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VARIABILITY OF TWO SUPERGIANTS: HD 3940 AND HD 10494

Most of the supergiants show light and/or radial velocity variations (see e.g. Abt 1957, Rufener *et al.* 1978). The cause of the variation is probably pulsation (e.g. Maeder 1980, Lovy *et al.* 1984) though there are other suggestions (e.g. rotation, see Harmanec (1987)).

Two supergiants have been observed with the 1-m (during 1984–86) and 50-cm (during 1987–89) telescopes of Konkoly Observatory in Piszkestető. The stars are HD 3940 (A1 Ia) and HD 10494 (F5 Ia). They are members of the associations Cas OB7 and Cas OB8, respectively (Humphreys 1978). Small amplitude radial velocity variations in HD 10494 were discovered by Smolinski *et al.* (1980).

HD 3940 was observed relative to BD+63°82, the check star was BD+63°87. The check-comparison difference in V is $0.^m756 \pm 0.^m013$. Only the V light curve is displayed in Figure 1 (together with the check star magnitudes), which shows that the mean V value of HD 3940 decreased by $0.^m15$ in three years. The $U-B$ curve follows the same pattern while the $B-V$ curve is its mirror image. A period of $9.^d7$ is expected from the PLC relation of Lovy *et al.* (1984), but neither this nor any other reasonable value could be derived from the data. The cause of the variation is unlikely to be pulsation, but there is insufficient information now even to guess its origin.

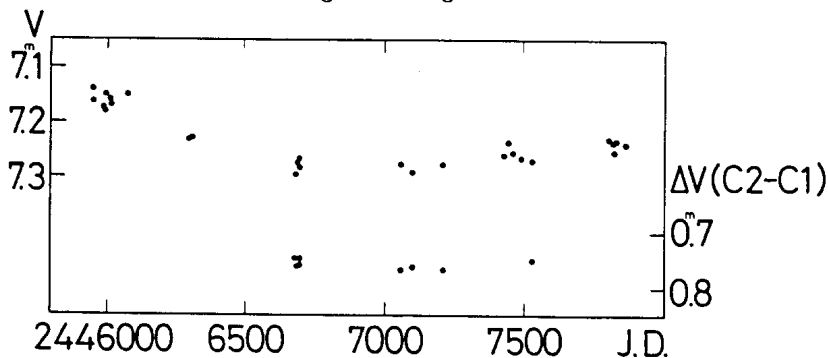


Figure 1

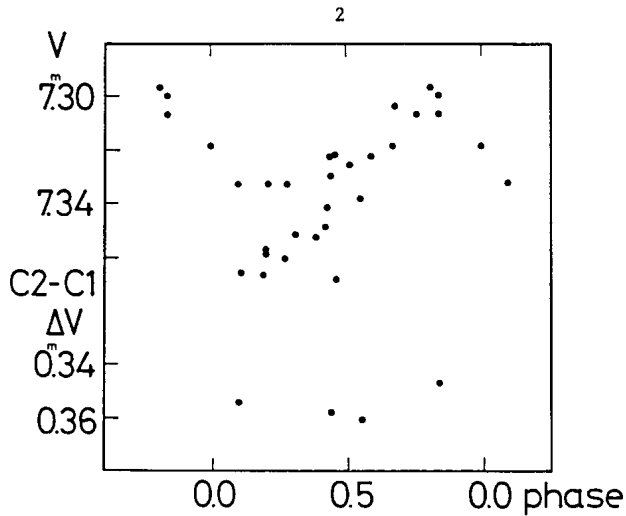


Figure 2

HD 10494 was observed relative to BD+60°312, the check star was BD+60°308. Their difference in V is $0.^m353 \pm 0.^m006$. Figure 2 is a plot of the V magnitudes of HD 10494 phased with a possible period of $12.^d7$. The amplitude is $0.^m05$ which is the expected value for an F5 supergiant (Maeder 1980). The amplitudes of the colour curves are negligible.

The period of the radial fundamental mode of an F5 supergiant is $39.^d8$ (using the T_{eff} , M_V and B.C. values given by Humphreys (1978)), while the suggested period for HD 10494 is $12.^d7$. If this period is real, then it means that either the star pulsates in overtone or the cause of the variability is not pulsation.

No further observations are planned, the data are available upon request.

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References

- Abt, H. A. 1957, *Astrophys. J.* **126**,138
 Harmanec, P. 1987, *Bull. Astron. Inst. Czechosl.* **38**,52
 Humphreys, R. M. 1978, *Astrophys. J. Suppl.* **38**,309
 Lovy, D.; Maeder, A.; Noëls, A.; Gabriel, M. 1984, *Astron. Astrophys.* **133**,307
 Maeder, A. 1980, *Astron. Astrophys.* **90**,311
 Rufener, F.; Maeder, A.; Burki, G. 1978, *Astron. Astrophys. Suppl.* **31**,179
 Smolinski, J.; Climenhaga, J. L.; Harris, B. L. 1980, *Acta Astron.* **30**,427