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THE LIGHT VARIATIONS OF THE Ap STAR HR 8861

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Summary. — Photoelectric observations of the Ap star HR 8861 carried out from 1967 to 1971 at Catania Astrophysical Observatory are presented. A new value of the period (0.617 135 days) was found.

Key words : Ap stars — Magnetic stars — Light variations.

1. **Introduction.** — HR 8861 (= HD 219 749 = ET And) is a broad lined B9p Si star (Osawa, 1965) which has been observed photoelectrically in *UBV* by Rakosch (1962), who found a period of $2^d.604$ and a considerable scatter of single observations. Later on, from the same set of data, Renson (1965) found a period of $0^d.723$ which was in better agreement with the period-line width relation. Schöneich *et al.* (1976), from 10 colours photoelectric observations, found a period of $1^d.615\ 53$. Recently, Sezer (1978) gives evidence of a shorter period namely $0^d.499\ 25$.

Because of the considerable scatter of the Rakosch's (1962) observations noticed by Renson (1965), HR 8861 has been put in our programme of photoelectric observations of Ap stars to look for a better determination of the period.

2. **The observations.** — Photoelectric observations of HR 8861 have been carried out at the Stellar Station of the Catania Astrophysical Observatory from 1967 to 1971 in our natural system using a 30 cm Cassegrain telescope. The photoelectric equipment, the sequence of observations and the technique of reduction are the same as described in Blanco *et al.* (1978). The comparison stars C_1 = HD 219891 (A2, V = 6.40) and C_2 = HD 219668 (KO, V = 6.42, B-V = 1.07, U-B = 1.02), whose spectral types and magnitudes are taken from Blanco *et al.* (1968), are the same as those used by Rakosch (1962) and by Schöneich *et al.* (1976) ; the magnitude differences C_2-C_1 did not show any variation during the whole period of observations. The number of observations per year, the seasonal value of the extinction coefficients and the standard deviation are reported in Table I, where the year code is also given. Individual magnitude differences ($m_{VAR} - m_{C1}$) versus the Julian day date are stored at the Stellar Data Center in Strasbourg. With our method of period determination (Blanco *et al.*, 1978) we found a new value of the period through which we obtained the best representation of the light variations. The ephemeris elements are the following :

$$JD_0\ (U \text{ light max}) = 243\ 9751.28 \pm 0.617\ 135\ E \pm 0.01 \pm 0.000\ 015$$

The resulting *U, B, V,* light curves are plotted versus the phase in figure 1 with the year codes given in Table I.

Although the variation amplitudes are of the same order as the scatter of the observations, they seem to be a real effect since the light curves are repeated unchanged during all the years of observations.

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TABLE I. — *Number of observations, seasonal value and standard deviations of the extinction coefficient for HR 8861. The codes used to distinguish the different years of observations in the figure are also given.*

Year	Code	Number of observations Mean value of the extinction coefficient Standard deviation	*U*	*B*	*V*
1967	x		79	79	68
			.704	.450	.318
			.251	.168	.215
1968	△		69	78	74
			.643	.391	.288
			.211	.129	.216
1969	●		25	20	16
			.787	.529	.423
			.332	.330	.335
1971	○		73	68	63
			.587	.342	.189
			.163	.191	.115

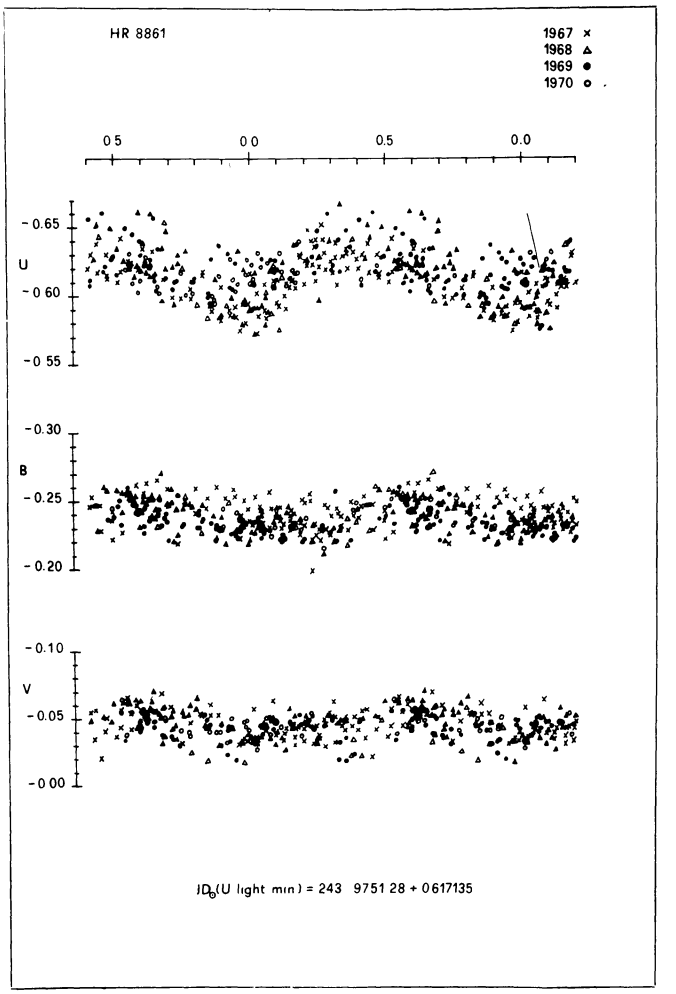

FIGURE 1. — Magnitude differences Hr 8861 — HD 219891 versus the phase computed from the elements

JD_0 (*U* light max) = 243 9751.28 + 0.617135 E .

Code is as follows : x = 1967, △ = 1968, ● = 1969, ○ = 1971.

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