

LINEAR POLARIZATION OF RY TAURI AFTER ITS "FLASH" IN 1983 OCTOBER

V. I. Kardopolov, F. K. Rspaev

Fesenkov Astrophysical Institute, 480068 Almaty, Kazakhstan

ABSTRACT. Simultaneous photoelectric and polarimetric BVR measurements of RY Tau have been obtained from 1987 December to 1993 March. A "flash" changed usual behavior of the star, possibly indicating the binarity of the system.

Key words: Stars: pre-main-sequence – Stars: photometry and polarimetry – Stars: RY Tau – Stars: Binaries

At the end of 1983 – in the beginning of 1984 the extraordinary increase of the InT variable star light flux (for 0.5 magnitude in V band) occurred and the character of the stellar brightness behaviour changed (Herbst & Stine 1984; Zaitseva et al. 1985; Kardopolov & Rspaev 1990). There were no any regularities in the star color/magnitude diagrams in the preceding years. However, near the new photometric maximum after the RY Tau "flash" the direct correlation between reddening degree and a light variability of the star takes place. Up to date this kind of the InT variable star brightness behaviour is still the same.

Our measurements indicate that the light flux increase has influenced to the other parameters of RY Tau continuum radiation. Before 1983 October, for instance, a dependence of the star linear polarization degree on its photometric variability was absent. But after the "flash" the contribution of the polarized light rises with the increase of the light flux (in the RY Tau

bright state). The positional angle as always did not correlate either with the brightness or with the polarization values of RY Tau.

At the same time episodic light weakenings of the star to the brightness before its "flash" are observed. Simultaneously the relation of polarization degree to photometric variability vanishes, i.e. the parameter P arbitrarily changes again. Thus RY Tau returns temporarily to the state like before 1983 October one.

All the enumerated features of RY Tau activity should be understood, if, for example, two objects, unresolved for an observer, were located toward it. One of them was not registered on the brighter companion background before 1983 October. The star "flash" has done it visible. Its properties observed about a new RY Tau light maximum only. When the companion weakens, we observe the well-known InT variable star. It is a possible close binary system (Herbig 1977; Nurmanova 1982).

References

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