Part 2. The Status of Stellar Variability
Section 2E. Other Variable Sources and Data Analysis

Photoelectric Photometry of Two Chromospherically Active Stars: HD 29697 (= V834 Tau) and HD 82443

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Abstract We have photometrically observed HD 82443 and HD 29697 (= V834 Tau) using the 48-cm Cassegrain reflector with an SSP-5 photometer of Ege University Observatory during the 1996–1997 observing seasons. The observations were made between November 1996 and March 1997 in *B*, *V*, and *R* filters, and the light curves with color variations were obtained. The amplitudes of the light variations have been approximately estimated as 0.05 and 0.1 magnitude for HD 82443 and HD 29697, respectively, but considerable scattering is seen among all the phases.

1. Introduction

It is a well-known fact that one can classify to some extent the types and forms of activity of single and binary stars by observing them through the electromagnetic spectrum. The difference between the activity levels of single and binary stars also has an influence on the evolution of those stars. Even so, photometric observations of chromospherically active single stars should be considered as an important step for the understanding the differences relative to the activity mechanism of binary stars.

In recent years, stars exhibiting active chromospheres have been included in a fast observing schedule by Henry *et al.* (1995), using robotic telescopes. In this study, we present the preliminary results relating to the photometric data of HD 29697 = V834 Tau and HD 82443, both of which are known to be chromospherically active single stars. Observations have been carried out at the Ege University Observatory with the 48-cm Cassegrain telescope using *B*, *V*, and *R* filters, between November 1996 and May 1997.

2. Observations and results

2.1. HD 29697 = V834 Tauri

HD 29697, a K4-type main sequence star, shows Ca II H and K, and H-alpha emission lines in its spectrum (Young *et al.* 1989) and has a constant velocity. According to the photometric study of Henry *et al.* (1995), the rotation period is 3.936 ± 0.003 days. The amplitude of light variations is measured approximately as 0.17 magnitude in visual. During the period 3 November 1996 through 7 March 1997, HD 29697 was observed for eighteen nights. We obtained 158 observations through each filter. HD 29169 was taken as the comparison star. Atmospheric extinction was taken into account for each color. Light (*V* shown here) and color curves of the star with respect to photometric phase are shown in Figures 1a and 1b.

2.2. HD 82443

The spectral type of HD 82443 is K0V, and it shows Ca II H and K emission lines. The periodogram analysis made by Henry *et al.* (1995) gives the rotation period P = 5.43 ± 0.03 days. Epoch time is taken as HJD 2447573.78 (Messina and Guinan 1996). HD 82443 was observed for twenty-five nights between 3 November 1996 and 5 May 1997, and 157 observations were obtained. Atmospheric extinction was taken into account for each color. Light (*V* only) and color curves of the star with respect to photometric phase are shown in Figures 2a and 2b.

3. Acknowledgements

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References

Henry, G. W., Fekel, F. C., and Hall, D. S. 1995, *Astron. J.*, **110**, 2926.
Messina, S., and Guinan, E. F. 1996, *Inf. Bull. Var. Stars*, No. 4286.
Young, A., Ajir, F., and Thurman, G. 1989, *Publ. Astron. Soc. Pacific*, **101**, 1017.

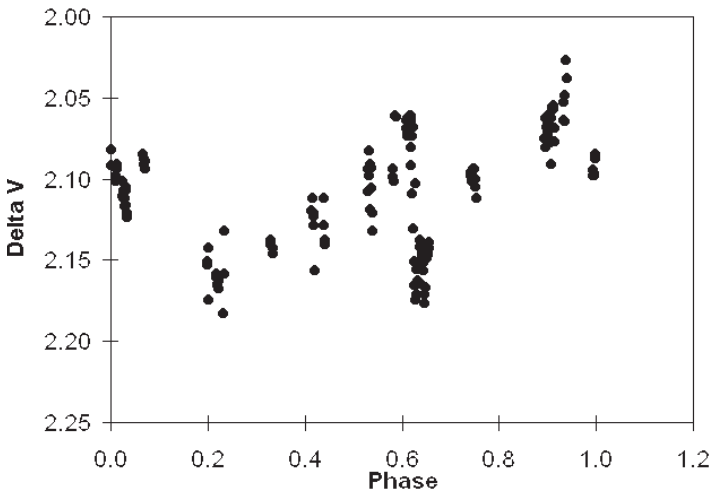

Figure 1a. HD 29697 = V834 Tauri: light curve of the star with respect to photometric phase.

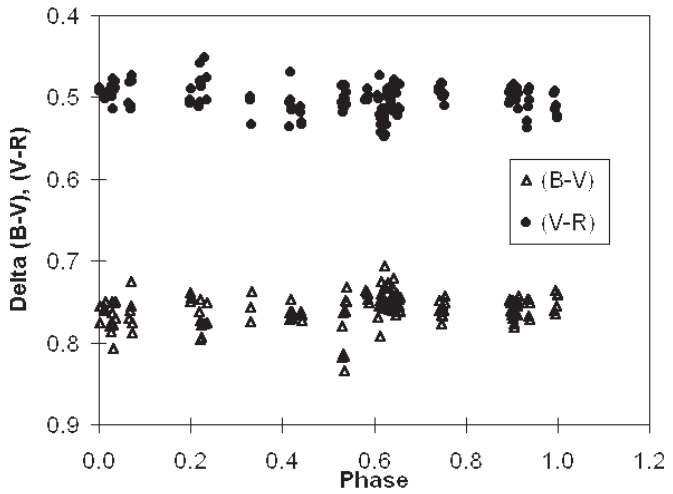

Figure 1b. HD 29697 = V834 Tauri: color curves of the star with respect to photometric phase.

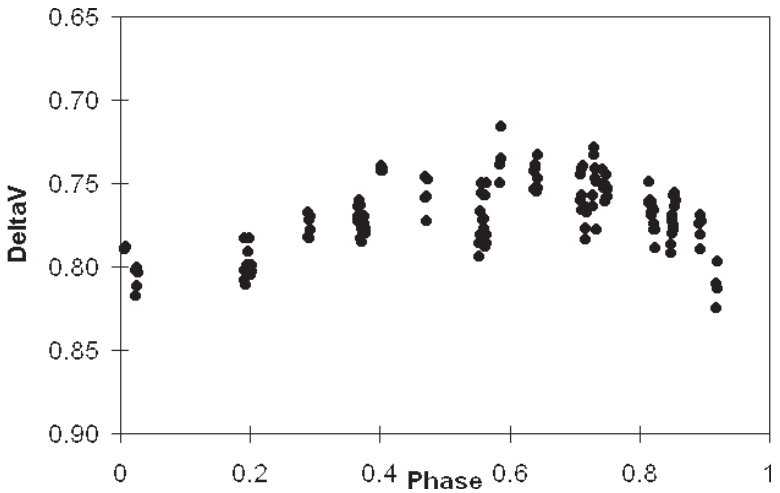

Figure 2a. HD 82443: light curve of the star with respect to photometric phase.

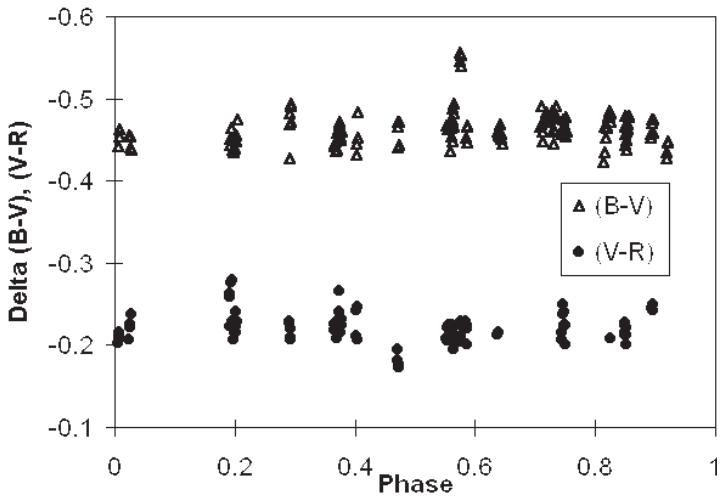

Figure 2b. HD 82443: color curves of the star with respect to photometric phase.