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HD 34409 - A SUSPECTED NEW VARIABLE STAR

Between January 1968 and January 1970, three-colour photo-electric photometry of the eclipsing binary AS Cam was carried out at the University Observatory, St Andrews, using the 40 cm Nishimura reflector. The star HD 34463 was adopted as comparison star, and no evidence was found for variability. However, the secondary comparison star HD 34409 (BD +69°315) was found to vary in brightness on four out of a total of fourteen nights. Graphs of the yellow observations ( $\lambda_{\text{eff}}=5350 \text{ \AA}$ ) on these four nights are presented in Fig.1. Differential magnitudes were formed in the sense (HD 34409 minus HD 34463) and running means of two observations were then taken. Correction for differential extinction of the yellow observations was unnecessary since the differential air mass never exceeded 0.001.

Estimates of the (B-V) and (U-B) colour indices of HD 34463 and HD 34409 were obtained on only one night (JD 2440261) as follows:

Star	(B-V)	(U-B)	HD spectral Type
HD 34463	+0 <sup>m</sup> .19	+0 <sup>m</sup> .08	A5
HD 34409	+0.39	+0.18	F2

The mean errors are +0<sup>m</sup>.02 in (B-V) and +0<sup>m</sup>.04 in (U-B). The colours of HD 34463 correspond well with the HD spectral type of A5 (Johnson 1963). The (B-V) colour index of HD 34409 is in agreement with the HD spectral type of F2 but its (U-B) value indicates an apparent ultraviolet depression.

During November 1970, five spectrograms of HD 34409 were obtained at Haute Provence Observatory using the 152 cm telescope and coudé spectrograph. Three of the spectrograms have dispersions of 20Å/mm and the other two were taken at 12Å/mm. The spectral type of F2 is confirmed. There is no sign of doubling of the absorption lines and no indication of emission components. The rotational velocity is estimated from the profile of MgII  $\lambda$ 4481 (Slettebak 1955) to be  $v \sin i = (165 \pm 30) \text{ km sec}^{-1}$ .

The light variations closely resemble Delta Sct variability in appearance and duration, and the spectral type is certainly within the appropriate range. The rotational velocity is, however, at the upper limit for Delta Sct variables (Dickens 1967) but this could be compatible with the small light amplitude.

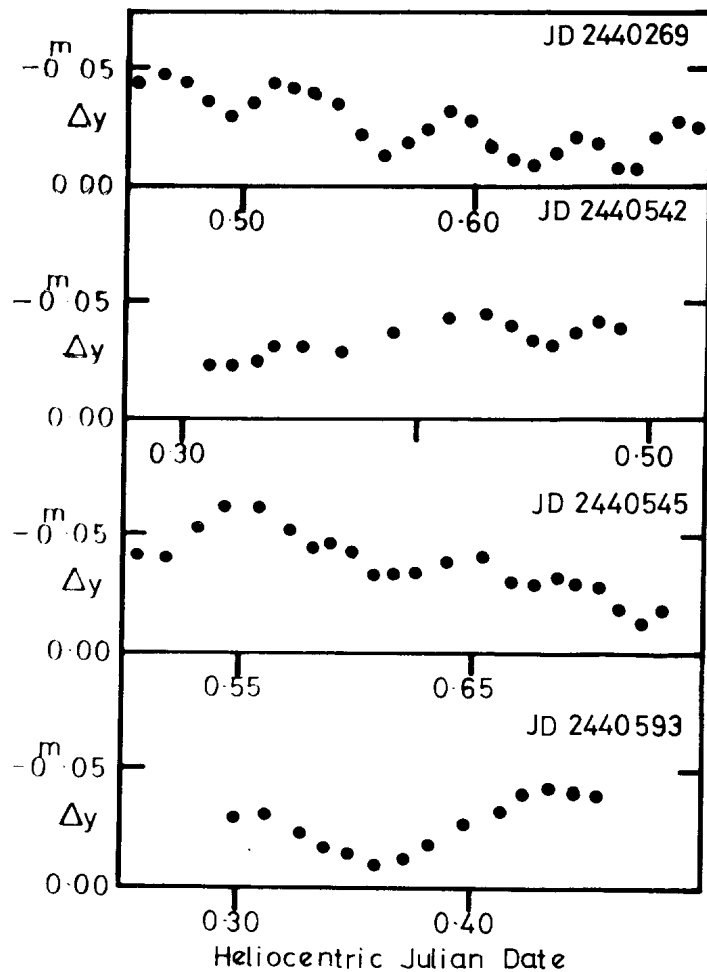


Fig.1

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