

POLARIMETRY OF SYMBIOTIC STARS

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In an effort to bring out the variations in the polarization parameters of symbiotic stars that result from their binary character, polarimetry in R, I IR bands was initiated at the Byurakan station of the Leningrad University Observatory in 1974. In addition, U, B, V measurements for some stars have been made. Three telescopes have been used, with mirror apertures of 48, 48, 62 cm.
Table I

Star	l °	b °	Opt. var.	B		I		E(B-V) mag.	Ref
				Δq %	Δu %	Δq %	Δu %		
R Aqr	66.49	-70.32	m	7.3	16.0	7.1	3.7	0.1	Eg
UV Aur	174.22	-02.36	m	1.0	0.4	1.0	0.1	0.2	RG
EG And	121.54	-22.17	m?			<0.3	<0.3		
z And	100.97	-12.09	r			0.9	0.8	0.2-0.4	KW
CH Cyg	81.86	+15.58	r			0.9	0.2	0.1	KW
CI Cyg	70.90	+04.74	r	2.0	1.0	1.3	1.5	0.4	B
V1016Cyg	75.17	+05.67	sm			<0.4	<0.4	0.2-0.3	KW
AG Dra	100.29	+40.97	r			<0.3	<0.3	0.03	KW
AG Peg	69.27	-30.88	s			<0.3	<0.3	0.1-0.2	KW
FR Sct	18.47	+00.35	?	<0.4	<0.5	0.4	1.7	$A_V=4.2$	L

Key: m - Mira-like; s - slow nova;
r - classical symbiotic

B - Baratta, G.B. et al: 1982, IAU Colloq. n°70, 145.

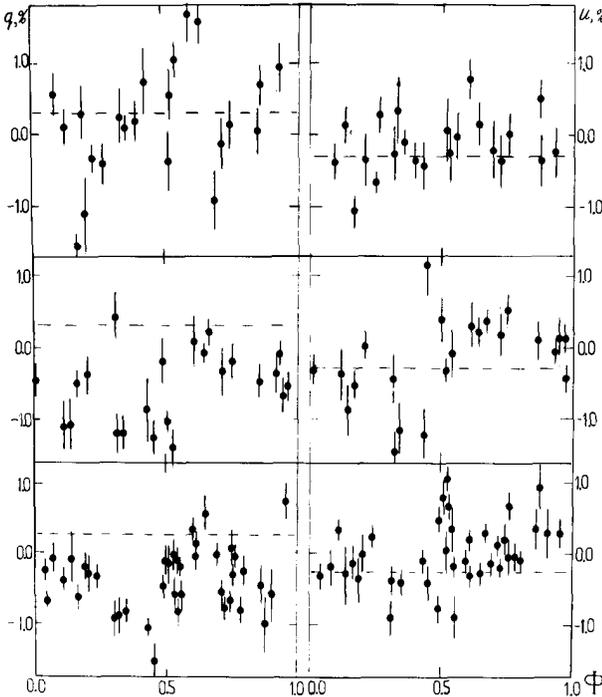
Eg - Eggen, O.J.: 1970, Ap. J. 22, 289.

KW - Kenyon, S.J. and Webbink, R.F.: 1984, Ap. J. 279, 252.

L - Lee, T.: 1970, Ap. J. 162, 217.

RG - Reimers, D. and Groot, D.: 1983, Astr. & Ap. 223, 257.

Table I consists of observed stars list and some data concerning them. The character of polarization is complicated: for some stars variations in visual and IR bands are correlated, for the other ones they are not.



CI Cyg. It is found that variations of polarization are not correlated with those of stellar brightness. Let us suppose that the variable polarization reflects the orbital motion (Khudya kova 1987). Variations of normalized Stokes parameters q , u in the B, R, I bands with orbital phase are shown in fig.1. Dotted line indicates the interstellar polarization.

We assume that the increase of polarization (see fig. 1 phase 0.5) is the result of passage of the hot object with accretion disk between cool star and observer.

R Aqr. The maximum of degree of polarization in 1976 (Nikitin and Khudyakova 1979) lies near to the eclipse of 1978 (Wallerstein and Greenstein 1980). The period of the orbital motion is 44 years. In the case R Aqr long-term variations of polarization combine with intrinsic ones of the cool companion, the Mira. So for the two stars we may assume that the passage of the object with a disk before cool component leads to the increase of the degree of polarization.

UV Aur. Our data suggest that the polarization presumably accompanying the orbital motion combines with intrinsic one of the cool companion, the Mira variable. The cyclic behavior of the parameters of polarization implies an orbital period of 14 years (Khudyakova 1985).

References:

- Nikitin, S., Khudyakova, T.: 1979, *Pisma Astr. Zh.* **5**, 611.
 Khudyakova, T.: 1985, *Sov. Astr. Lett.* **11**(4), 262.
 Khudyakova, T.: 1987, *Astr. Tsirc.* n°1504.
 Wallerstein, G., Greenstein, J.: 1980, *PASP* **92**, 547.