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ON THE PHOTOMETRIC VARIATIONS OF HD 28843 AND HD 29009

The CP stars HD 28843 = HR 1441 (He weak) and HD 29009 = HR 1449 (B9 Si) have published photometric periods of respectively 1.37375 days (Pedersen, 1979, based on spectroscopic as well as photometric data) and 3.82 days (Renson and Manfroid, 1981).

In spite of the large amplitude of its variations, HD 28843 was not known to be variable until 1977, and we used it as a comparison star for HD 29009 in several observing runs conducted at that time. Fortunately a second comparison was included, HD 27563, and differential measurements led us to derive periods for HD 28843 and HD 29009.

Analysis of new uvby data obtained in the framework of the Long Term Observing Programme at ESO, showed that HD 27563 is also variable, with a complex behavior (Manfroid and Mathys, in preparation), displaying variations of several hundredths of a magnitude on a time scale of days.

Careful absolute reduction of all of our old data concerning HD 28843 and HD 29009, using sophisticated techniques (Manfroid and Heck, 1983) allowed to study both stars without the interference of HD 27563, and to derive new periods. Table I shows the repartition of our observations and the telescopes used. Observations of Pedersen and Thomsen (1977) were included for HD 28843.

Table I

Date	Telescope	Number of observations HD 28843	HD 29009
November 1977	La Silla Danish 50 cm	42	42
December 1978	La Silla ESO 50 cm		8
September 1981	La Silla Danish 50 cm		7
January - February 1976 (Pedersen - Thomsen)	La Silla Danish 50 cm	11	
Total		53	57

The periods derived from these data are:

HD 28843 P = 1.37390 $\pm$0.00015 d

HD 29009 P = 3.79864 $\pm$0.00015 d

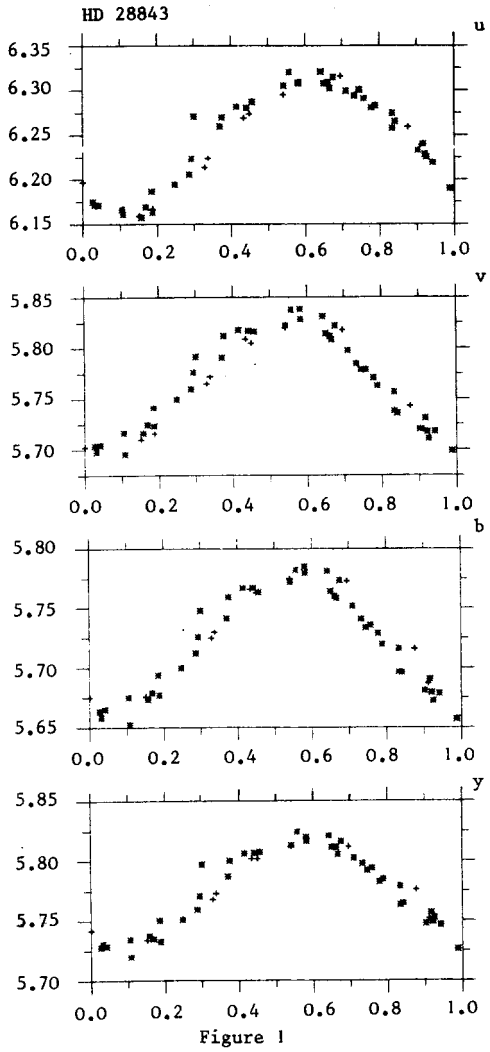

Figure 1

Phase diagrams for HD 28843 in u,v,b and y. Phase origin is JD 2442778.614 (same as in Pedersen and Thomsen, 1977). (+ Pedersen and Thomsen, January-February 1976, *November 1977)

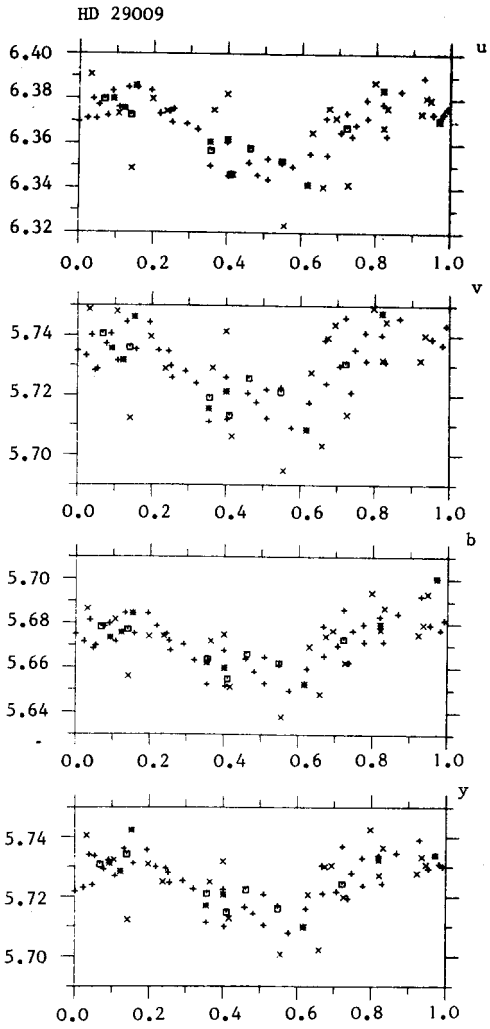

Figure 2

Phase diagrams for HD 29009 in u,v,b and y. Phase origin is JD 2443455.6421. (+November 1977, *December 1978, ⊡September 1981, xLong Term Programme)

and lie within the possible ranges quoted by the previous authors. (For HD 29009, a period of about 3.84 days cannot be definitely excluded; however this value is much less likely.) The phase diagrams are presented in Figures 1 and 2.

Additional data from the ESO Long Term Photometric Programme are being obtained for HD 29009. However the variety of the equipments used so far in this programme is so large that no refinement of the period could be made. Analysis and inclusion of those data is under way however (Renson and Manfroid, in preparation). Figure 2 shows several points of good quality in 1982/83, which tend to confirm our value of the period of HD 29009.

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