for 1900.0
6. The magnitude of the flare star at minimum (m_u);
7. The amplitude of the flare (ΔU or Δp_g);
8. The telescope which was used for the detection of the flare;
9. The date of the occurrence of the flare.

In seven cases the rise of the flare lasted more than 10 minutes. These are "slow" flares according to the classification of Haro (1964). In Table II the numbers and the rise times for these flares are presented.

The light curve of the outburst on the star No.20 had a very interesting shape. In Table I one can see that the amplitude of this flare in the U band

Table I. Flare stars in Orion

N	NP	NH	$\alpha_{1900.0}$	$\delta_{1900.0}$	m_u	Δu	tel.	date
B1			$5^h 30^m 3$	$-5^\circ 51'$	$16^m 5pg$	$1^m 2pg$	40"	25.10.1962
B2	1215	136	28.8	-4 17	17.5pg	2.4pg	40"	14.01.1964
B3		254	38.0	-5 51	16.5pg	1.3pg	40"	12.02.1964
B4			30.0	-5 49	16.5pg	1.5pg	40"	03.10.1970
B5			29.6	-5 05	18.0	4.5	40"	07.03.1975
B6		236	31.7	-5 41	18.7	>3.5	40"	08.03.1975
B7			38.7	-4 58	20.0	6.5	40"	08.03.1975
B8			26.8	-7 15	18.7	5.2	40"	10.11.1977
B9		207	29.3	-6 00	17.6	2.1	40"	07.11.1977
B10			20.4	-4 39	17.6	4.1	40"	19.10.1979
B11	2176		28.4	-4 23	15.5	1.7	40"	18.12.1979
B12			22.5	-7 06	18.4	5.0	40"	18.12.1979
B13			27.1	-5 43	18.0v	1.8v	28"	21.12.1979
B14		129	27.0	-4 31	18.2	5.7	40"	18.12.1979
B15		187	27.3	-7 08	18.0	4.6	40"	25.11.1978
B16			37.1	-5 14	21	7.0	40"	29.11.1978
B17	1167	194	28.5	-5 37	17.8	2.1	40"	29.01.1979
B18			31.7	-3 48	19.0	3.5	40"	29.01.1979
B19			30.2	-4 30	17.7	3.5	40"	17.10.1980
B20	2572		32.8	-5 16	17.4	5.4	40"	22.10.1980
B21	1588		29.7	-5 38	18.0	3.7	40"	22.10.1980
B22	2618		33.0	-6 28	15.0	1.0	40"	22.10.1980
B23	1463	31	29.5	-5 00	17.4	4.2	40"	04.11.1980
B24	847		27.2	-5 07	17.4	4.5	40"	04.11.1980
B25	1471		29.5	-5 37	17.8	2.5	40"	04.11.1980
B26			28.1	-4 14	15.8	1.2	40"	01.12.1980
B27	2368	231	31.3	-5 16	15.5	1.4	40"	07.12.1980
B28	2381		31.5	-6 06	15.1	4.3	40"	03.11.1980

Table II. Slow flares in Orion

N	B6	B9	B12	B14	B15	B22	B24
Rise time (min.)	30	20	15	10	10	10	10

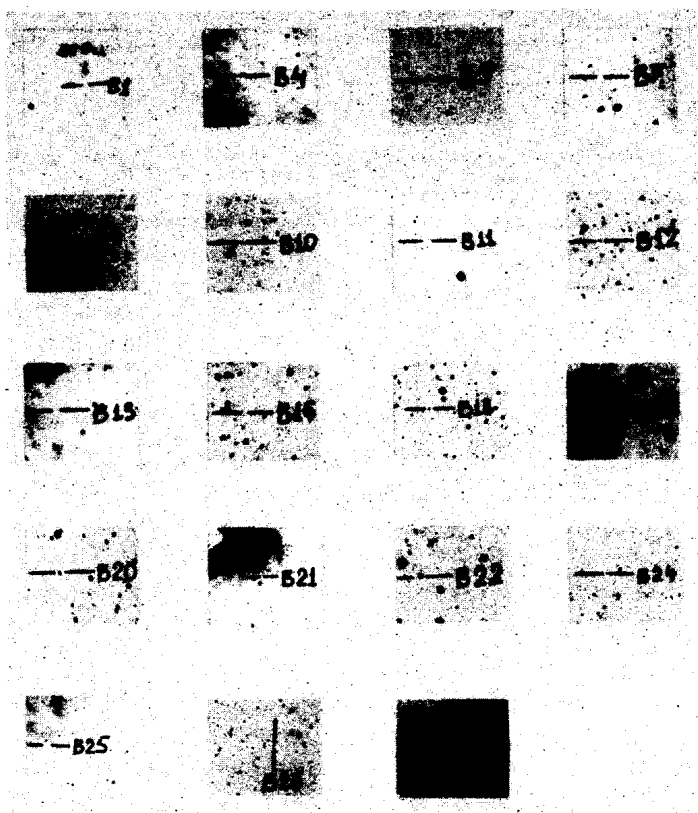


Figure 1

is equal to 5.4^m . The brightness during this flare increased within few minutes and remained at the maximum for more than 3 hours.

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