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SAO 072799, A NEW BRIGHT ECLIPSING BINARY

The variability of SAO 072799 (BD +37^o4713) was detected photographically by one of us. The star was suspected to be an eclipsing binary. This could be confirmed photoelectrically by the other. Despite the fact of a still incomplete light curve we present our results now, to make possible that other observers join the observation of this interesting star.

Photoelectric observations were made by a digital photometer equipped with an EMI 9781B tube in B, using the filters Schott BG 12+GG 13 (2mm), with a 25 cm Schmidt-Cassegrain telescope. SAO 072816 (FO, $m_V = 7^m.6$) served as comparison star, the constancy of which was checked with SAO 072806 (MO, $m_V = 7^m.1$). The latter was found to be variable during the course of the observations ($A \sim 0^m.1$).

The observed minima of SAO 072799 are given in Tab.I. It was possible to find retrospectively some more on the photographic films. The times of these minima are also included. The

Table I

The minima with asterisks were extrapolated from parts of the decrease or increase

Epoch	Min. JD2444...	O-C	p or B
-15.5*	143.4913	+0.163	p
0*	257.2789	-0.0037	p
35.5	518.4573	+0.1863	p
51	632.2236	+0.0090	p
83	867.4795	-0.0013	B
84.5*	878.6625	+0.1541	B
88.5*	908.0849	+0.1684	B
89	911.5875	-0.0040	B
89.5	915.4233	+0.1559	B

star shows primary and secondary minima of almost equal depth. From the times of the primary minima the following elements were calculated:

$$\text{Min.} = \text{JD } 2444 \ 257.2826 + 7^{\text{d}}.351785$$

$$\quad \quad \quad \pm 43 \quad \quad \quad \pm 65$$

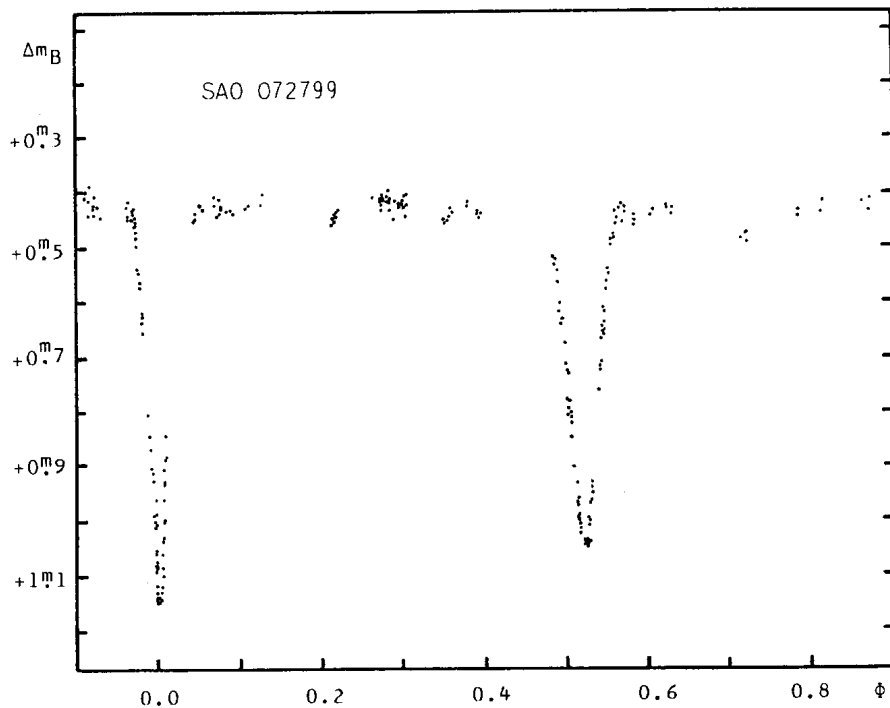


Figure 1

The O-C against these elements are also given in Tab.I, in the case of the secondary minima the O-C against the phase 0.50 is calculated. With these elements the lightcurve in Fig.1 was obtained from the observations in B. The secondary minimum lies clearly excentric at the phase 0.52. Also the shape is different from that of the primary. The latter shows a "D" of 10.0, and a "d" of 0.6 hours, the values for the secondary are: "D" 13.6, "d" = 1.6 hours. The amplitudes in B are $A_1 = 0.74$, $A_2 = 0.64$. Whereas the primary minimum is symmetric, the secondary shows a

steeper increase immediately after the constant phase. Also the maximum light seems to be distorted. Especially around the phase 0.2 after both minima a small decrease in brightness ($.0^m.08$) is obvious. This has been found also repeated in the photographic light curve and was originally described as secondary minimum in IBVS 1885. All other peculiarities described here were also found by the photographic observations. After completion of the light curve all data will be published in "BAV-Rundbrief".

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Reference:

Frank, P., 1980 IBVS No. 1885