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NEW FLARE STARS AND REPETITIONS
IN THE ORION ASSOCIATION REGION

Photographic material of the Orion association from Tonantzintla Schmidt plates covering the interval 1978-82 and re-examination of old plates allowed us to find 20 new flare stars and 20 flare-ups of known flare stars. The effective observational time is 104 hours.

Table 1
New flare stars in Orion association

| No. Ton | Star Parenago | R. A. 1900 | Dec. 1900 | U mag | ΔU mag | Spec. Type | Date of Flare | Ref. |
|---------|------------------|----------------------------------|--------------|----------|-------------------|---------------|------------------|------|
| 340 | | 5 ^h 22 ^m 4 | -5°45' | 16.7 | 1.3 | | 27.01.65 | |
| 341 | | 24.5 | -7.28 | 16.8 | 2.8 | | 21.01.82 | |
| 342 | | 25.4 | -6.33 | >18.4 | >3.4 | | 03.01.82 | |
| 343 | | 26.4 | -6.09 | >18.4 | >3 | | 22.01.82 | |
| 344 | | 27.4 | -6.38 | >18.6 | >2.6 | | 05.02.65 | |
| 345 | | 28.0 | -6.10 | >18.4 | >3.9 | | 26.10.81 | |
| 346 | 1062 | 28.0 | -4.51 | 16.8 | 2.6 | | 26.10.81 | |
| 347 | | 28.9 | -7.20 | >18.5 | >2.8 | | 29.12.64 | |
| 348 | | 29.0 | -4.25 | 17.6 | 0.5 | | 26.01.65 | |
| 349 | V 1118 | 29.8 | -5.38 | >18.8 | >2.0 | e α | 07.02.67 | 1.2 |
| 350 | 1631 | 29.9 | -4.33 | 16.2 | 1.6 | | 19.01.66 | |
| 351 | | 30.4 | -4.20 | >18.6pg | >2.2pg | | 21.10.62 | |
| 352 | 2220 | 30.9 | -4.02 | 16.1 | 0.6 | | 10.01.82 | |
| 353 | | 31.0 | -4.17 | >18.4 | >2.4 | | 24.12.65 | |
| 354 | | 32.3 | -4.05 | 18.2 | 2.8 | | 11.02.78 | |
| 355 | 2612 | 33.0 | -6.43 | 15.2 | 2.9 | | 26.01.82 | |
| 356 | | 33.2 | -5.05 | 16.5 | 0.9 | e α | 21.01.82 | 3 |
| 357 | 2685 | 33.6 | -5.07 | 15.0 | 1.3 | | 07.01.81 | |
| 358 | | 35.2 | -5.36 | 17.0pg | 0.9pg | | 23.10.62 | |
| 359 | | 37.4 | -5.31 | 16.6 | 0.9 | | 23.01.82 | |

References: 1. Gasparian et al. (1990) 2. Parsamian et al. (1991) 3. Parsamian, Chavira (1982)

Table 2
Repeated flares in Orion association

| No. Ton | Star Parenago | U mag | ΔU Type | Spec. Flare | Date of | Ref. |
|---------|------------------|----------|--------------------|----------------|----------|------|
| 12 | | 17.3 | 2.1 | e α | 19.01.82 | 1 |
| 71 | | 17.5 | 2.0 | | 23.01.82 | |
| 143 | 1502 | 17.6 | 1.5 | e α | 21.01.82 | |
| 150 | | 18.3 | 2.9 | | 2.01.82 | |
| 176 | | 16.8 | 0.8 | e α | 29.12.81 | 2 |
| 219 | 1609 | 16.8 | 2.2 | | 19.01.82 | |
| 224 | 1790 | 16.2 | 1.1 | | 23.12.81 | |
| 257 | | 17.2 | 1.9 | | 08.01.65 | |
| 260 | | 17.4 | 1.9 | | 29.01.65 | |
| 294 | | 18.5 | 2.7 | | 14.02.66 | |
| 296 | | 17.3 | 2.1 | | 13.12.72 | |
| 328 | 2186 | 17.2 | 4.3 | e α | 31.01.81 | 1 |
| 333 | 2326 | 16.0 | 2.4 | e α | 24.01.82 | 1 |
| 349 | V1118 | >18.8 | >2.6 | e α | 12.01.77 | 3, 4 |
| 349 | V1118 | >18.8 | >3.1 | e α | 11.01.81 | |
| 350 | 1631 | 16.2 | 0.8 | | 24.12.76 | |
| * | V1143 | 18.6 | | e α | 20.01.63 | 4, 5 |
| | V1143 | 18.6 | 2.0 | | 07.04.88 | 4 |
| AB 18 | | 18.0 | 1.0 | | 28.12.59 | |
| AB 105 | | 16.1 | 0.9 | | 13.12.72 | |

References: 1. Haro (1953), 2. Haro (1976), 3. Gasparian et al. (1990), 4. Parsamian et al. (1991b), 5. Marsden (1983).

*This flare was observed spectroscopically.

The results obtained from the present examination and re-examination are given in Tables 1 and 2. In the columns of Tables 1 and 2 the following data on flares are presented respectively: the Tonantzintla number of stars, number from Parenago's catalogue, the approximate equatorial coordinates, ultraviolet magnitude at minimum, the amplitude of flare event, the spectral type, the date of flare.

Flare ups of stars T12 and T143 can be considered as slow ones.

In Table 1 we continue the Tonantzintla numeration (Parsamian et al., 1978). Recently re-examination of all photographic material covering essentially the interval from 1959 to 1978 allowed us to find 33 new flare stars and 83 repetitions. The new ones received numbers Ton261-298 (Chavira, Parsamian, 1991).

Some numbers of Ton do not exist at all, they are 255, 256, 258, 259, 299-325 and T278=T142, T282=B19, T284=U7, T286=R5, T289=AB17. A more detailed article is going to appear in *Rev. Mexicana Astron. Astrof.*

E. CHAVIRA

G. GONZÁLEZ

C. ESCAMILLA

Instituto Nacional de
Astrofísica, Óptica y Electrónica
Tonantzintla, México

E. PARSAMIAN

Byurakan Observatory, Armenia.
Instituto Nacional de Astrofísica, Óptica
y Electrónica, Tonantzintla, México.

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