

# OUTBURST ACTIVITY OF THE DWARF NOVA AB DRACONIS

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**ABSTRACT.** Two different stages of the outburst activity were found cyclically replacing each other every 6 yr. Mean outburst cycle is  $13.1327^d$  (1943-1991). Photometric period is  $P = 0.1529581^d$ . Amplitude increases with decreasing brightness.

**Key words:** Stars: Dwarf Novae

AB Dra was discovered by Morgenroth (1934). In GCVS it was classified as a Z Cam-subtype Dwarf nova with an outburst amplitude  $\Delta V = 4.3^m$  and mean cycle  $P_0 = 13.4^d$ . Normal outbursts of a  $3.1^d$  width and  $8.6^d$  wide are observed. On the base of spectral observations, Thorstensen & Freed (1985) showed the importance of orbital period 0.15198 days. However, the data of Voloshina & Shugarov (1989) period correspond to a photometric period  $0.151662^d$ .

We have obtained new 40 photographic B observations in 1986 and 284 photoelectric BV observations in 1991. Totally 13 outbursts were detected. The amplitude of the orbital changes at the outburst maximum is smallest and is equal to  $0.05^m$ . With falling brightness down to  $13.5 - 14.0^m$  the amplitude increases to  $0.3^m$ .

The obtained observations do not agree with a period  $0.151662^d$ . For more precise determination we have used the longest rows of our observations and that of Voloshina & Shugarov (1989). The period search was done separately both for the maximum of the outburst and for the slump of the brightness in connection with a rather different amplitude. Besides that the observations in each group were shifted to one mean brightness. As a result we had found a period which satisfies all the observations. The light elements are the following:

$$\text{Max HJD} = 2445938.7427 + 0.1529531 \cdot E_0 \\ \pm 4 \qquad \qquad \pm 3$$

The shape of the light curve is non-sinusoidal. It has a narrower maximum and a wide minimum. In such a way the photometrical period AB Dra differs from the spectral as it is.

The determined parameters of average outburst: brightness  $m_B = 12.8^m$  at maximum,  $m_B = 14.9^m$  at minimum with a full amplitude  $\Delta B = 2.1^m$ . The width of the outburst at a level  $m_B = 13.5^m$  is  $W = 2^d$ , the duration of the outburst about 6 days.

The received 13 moments of the outbursts AB Dra were completed by all available literature data. And as a result, 195 moments were drawn up. The intervals of time between two consecutive outbursts change from  $7^d$  to  $20^d$  with an average cycle of  $13.1327^d$ . Dependence ( $O - C$ ) on JD shows that AB Dra has two alternating periods of outburst recurrence -  $12.487^d$  and  $13.893^d$ , replacing each other with a cycle of  $\Pi = 2200^d$ . It is possible to say that there exist two states: "active", when the outbursts occur more frequently, and "non-active", when the outbursts rarely occur. Similar result was found out earlier for some other dwarf novae (Shakun 1987, 1988ab).

## References

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