NSV 14145 LAC: VISUAL OBSERVATIONS AND RESULTS

Summary: about 400 visual estimates of the suspected variable star NSV 14145 Lac exclude any marked light variation and a certain oscillation period. However small oscillations in the brightness of the star, regular or irregular, cannot be completely excluded.

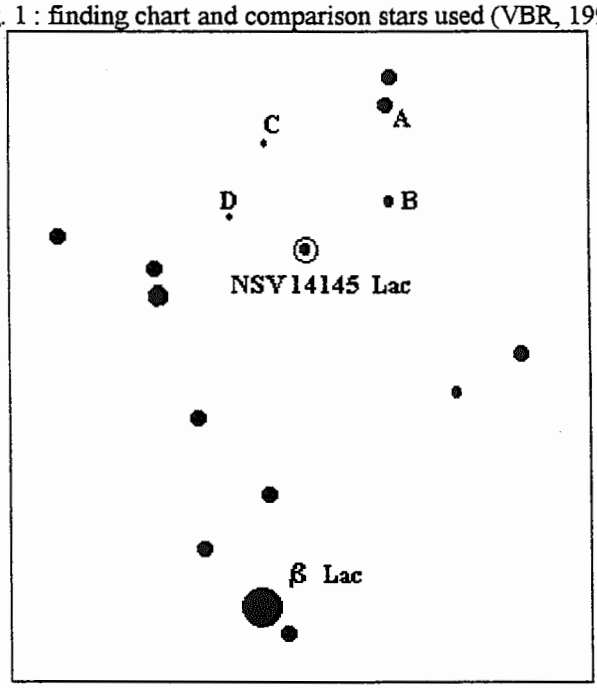
Introduction

In 1958 W.Strohmeier discovered a suspected variable star in Lacerta's constellation at position RA= $22^h\ 19^m\ 36.8^s$ and Dec= +52° 17.3' (1900). The star appeared like a short period variable star ranging from 9.5 to 10.0 mag(1). The NSV catalogue assignes the name NSV 14145 Lac at this suspected variable star, which has an A0 spectrum. Till today nobody has confirmed the variability and, eventually, the type and light elements of the star.

Results and discussion

From 1993 to 1995,3 members of GEOS visually observed NSV 14145 Lac using the finding chart with the comparison stars reported below in fig. 1:

Fig. 1 : finding chart and comparison stars used (VBR, 1993)



In the next tab. 1 the distribution of 371 visual estimates per year and per observer are reported:

Tab. 1 : distribution of visual estimates of NSV 14145 Lac

OBSERVER	1993	1994	1995
BEN	-	43	-
DDL	-	-	148
VBR	128	52	-
TOTAL	128	95	148

A first look of row data does not show any substantial change of the brightness of the star: according to all observers, the visual magnitude is between the comparison stars B and C, never beyond them. Furthermore no sudden decrease or increase of brightness, typical for a short period variable star, was observed. However in order to eliminate every doubt, the most considerable sets of estimates

were processed by RCFM program[2] in order to obtain the relative Fourier power spectra and to identify if any frequency was predominant. These power spectra are reported below:

Fig.2 : power spectrum of VBR's estimates (1993-1994)

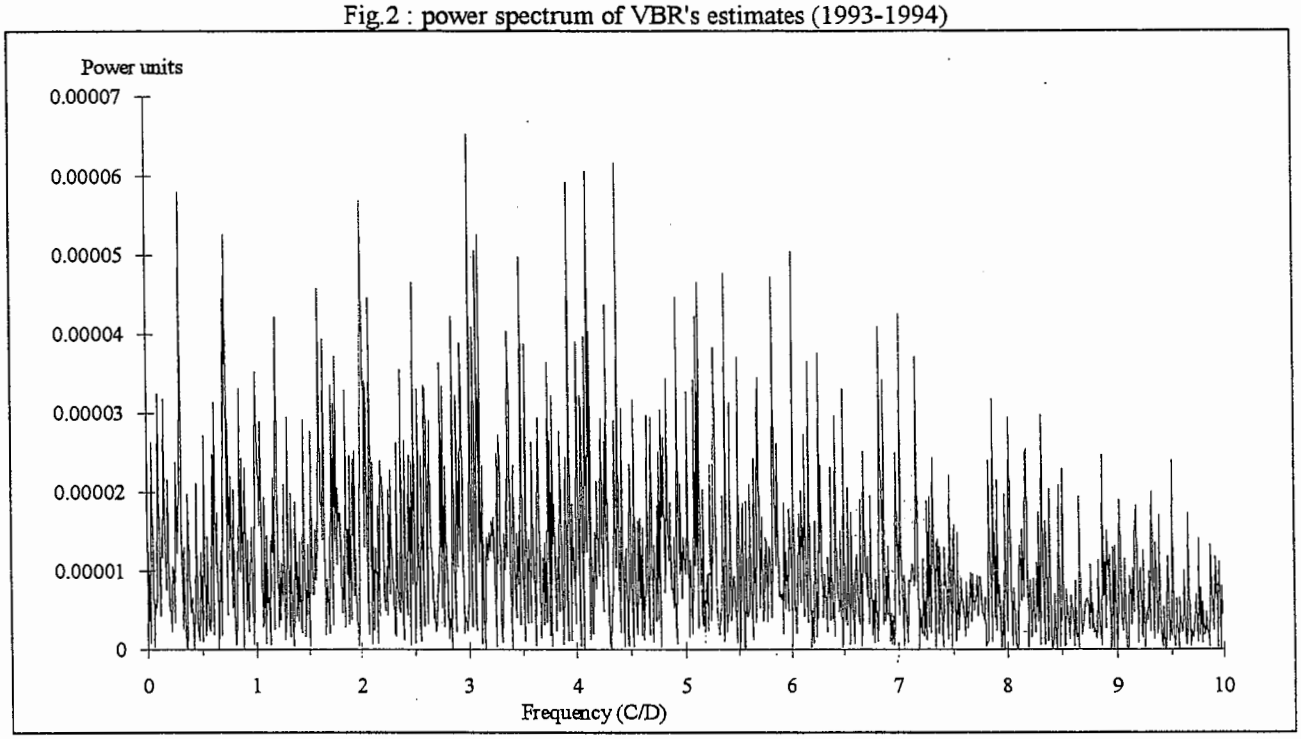
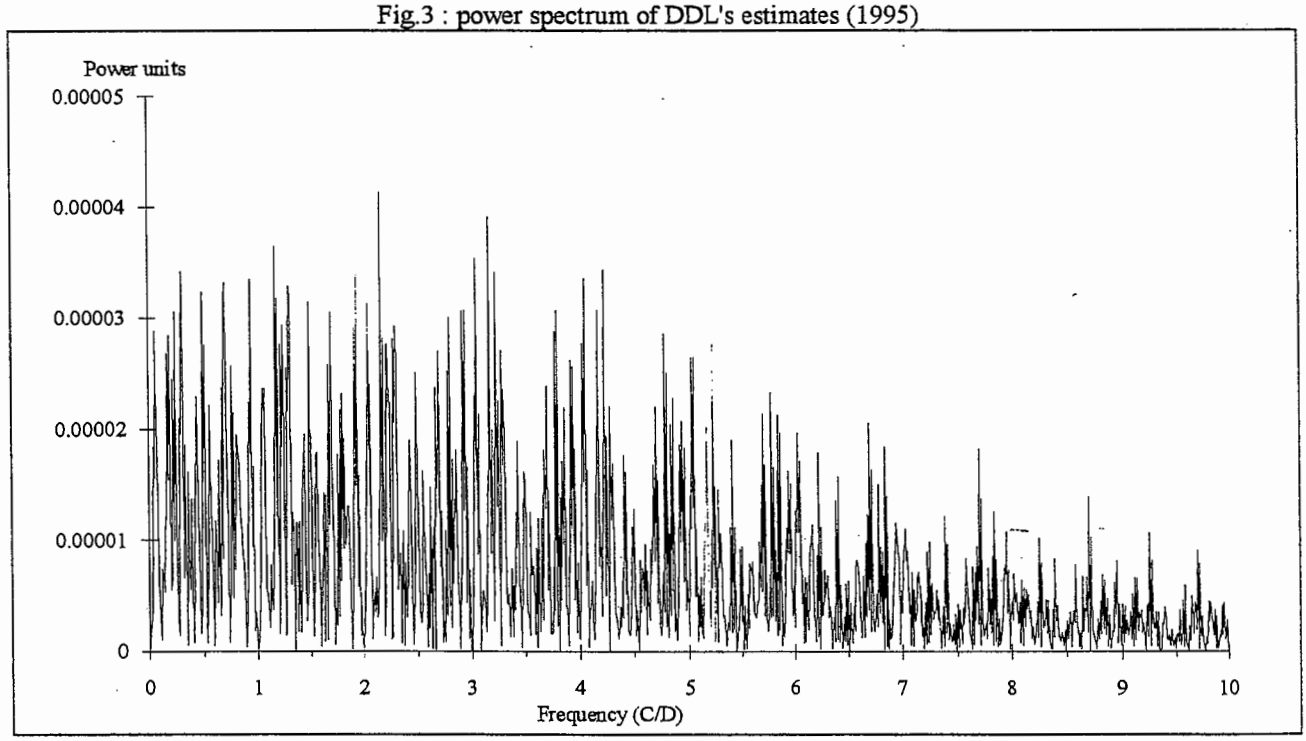
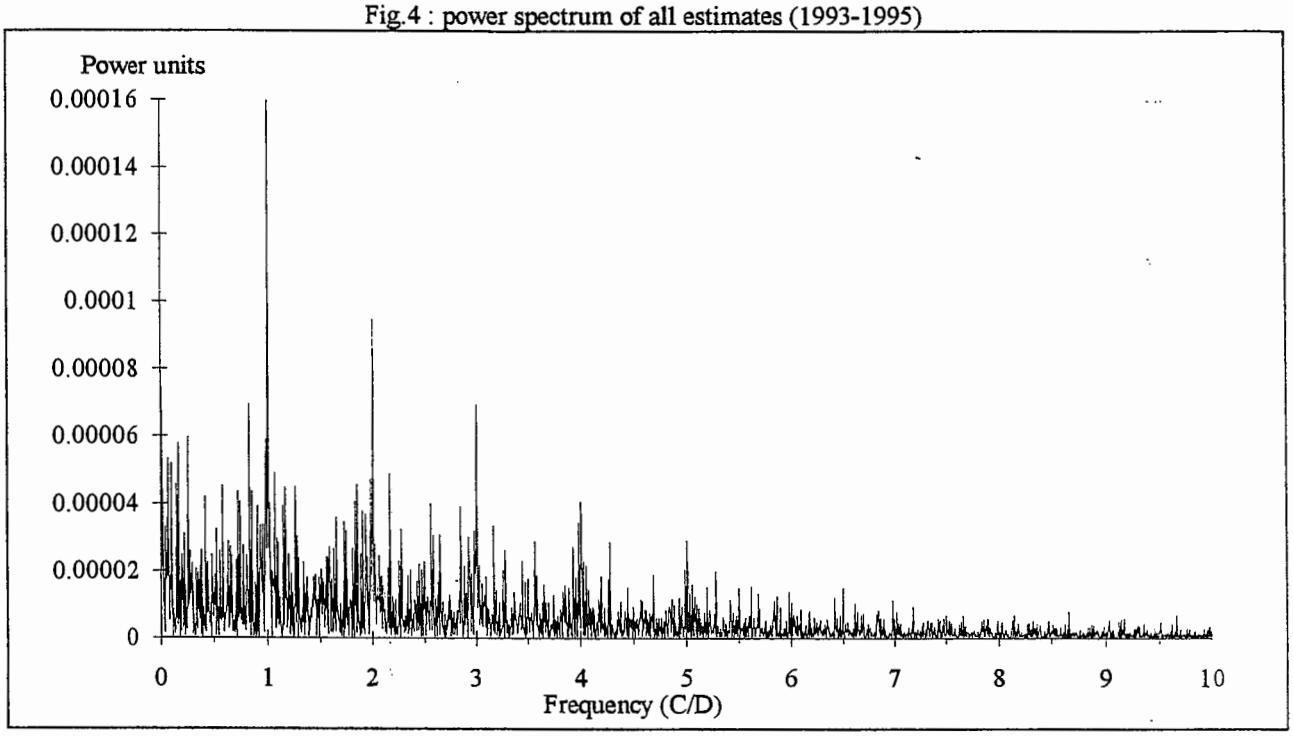


Fig.3 : power spectrum of DDL's estimates (1995)



As we can see there is not a clear oscillation frequency above the others. Both these spectra indicate that a marked light variation as well as a clear periodicity have to be excluded, at least visually. Processing in the same way all data, we have the graph showed in fig.4:

Fig.4 : power spectrum of all estimates (1993-1995)



As a surprise a predominant peak appears, its value is 1.003 C/D which corresponds with the sidereal day: 0.997 day or $23^h\ 56^m\ 4^s$. A clear example of how the earth's revolution and, consequently, the position of the star in the sky affects our estimates.

Conclusions

In the last 3 years, about 400 visual estimates carried out on NSV 14145 Lac by members of GEOS have provided only negative results in the search of visual light variation, and eventually of the oscillation period, of this suspected variable star. Even if visual observations seem to exclude a marked light variation, small oscillations minor than 0.3-0.2 magnitude, regular or irregular, cannot be completely excluded.

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References:

(1) W.STROHMEIER, *KVB*, **24** (1958)
(2) A.GASPANI, *Spectrum Estimation via Recursive Fourier Transform Technique*, (priv. comm.)