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Multi-Site Observations of the Delta Scuti Stars V624 Tauri and HD 23194

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Abstract. Some results of the photometry multi-site observations of two δ Scuti stars,V624 Tau and HD 23194, are presented. The observations were carried out in the framework of a STEPHI network in 1999. We collected 343 hours of useful data and detected seven frequencies in V624 Tau and two frequencies in HD 23194.

1. Introduction

The main purpose of multi-site observations of δ Scuti stars is to obtain detailed information on frequency spectrum of this type of variables. To this aim, V624 Tau and HD 23194, two main sequence δ Scuti stars in the Pleiades cluster, were observed in STEPHI X multi-site campaign in 1999. HD 23246 was used as comparison star. V624 Tau and HD 23194 are short period pulsating variables with magnitudes V = 8.22 and 8.17, and oscillation amplitudes ΔV = 10 mmag and 5 mmag respectively (Rodriguez et al., 2000). The δ Scuti pulsations in V624 Tau were reported by Breger (1972) during a study of variable stars in the Pleiades cluster. The variability of HD 23194 was found by Koen et al. (1999).

2. Observations and frequency analysis

The campaign spanned the period 1999, November 27-December 30. As was done in previous STEPHI campaigns, three observatories approximately equally-spaced in longitude were operating during observations. These are: San Pedro Mártir, in Baja California, Mexico, Xing Long Station in Beijing, China; and Teide Observatory in Tenerife, Spain. The observational procedure and the data reduction were the same as in the previous campaigns (see Álvarez et al., 1998 for details). A total amount of 343 hours of useful data were collected from three

sites. The coverage was 41.3% of the cycle. The amplitude spectrum of the time series was obtained by using the iterative sine wave fit (ISWF). The spectral resolution reached in this campaign is $\Delta\nu = 0.51$ μHz. The frequencies have been obtained by using the prewhitening process, as explained in Álvarez et al. (1998), where the frequency peaks above a 99% confidence level are selected and subtracted iteratively from the original series until the whole spectrum is below this level. Detected frequencies are given in Table 1.

3. Conclusions

V624 Tau and HD 23194 have been found to be multi-mode pulsators with seven frequencies and two frequencies above 99% confedence level respectively. Theoretical work using this observational material is currently being developed (Suárez et al., these proceedings).

Table 1. Modes detected in our target stars above a 99% confidence level. A is the amplitude, S/N is signal-to-noise ratio.

Star		ν (μHz)	A (mmag)	S/N
V624 Tau	ν_1	242.9	1.5	8.2
	ν_2	409.0	0.9	7.2
	ν_3	413.5	2.2	17.5
	ν_4	416.4	0.8	6.3
	ν_5	451.7	1.2	9.7
	ν_6	489.4	1.5	13.0
	ν_7	529.1	0.7	6.8
HD 23194	ν_1	533.6	2.0	9.4
	ν_2	574.9	1.5	6.7

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