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HD 17892, A NEW DELTA SCUTI STAR

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We are currently undertaking a large multisite campaign for the main-sequence δ Scuti star XX Pyx (Handler & Breger 1997). Since this star is not available all night from Northern Hemisphere observatories, we selected a backup program for the rest of the nights. We decided to undertake a search for rapidly oscillating Ap (roAp) stars in the Northern Hemisphere. Our candidates were carefully selected from Strömgren and Geneva photometry as well as spectral classification.

The observations were carried out with a two-channel photometer attached to the 0.9m telescope at McDonald Observatory, Fort Davis, Texas. We acquired continuous 10-second integrations through a Johnson B filter in both channels, only interrupted by sky background measurements.

As our first target, we chose BD+39°654. It has been classified as SrCrEu by Bidelman (1983). Schneider's (1986) Strömgren photometry yields $(b - y)_0 = 0.136$, $\delta m_1 = -0.095$ and $\delta m_2 = -0.267$, while Geneva photometry (Burki et al. 1998) results in $[\Delta] = 0.163$ and $[g] = 0.162$. All these features are typical for roAp stars.

We tested BD+39°654 for rapid light variations in the night of January 16/17, 1998. We chose HD 17892 as our channel 2 comparison star. While our roAp candidate did not show indications of variability, we noticed light variations of the comparison star and continued the observations. The reduced light curve of HD 17892, where the integrations have been summed into 2-minute bins, is shown in Figure 1 together with an amplitude spectrum for both stars.

A frequency analysis of this run yields a period of 71.2 ± 1.3 minutes with a B amplitude of 4.1 ± 0.4 mmag. The error bars have been determined following Kovács (1981) and should be taken only as formal values; the real errors may be higher by up to a factor of 2. From an inspection of Figure 1 it can be suspected that the light curve of HD 17892 is multiperiodic, but our data set is too small to prove this.

The HD spectral type of HD 17892 is A5. From this and from the period and amplitude we derived for the star we conclude that it is a δ Scuti pulsator. Mode stability considerations allow us to estimate that this object is near the middle of its main sequence evolution. Strömgren photometry would allow to support this conclusion, but no optical photometric indices of HD 17892 have been determined up to now.

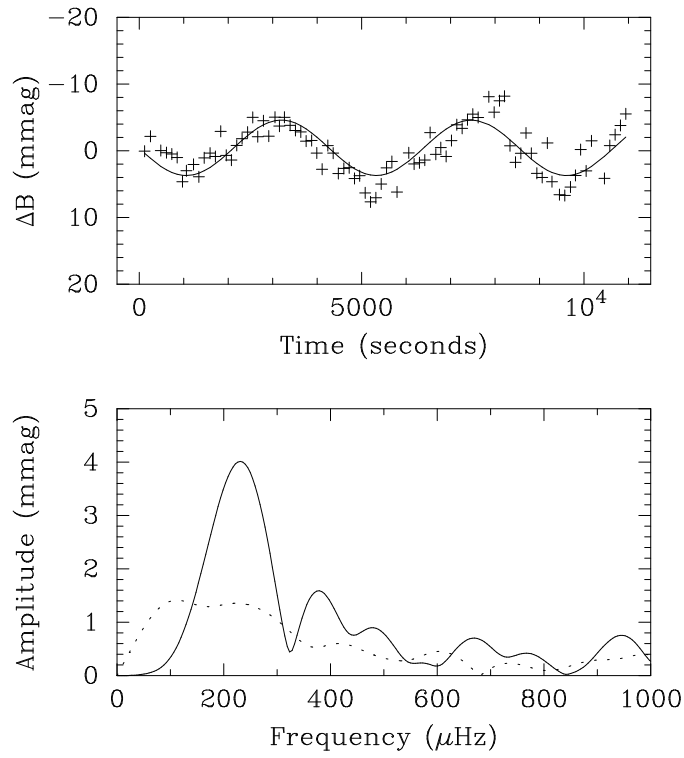


Figure 1. Upper panel: reduced light curve of HD 17892 together with a single-frequency fit (see text). Lower panel: amplitude spectrum of this run for HD 17892 (full line) and BD+39°654 (dashed line)

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