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Comparative analysis of photometric variability of TT ARI in the years 1994-1995 and 2001, 2004

Belova A., Suleimanov V., Bikmaev I., Khamitov I., Zhukov G., Senio D., Belov I., Sakhibullin N.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

We present the results of photometric observations of a bright cataclysmic variable TT Ari with an orbital period of 0. 13755 days. CCD observations were carried out with the Russian-Turkish RTT 150 telescope in 2001 and 2004 (13 nights). Multi-color photoelectric observations of the system were obtained with the Zeiss 600 telescope of SAO RAS in 1994-1995 (6 nights). In 1994-1995, the photometric period of the system was smaller than the orbital one (0. d132 and 0. d134), whereas it exceeded the latter (0. d150 and 0. d148) in 2001, 2004. An additional period exceeding the orbital one (0. d144) is detected in 1995 modulations. We interpret it as indicating the elliptic disc precession in the direction of the orbital motion. In 1994, the variability in colors shows periods close to the orbital one (0. d136, b-v), as well as to the period indicating the elliptic disk precession (0. d146, w-b). We confirm that during the epochs characterized by photometric periods shorter than the orbital one, the quasi-periodic variability of TT Ari at time scales about 20 min is stronger than during epochs with long photometric periods. In general, the variability of the system can be described as a "red" noise with increased amplitudes of modulations at characteristic time scales of 10-40 min. © 2013 Pleiades Publishing, Ltd.

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Keywords

binary stars, cataclysmic variables, TT Ari