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PERIOD CHANGES OF THE BINARY SYSTEM RX CASSIOPEIAE

The investigation of period changes of the Beta Lyrae-type eclipsing binary RX Cas was based on 25 epochs of primary and secondary minima listed in Table 1. The $(O-C)_1$ values were calculated according to Martynov's (1950) elements:

$$\text{Min.} = \text{J.D. } 241\,6250.731 + 32.3165 \cdot E \qquad (1)$$

The last times of minima indicate that the period appears to be increasing. On the basis of all available material new elements with second order term were calculated. A least squares solution gives:

$$\text{Min.} = \text{J.D. } 241\,6251.10 \pm 13 + (32.3100 \pm 6) \cdot E + (1.39 \pm 6) \cdot 10^{-5} \cdot E^2 \qquad (2)$$

The $(O-C)_2$ values in Table 1 were calculated according to above mentioned elements. As it is seen in the Figure a parabolic-like fit is a good approximation of changes of period. From the elements (2) the following results were obtained:

$$\Delta P = 2.40 \text{ sec epoch}^{-1}$$

$$\frac{\Delta P}{P} = 0.86 \cdot 10^{-6}$$

$$\frac{d \ln P}{dt} = 0.97 \cdot 10^{-5}$$

Thus, RX Cas is one of the binary systems with extremely large changes of period. This is with a good agreement with Paczynski's (1971) suggestion that all binaries with Beta Lyrae - type light curves and periods longer than 10 days may be suspected to be in a phase of rapid evolution connected with rapid transfer of matter. Further photoelectric and spectral observations of this interesting system would be very desirable.

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Table 1

J.D. hel.	Epoch	$(O-C)_1$	$(O-C)_2$	Source
2416250.9	0	+0.169	-0.200	1
7511.19	39	+0.116	-0.021	1
8803.780	79	+0.046	+0.103	1
2422907.75	206	-0.180	+0.200	2
3198.31	215	-0.469	-0.083	1
4943.60	269	-0.270	+0.104	1
5492.93	286	-0.320	+0.033	1
6947.213	331	-0.280	-0.020	1
7464.325	347	-0.232	-0.019	1
7916.931	361	-0.057	+0.110	1
8434.108	377	+0.057	+0.162	1
8886.456	391	-0.027	+0.021	1
9338.987	405	+0.074	+0.057	1
9662.334	415	+0.256	+0.190	1
9855.735	421	-0.243	-0.339	3
2430050.037	427	+0.161	+0.033	1
0534.971	442	+0.347	+0.135	1
0890.075	453	-0.031	-0.307	1
1116.6	460	+0.279	-0.041	1
3540.85	535	+0.792	-0.079	4
4154.90	554	+0.828	-0.206	4
2442706.5 sec	818.5	+4.714	+0.353	5
2706.53 sec	818.5	+4.744	+0.383	6
2883.69	824	+4.163	-0.288	6
2883.7	824	+4.173	-0.278	5

1. Martynov (1950), 2. Gaposchkin (1941), 3. Gaposchkin (1953),
4. Domke, Pohl (1953), 5. Mallama et al. (1977), 6. Rhombs (1978).

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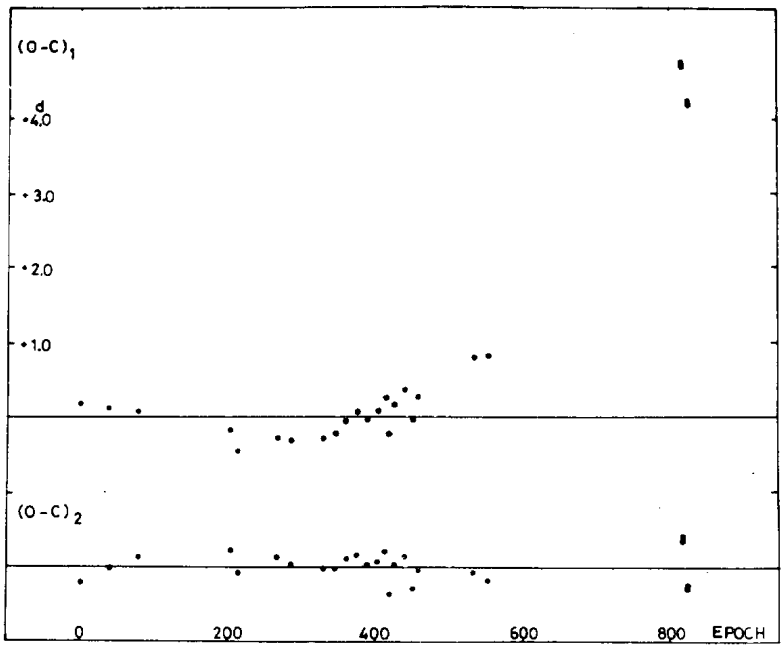
(O-C)1
d
4.0
3.0
2.0
1.0
(O-C)2
0
200
400
600
800
EPOCH