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BY PHOTOMETRY OF IOTA BOOTIS

The light variability of Iota Bootis was firstly reported by Guthnick and Prager (1918). Based on two short data series Albert (1980) suggested a 35-40 minute period with 0.025 magnitude variation in B. Kholopov et al. (1985) reported this star as DSCTC type.

Our observations were made on four nights in June 1988 with the 40 cm Cassegrain reflector of JATE University at the Baja Observatory described by Hegedüs (1987).

Iota Boo (=21 Boo=HR 5350=HD 125161=ADS 9198=NSV 06610, $V=4.75^m$ A7V) was observed as var2 during a photometric study of the δ Scuti type star α^2 Boo. Iota Boo is a visual binary, A and B components were observed together.

The comparison star was ϑ Boo (=23 Boo=HR 5404=HD 126660=NSV 06669, $V=4.05^m$ F7V). Although it is a suspected variable (Kukarkin et al. 1982), probably is not δ Scuti star.

The α Boo A+B - ϑ Boo differential light curves in the instrumental BV system are presented in Figure 1. By use of the Fourier analysis of unequally spaced data (Deeming, 1975), the power spectra for all our data were calculated, Table I shows the peaks in the spectrum of the ΔV light curve. The frequency spectrum for ΔB is similar, but there are differences in the position of frequencies.

Table I

	frequency (c/d)	amplitude (mag)
f_1	2.822	0.016
f_2	9.279	0.014
f_3	13.675	0.012
f_4	22.660	0.012
f_5	36.782	0.013

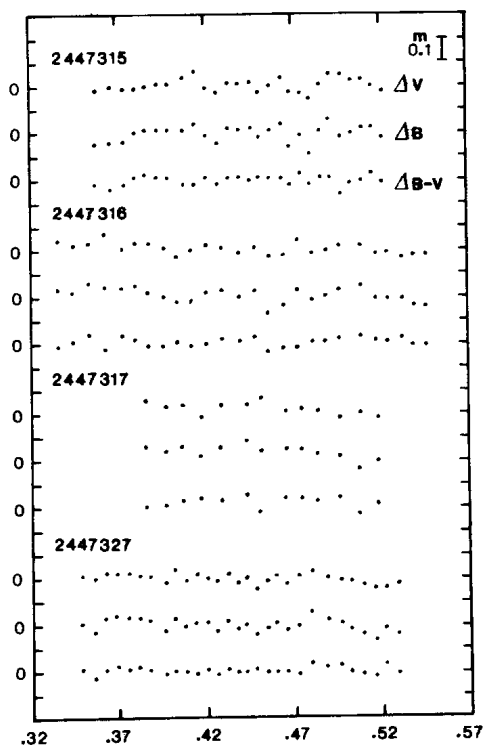


Figure 1. ι Boo A+B - ϕ Boo light curves on four nights. O signs are the averages: $\langle \Delta V \rangle = 0^m.6996$, $\langle \Delta B \rangle = 0^m.4784$, $\langle \Delta B-V \rangle = -0^m.2212$. Data are in IAU Archives as file 167.

In the case of f_2 , f_3 and f_4 the determination of the true frequencies is difficult because the 1 c/d aliases have similar peak-heights. We note that $f_2 + f_3 \sim f_4$ and $f_3 + f_4 \sim f_5$. The short period $P_5 = 38\text{--}39$ minutes is very close to Albert's result.

Our observations were also analysed by the Maximum Entropy Method (Burg, 1975; Ulrych and Clayton, 1976). The data were made equidistant by linear interpolation. One or two peaks at the average period of 0.026^{d} is present on each night. The position of the other peaks at longer periods varies.

There is an interesting group of the δ Scuti stars with such a short period ($0.021^{\text{d}} < P < 0.032^{\text{d}}$): V377 Cas, BG Cet, V624 Tau, V534 Tau, V650 Tau, UU Com, ρ Vir, γ CrB and V 1644 Cyg. These stars have small amplitude and very complex light variation.

We conclude that Iota Bootis may be really a δ Scuti star with a characteristic short period $P = 0.027^{\text{d}} \pm 0.002^{\text{d}} = 39 \pm 3$ minutes. More observations are needed to determine its periodic behaviour.

K. SZATMÁRY

JATE University

Dóm tér 9.

H-6720 Szeged, Hungary

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