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DETECTION OF VARIABILITY IN HD 191850

We obtained two nights of differential photometry of HD 191850 (22/23 and 25/26 July 1994). The observations were done at the ESO 50 cm telescope at La Silla. The observer was E. Paunzen. The measurements are in the Strömgren photometric system and the integration time was 40 seconds. Two comparison stars were observed (C1: HD 191542, $m_V=9.6$, A5V and C2: HD 191760, $m_V=8.9$, G3IV/V). Both comparison stars proved to be constant within an upper limit of 0.01 mag in Strömgren *b*.

The spectral type of HD 191850 is A3 II/III. The following calibrations have been adopted by the Strömgren indices (Moon & Dworetzky, 1985):

$$T_{eff} = 7400 \text{ K}, \log g = 3.7, \delta m_0 = 0.057$$

Because of the decreased metallicity and the classification as luminosity-class II/III star, HD 191850 is a candidate for the λ Bootis group (Gray, 1991) which contains metal weak A type stars with broad and shallow hydrogen lines (the properties of this group are described by Weiss et al., 1994). Further observations have to prove the membership in the λ Bootis group.

Two theories exist concerning the evolutionary status of this group. In one case diffusion would be the determining mechanism and the stars are at the end of the ZAMS phase. In the other hypothesis accretion and/or mass-loss would be responsible for the low metallicity and the stars are just arriving at the ZAMS.

The tools of asteroseismology should make it possible to determine the position of stars within the HR-diagram. We started therefore a survey for periodic variability among λ Bootis stars. Up to now we found 8 new pulsating stars. For HD 191850 the maximum peak in the frequency spectrum appears at $f=13.53$ c/d ($P=106$ minutes) with a semi-amplitude of 0.034 mag in Strömgren *b* (see Figure 2). This period is consistent with an expected period of an A type star at the ZAMS (Stellingwerf, 1979). Figure 1 shows the light curve for the first night for all three measured stars. All light curves are in instrumental magnitudes with an offset.

This amplitude spectrum gives some evidence for the presence of more than one pulsation frequency. In spite of the rather poor quality of both nights, the variability of HD 191850 seems to be well established. Further observations have to improve the reported results.

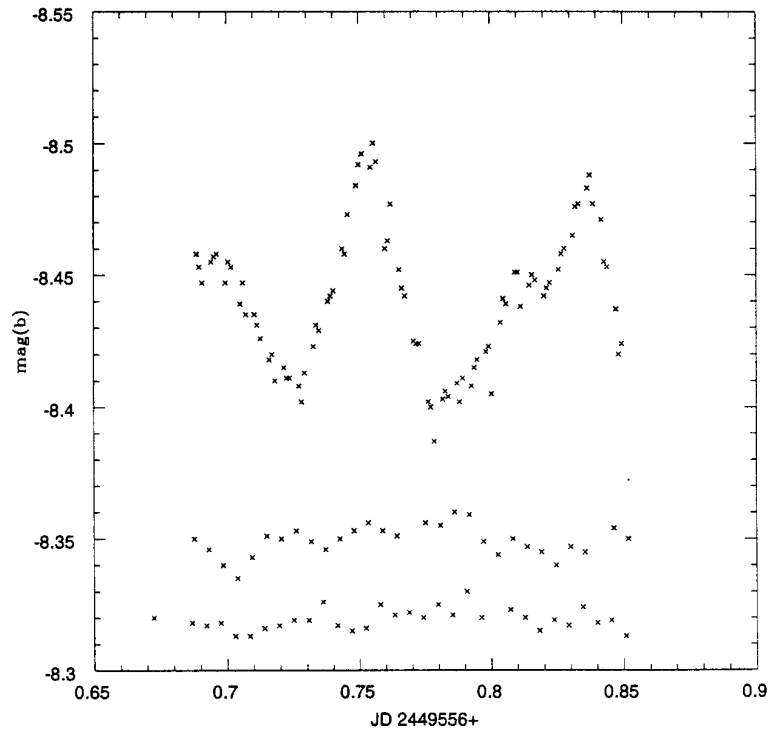


Figure 1. The light curve for HD 191850 (upper panel), C1 (middle panel) and C2 (lower panel) for the first night in Strömgen b

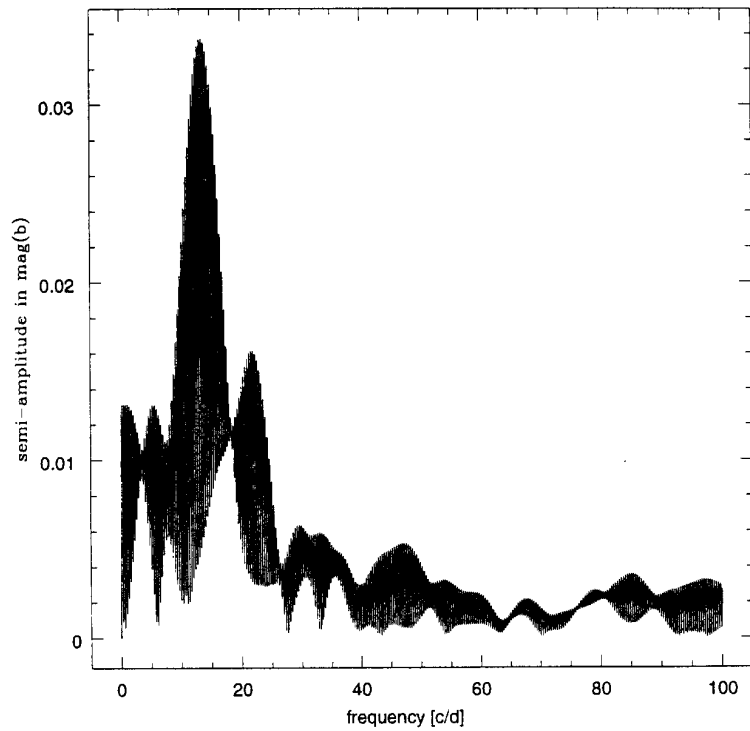


Figure 2. Amplitude spectrum for the differential data of HD 191850 and HD 191542

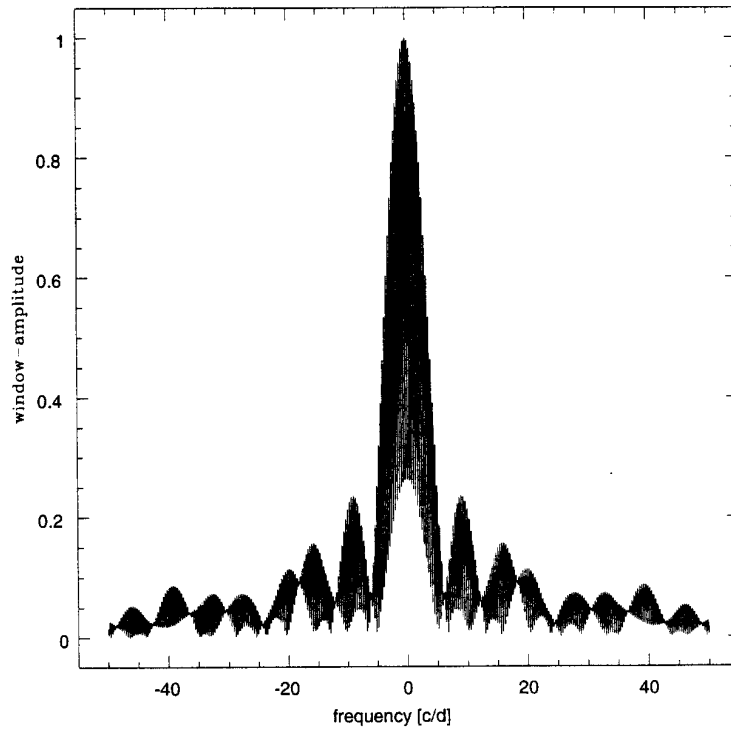


Figure 3. Spectral window for the differential data of HD 191850 and HD 191542

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E. PAUNZEN
 U. HEITER
 W.W. WEISS
 Institut für Astronomie
 Türkenschanzstr. 17
 A-1180 Wien, Austria
 E-mail: PAUNZEN@ASTRO.AST.UNIVIE.AC.AT

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