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NEW PHOTOMETRIC DATA FOR HD 142703 AND HD 192640

We present new photometric data for HD 142703 and HD 192640, two λ Bootis stars which were found to be variable in former publications. The λ Bootis stars are a group of metal poor, population I, A-type stars (Weiss et al., 1994).

HD 142703 ($m_V = 6.1$) was found to be variable in 1994 (Paunzen & Weiss, 1994) with a period of 46 minutes and an amplitude of 10 mmag in Strömgren v and b . Additional observations were published in 1995 (Paunzen et al., 1995). They result in a period of 87 minutes and an amplitude of 7 mmag in Strömgren v and b . At this stage we were only able to confirm variability in HD 142703 but could not decide between the two proposed periods. Therefore we reobserved HD 142703 to determine its period and amplitude.

The observations were made in the night of 02/03 May 1995 by E. Paunzen with the 0.6 meter Lowell telescope at CTIO with an integration time of 10 seconds in Strömgren v and b . HD 142640 ($m_V = 6.4$, F6V) was used as comparison star. The lightcurves of both stars are shown in Figure 1. The result of a Fourier analysis (period = 80 minutes, amplitude(b) = 8 mmag) seems to confirm the results of 1995.

HD 192640 (29 Cygni, HR 7736, $m_V = 5.0$) is one of the ‘classical’ and best studied λ Bootis type stars. Its peculiarity was discovered by Slettebak (1952). Abundance analysis of this star (Venn & Lambert, 1990 and Stürenburg, 1993) gave a metal deficiency of about a factor of 50 compared to the Sun.

Pulsation was first reported by Gies & Percy (1977). They analysed 3 nights of photometry and determined a multiperiodic variation of about 45 minutes with an amplitude of about 10 to 30 mmag in Johnson V . They used 28 Cygni as comparison star. 28 Cygni is known as a variable Be star. Its frequency pattern is quite complicated and the periods range from 3 to 18 hours (Peters & Penrod, 1988 and Bossi et al., 1993). Therefore we reobserved HD 192640 to confirm its variability.

The observations were made in the nights of 07/08 and 11/12 Aug. 1995 by G. Handler at the 0.9 meter telescope of the McDonald Observatory with an integration time of 50 seconds in Strömgren v and b . We have chosen HD 195050 (HR 7826, $m_V = 5.6$, A3V) and HD 188892 (HR 7613, $m_V = 4.9$, B6III) as comparison stars. The second one turned out to be variable. Figure 2 shows extinction corrected instrumental magnitudes for the second night and indicates multiperiodic variations for HD 192640. The amplitude spectrum for the merged data indicates two periods of 38 and 43 minutes with an amplitude of about 26 and 13 mmag in Strömgren b . This result is consistent with Gies & Percy (1977).

We encourage further observations of HD 142703 and HD 192640 to apply the tools of asteroseismology.

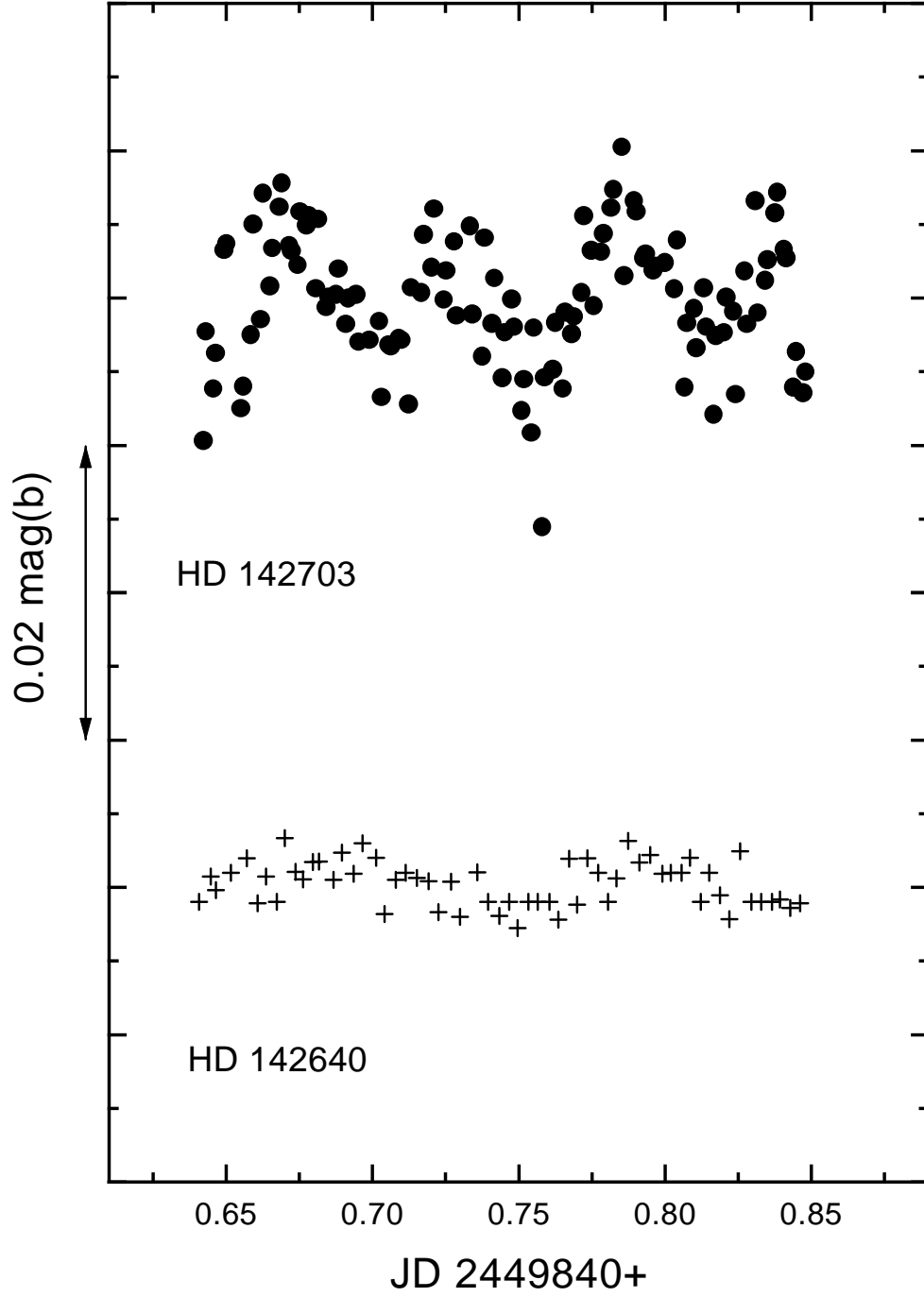


Figure 1. Lightcurves for HD 142703 (\bullet) and HD 142640 ($+$) in Strömgren b .

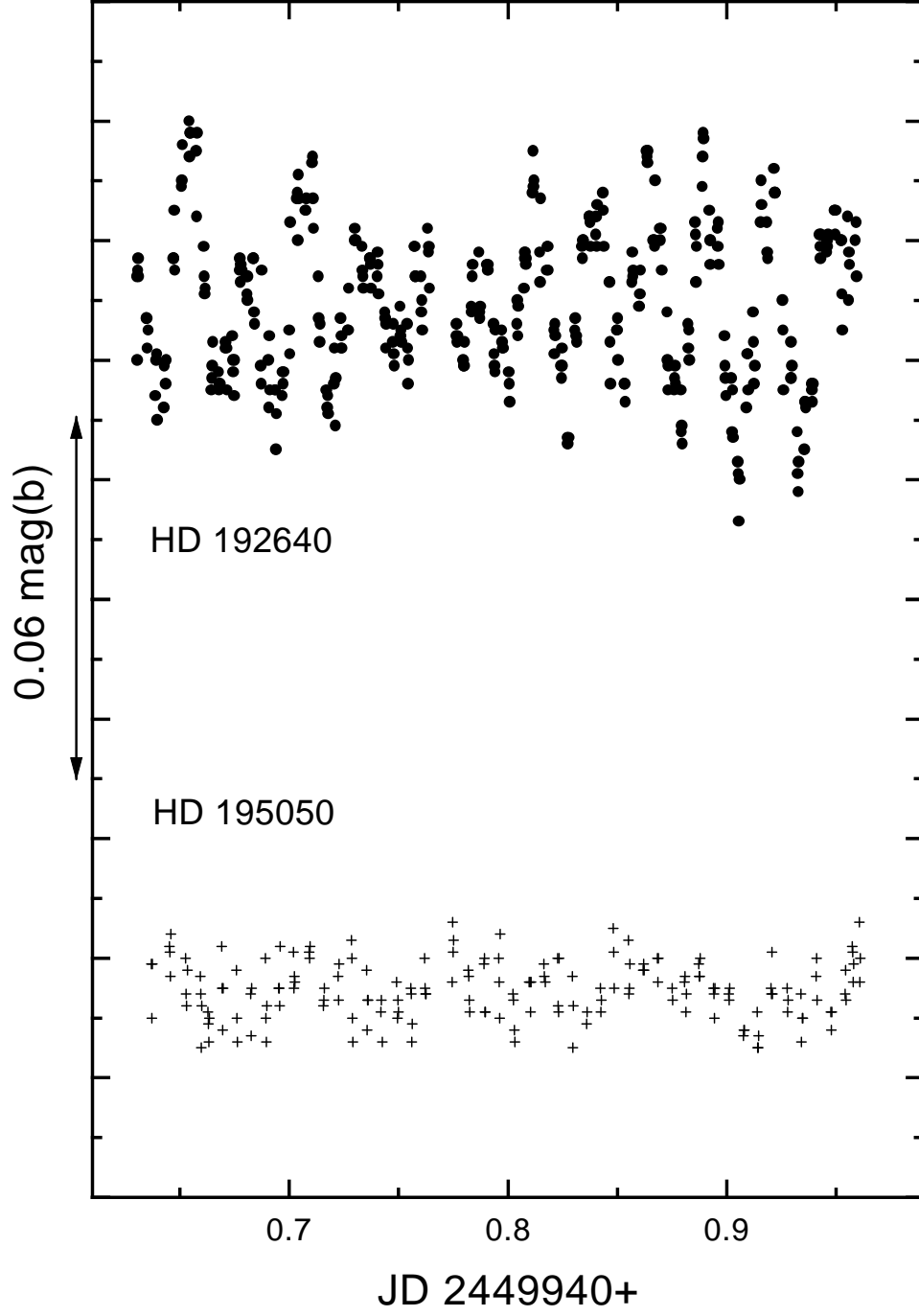


Figure 2. Lightcurves for HD 192640 (\bullet) and HD 195050 ($+$) in Strömgren b for the second night.

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