HD 84800: A NEW $\delta$ SCUTI VARIABLE

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We present photometric data for HD 84800 establishing $\delta$ Scuti type variability for this star. Furthermore we solve the previous discrepancy of different spectral classifications (A4 V or A2 II) in the literature by using the Hipparcos parallax. As a result of the analysis the found periodicity is likely to be a high overtone $\ell$-mode.

HD 84800 (HIP 48129, $V = 7.79$) was originally used as one of the comparison stars for HD 84123 (HIP 47792, $\lambda$ Boo spectral type, $V = 6.81$) during a photometric survey of pulsating $\lambda$ Bootis stars (Paunzen et al. 1998). Our program star HD 84123 as well as the second comparison star HD 84388 (HIP 47934, F2 spectral type, $V = 7.10$) turned out to be constant.

Photometric observations were performed with one of the University of Vienna automatic photometric telescopes (APT) in the night of 06/07/1997 with an integration time of 30 seconds. For a detailed description of the APT see Strassmeier et al. (1997). Figure 1 shows the differential light curves for all three stars in Strömgren $b$. A preliminary Fourier analysis of these data results in a frequency of $42 \text{ d}^{-1}$ ($= 486 \mu\text{Hz}$), $P = 34 \text{ min}$ and a peak-to-peak amplitude of $6.3 \text{ mmag}$ (Figure 2).

Using the Hipparcos parallax $\pi = 6.66 \pm 0.95 \text{ mas}$, and assuming $E(B-V) = 0$ (Bartkevičius et al. 1992) we estimate an absolute magnitude $M_V = +1.91 \pm 0.32 \text{ mag}$ for HD 84800. This result confirms the spectral type A4 V (Bartkevičius et al. 1992) and rejects the A2 II classification by Bartaya (1979). Note that for an A2 II star the corresponding $M_V$ is about $-3 \text{ mag}$.

In order to estimate a $Q$-value for the detected pulsation, typical astrophysical quantities for an A4 V star were adopted from Schmidt-Kaler (1982) since neither Strömgren nor Geneva photometry is available: $\log g = 4.3$, $T_{\text{eff}} = 8500 \text{ K}$ and $B.C. = -0.16 \text{ mag}$. These parameters give a $Q$-value of 0.015 days based on López de Coca et al. (1990):

$$\log Q = -6.456 + \log T_{\text{eff}} + 0.5 \log g + 0.1 M_{\text{bol}} + \log P$$

A comparison with theoretical $Q$-values listed in Stellingwerf (1979) results in the exclusion of the fundamental and the first overtone mode for the detected variability. However, this conclusion remains preliminary since “tabulated” values for a “standard” A4 V-type star have been used.
**Figure 1.** The differential APT light curves for HD 84123, HD 84388 and HD 84800 in Strömgren $b$. 
Figure 2. Amplitude spectra for all three stars

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