

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1277

Konkoly Observatory
Budapest
1977 May 17

ON THE CONNECTION BETWEEN PULSATIONS
OF RY Sgr AND THE TOTAL LIGHT DECLINES

1. The analysis of 1926-1974 visual observations of RY Sgr (1,2,3,4) resulted in conclusion that the period of pulsations seemed to vary. Averaged of 182 cycles the mean value of period \bar{P} equals $38^{\text{d}}.874$. Figure 1 shows the residuals $(O-C)^{\text{d}}$ calculated with $\bar{P}=38^{\text{d}}.874$ and $E_0 = \text{J.D. } 2424615$. The current periods P_i and corresponding Julian days are given in Table I.

2. The nine deep minima which occurred in the course of observations, did not affect either the phase of pulsations or the value of period. The beginnings of total light declines are indicated by vertical arrows in Fig. 1.

3. The moments of beginnings of total light declines T_i seemed to be connected with the phase φ of pulsations and arranged within $0.24 \leq \varphi \leq 0.37$. The initial parts of seven reliable declines of RY Sgr are shown in Fig. 2. φ_0 corresponds to the light minimum of pulsations. These fragments are shifted along time-axis by integral number of cycles. In Fig.2 observed (ob) and calculated (cal) minima of pulsations are given.

The results obtained are as follows:

- a. Pulsation period of RY Sgr varies.
- b. Cyclic process of pulsations is principal one and does not depend on the total light fading.
- c. The moments of T_i are synchronized by phase of pulsations and consequently are not distributed by "pure chance". A serial number of cycles when declines occur is probably accidental.

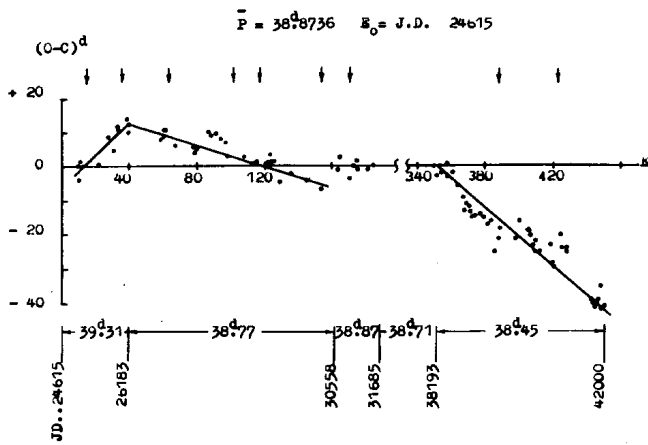


Figure 1

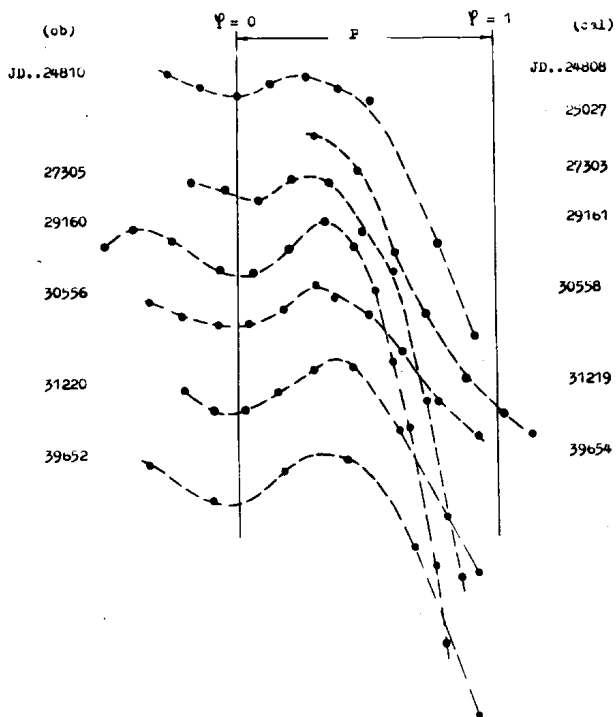


Figure 2

Table I

epoch number and Julian days	P_i
$E_0 = \text{JD}..24615 - E_{40} = \text{JD}..26183$	$39^{\text{d}}.307$
$E_{40} = 26183 - E_{153} = 30558$	38.777
$E_{153} = 30558 - E_{182} = 31685$	38.874
(168 ± 1) cycles are omitted for lack of observations	38.708 ± 0.232
$E_{350} = 38193 - E_{449} = 42000$	38.454

A.F. PUGACH

Main Astronomical Observatory
of Ukrainian Academy of Sciences
Kiev

References:

1. Campbell L., Harv.Circ.Nos.319, 1926; 330, 1927; 344, 1928;
354, 1929; 361, 1930; 376, 1931; 382, 1932;
407, 1934; 415, 1935
2. Campbell L., Harv. Ann. 104, 1938; 107, 1940; 110, 1945;
116, 1948
3. Bateson F.M., New Zealand Circ.Nos.120, 1965; 127, 1966;
133, 1967; 134, 1968; 147, 1969; 168, 1970;
184, 1971
4. Bateson F.M., Publ.VSS RAS of New Zealand 1, 33, 1974