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THE PERIOD OF THE Bp STAR HD 213918

HD 213918 (BD $+38^{\circ}4801$), m_v=8.715, is a very hot, Si λ4200 star (Bertaud, Floquet 1974). Its projected rotational velocity is 80 km/s according to Wolff (1980). It has a rather deep λ5200 depression, since its peculiarity index Z is -0.048, leading to a photometric estimate of the mean surface field H_S (Z, X) = 4.0 kG (Cramer and Maeder 1980a, b). It is a visual double star (ADS 16064) with 1.8" separation and visual magnitudes 8.7 and 13.2. So the companion has a negligible influence on the colours and amplitude of variations.

Furthermore, HD 213918 is a member of the association Lacerta OB1 and is relatively young ($1.26\ 10^7$ yrs after Abt (1979)). This fact, together with the high estimated field (4.0 kG is actually a lower boundary, because the relation between Z and H_S is not bijective) makes such an object interesting.

It was observed between 26 September and 4 October 1980 from the Gornergrat Observatory with the 1m telescope, in the Geneva photometric system. Eleven differential measures have been obtained, with HD 213801 and HD 214243 as comparison stars; these proved to be constant over the observing time span, while HD 213918 shows variations of about $0^m.07$ through the V filter (the measures of the other magnitudes have not yet been reduced). A period P=1.43 ± 0.03 days was derived using the Θ_1 test proposed by Renson (1978), see Fig. 1.

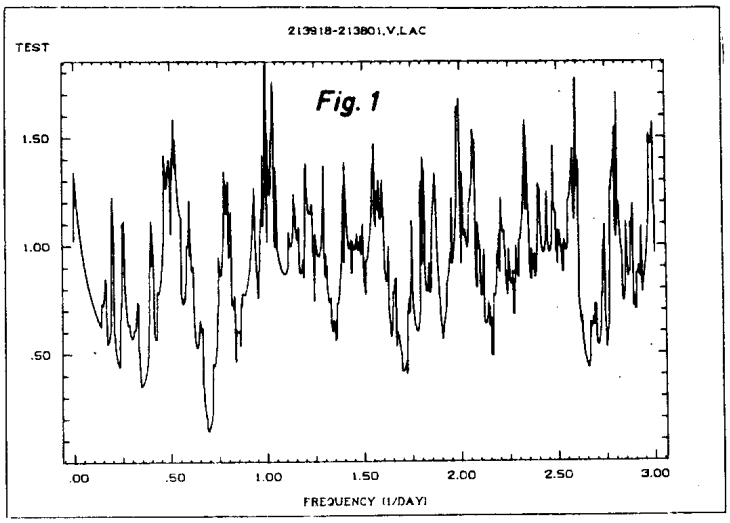
213918-213801.V.LAC
TEST
1.50
1.00
.50
.00
.50
1.00
1.50
2.00
2.50
3.00
FREQUENCY (1/DAY)

Fig. 1

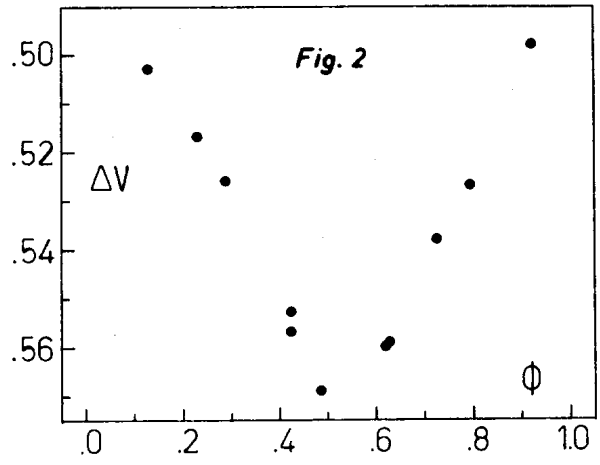
.50
.52
.54
.56
ΔV
.0
.2
.4
.6
.8
1.0
Φ

Fig. 2

The V magnitudes relative to the first comparison star (HD 213801) are shown in Fig. 2 as a function of the phase, according to the ephemeris

$$\text{J.D. (max. light)} = 2444509.32 + 1^{d}.43E$$

Differential extinction was taken into account.
If a radius $R = 3\ R_{\odot}$ is assumed, then the real rotational velocity may be estimated from the relation $V = 50.6\ R/P = 106$ km/s. This is about half the value admitted for field late-B stars (Slettebak 1954). From Vsini = 80 km/s the inclination is 49°.

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