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ALGENIB IS A SPECTROSCOPIC BINARY

Algenib (γ Peg, 88 Peg, HD 886) is a well-known representative of a group of β Cep stars. Its periodic radial-velocity variations with a period of 0.15175 days were discovered by McNamara (1953). Williams (1954) disclosed small light variations modulated by the same period. Many subsequent studies led to the conclusion that the period has remained constant. McNamara (1955) pointed out a possibility that the γ -velocity of the 0.15-day curve varies but little attention was devoted to this fact in all subsequent investigations.

During the night September 7/8, 1978 we obtained a series of 18 spectrograms of the star using the coudé focus of the Ondřejov 2-m telescope. A very detailed analysis of all velocity and photometric data available in literature was undertaken by us and the study will soon be submitted to Bull. Astr. Inst. Czech. However, one result in worth mentioning right now and should be available to astronomical community before the star will be observable again:

We have revealed a periodic variation of the γ -velocity of Algenib, with a period of 6.83072 days, which seems to indicate that the star is a spectroscopic binary. Modulation with this period is clearly detectable also in OAO 2

photometry of Algenib, kindly communicated to us by Dr. Lesh. In fact, the 6.83-day period is probably responsible for the scatter in OAO 2 data mentioned by Lesh (1976). Both periods are detectable even in more scattered photometry by Magalashvili and Kumsishvili (1970).

Orbital elements of Algenib as a spectroscopic binary are the following:

$P = 6.830713 \pm 0.000169$ days

$T_{max\ RV}$ = HJD 2434675.620 ± 0.092

e = 0 (according to the test suggested by Lucy and Sweeney 1971)

$K = 1.34 \pm 0.11$ km/s

$\gamma = 2.50 \pm 0.09$ km/s

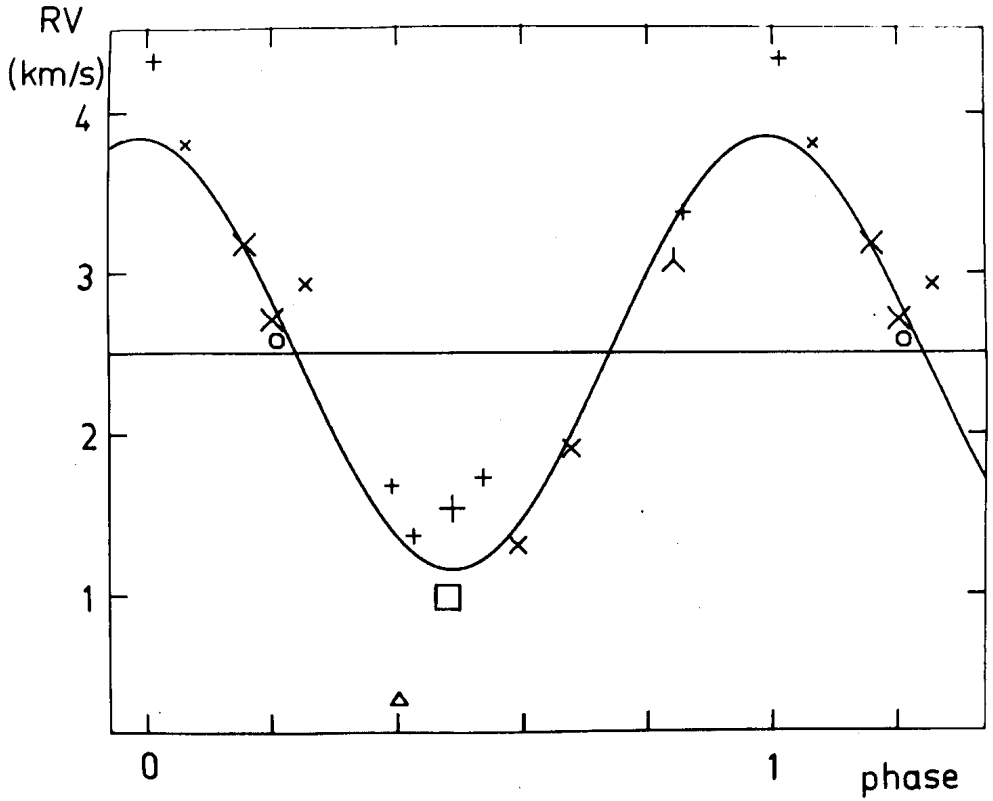
$f(m) = 1.71 \times 10^{-6}\ m_{\odot}$ $\qquad a_1 \sin i = 0.181\ R_{\odot}$

This sclution is illustrated by Figure. To obtain reasonable mass for the secondary component, one is led to conclusion that the inclination of orbit must be very low. It means, in turn, that the visible B2 component may be even a normal rapidly rotating B star seen almost pole-on.

Using all available velocities since 1899 we have also derived the following improved ephemeris for the short period,

$$T_{max\ RV} = \text{HJD } 2414888.6733 \pm 18 + 0.151750125^{d} \pm 15 \times E,$$

which allows to count unambiguously all 0.15-day cycles covered by available data.


RV
(km/s)
4
3
2
1
0
1
phase

We appeal to all spectroscopists and photometrists interested in the field to obtain new series of data during the forthcoming season and to confirm (or disprove) our finding. As to UBV photometry, it would be wise to accept 34 Psc (used by previous observers) as a comparison star, and to reduce all the measurements to the international system.

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