

PHOTOMETRIC STUDY OF TWO SOUTHERN ALGOL TYPE BINARIES

by

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Complete UBV light-curves of RR-Lep and RX-Hya have been obtained during 1983-87 seasons. Preliminary elements were computed using modified Wellmann's method. With these parameters as inputs Wilson-Devinney program was executed for Blue and Yellow passbands simultaneously in detached and semi-detached modes for both the systems. The semi-detached mode fitted better than the other solution for both the systems. For RR-Lep, the absolute dimensions were computed by assuming the primary to be a slightly evolved main sequence star. For RX-Hya, the absolute dimensions were computed using Struve's spectroscopic data. The following table gives all the elements for both the systems. The secondaries of both the systems are overluminous for their masses suggesting that they have lost considerable mass.

Parameter	RR-Lep	RX-Hya	Parameter	RR-Lep	RX-Hya
i	77°1	86.3	M1/M _☉	2.0	1.67
T1	7582 K	7265 K	M2/M _☉	0.68	0.40
T2	4506 K	4076 K	R1/R _☉	2.0	1.75
L1/L _☉	11.92	7.71	R2/R _☉	1.53	2.37
L2/L _☉	0.86	1.40	A/R _☉	5.53	9.29
B-V	0.28	0.27	distance	293 pc	183 pc

The period variation of RX-Hya can be explained by apsidal motion as well as by the existence of a third body with the parameters: eccentricity=0.27, period=72.5 yrs (11600 cycles), longitude of periastron=17.8, mass function=0.36 and masses of 1.7, 2.1 and 5.3 for inclinations of 90, 60 and 30 degrees respectively, which implies that the third body is either a neutron star or a pair of white dwarfs.