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DISCOVERY OF A NEW PULSATING STAR: GSC 04619-00846

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Name of the object:
GSC 04619-00846

Equatorial coordinates:	**Equinox:**
R.A.= $01^{\rm h}14^{\rm m}00\overset{\rm s}{.}7$ **DEC.**= $+84^\circ45'26\overset{''}{.}5$	2000

Observatory and telescope:
Xinglong Station, Beijing Astronomical Observatory, 60 cm reflector

Detector:	CCD, 1024×1024

Filter(s):	BV

Date(s) of the observation(s):
2005.10.03, 2005.10.04, 2005.10.07

Comparison star(s):	GSC 04619-00369

Check star(s):	GSC 04619-01518

Transformed to a standard system:	No

Type of variability:	δ Sct

Availability of the data:
`5658-t1.txt` (V), `5658-t2.txt` (B)

Remarks:

The variability of GSC04619-00846 was discovered during a follow-up observation on the suspected beta Cephei-type variable GSC04619-00450 previously discovered by us (Zhang et al., 2004). We report the discovery of oscillations of the star GSC 04619-00846. B and V CCD photometry observations of the star are presented. In Fig. 1 we plot the light curves collected in both filters. It shows obvious periodic light changes with a total amplitude of about $0\overset{m}{.}04$. To search for periodicity of the light variations, a Fourier analysis was performed by using the algorithm Period04 (Lenz & Breger, 2005). Fig. 2 represents the amplitude spectra produced from the B and V data. A dominant frequency of $f = 13.546 \pm 0.009$ c/d, corresponding to a period of $P = 0.0738 \pm 0.0001$ days is determined for the star. In addition, two more frequencies can be detected at 8.911 ± 0.013 c/d and 18.600 ± 0.014 c/d. This suggests that GSC 04619-00846 could be pulsating with multi-periods. Adopting the B and V magnitudes of the check star GSC 04619-01518, B=11.7 and V=10.6 (Høg et al., 2000), the color indices of the variable can be estimated as $B-V \simeq 0.4$, which suggests a spectral type of about F3 for the star. Therefore we conclude that GSC 04619-00846 could be very probably a new δ Scuti variable.

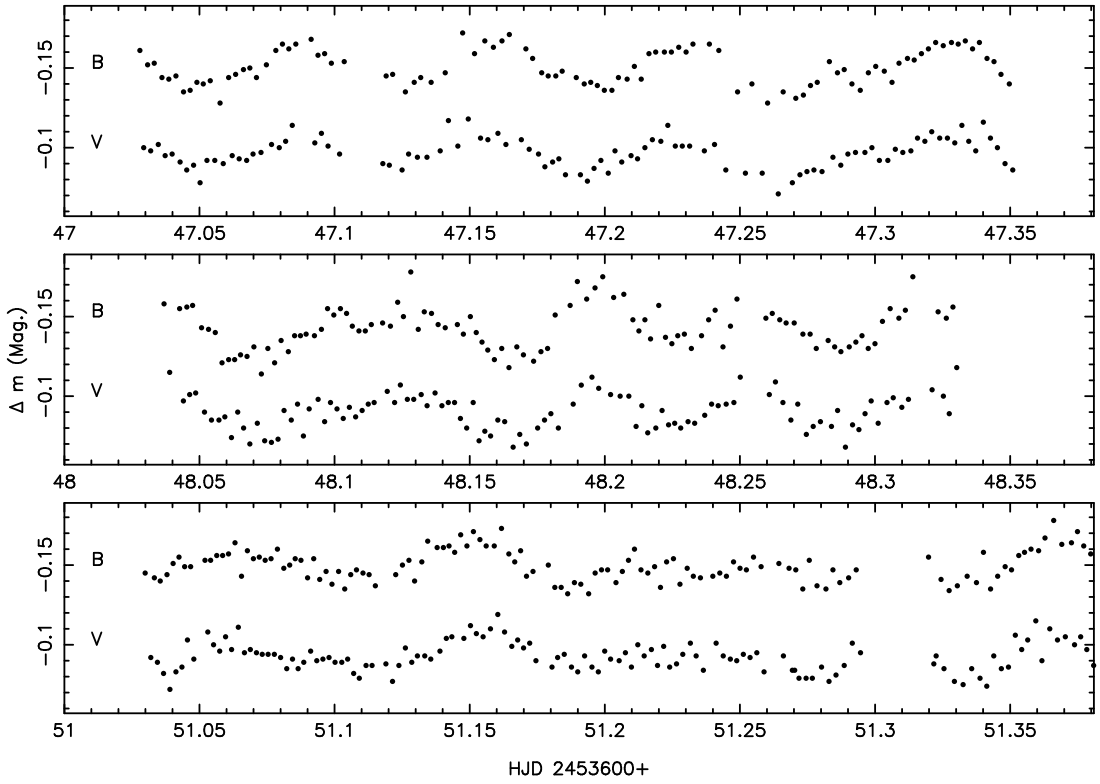

Figure 1. B and V light curves of GSC 04619-00846

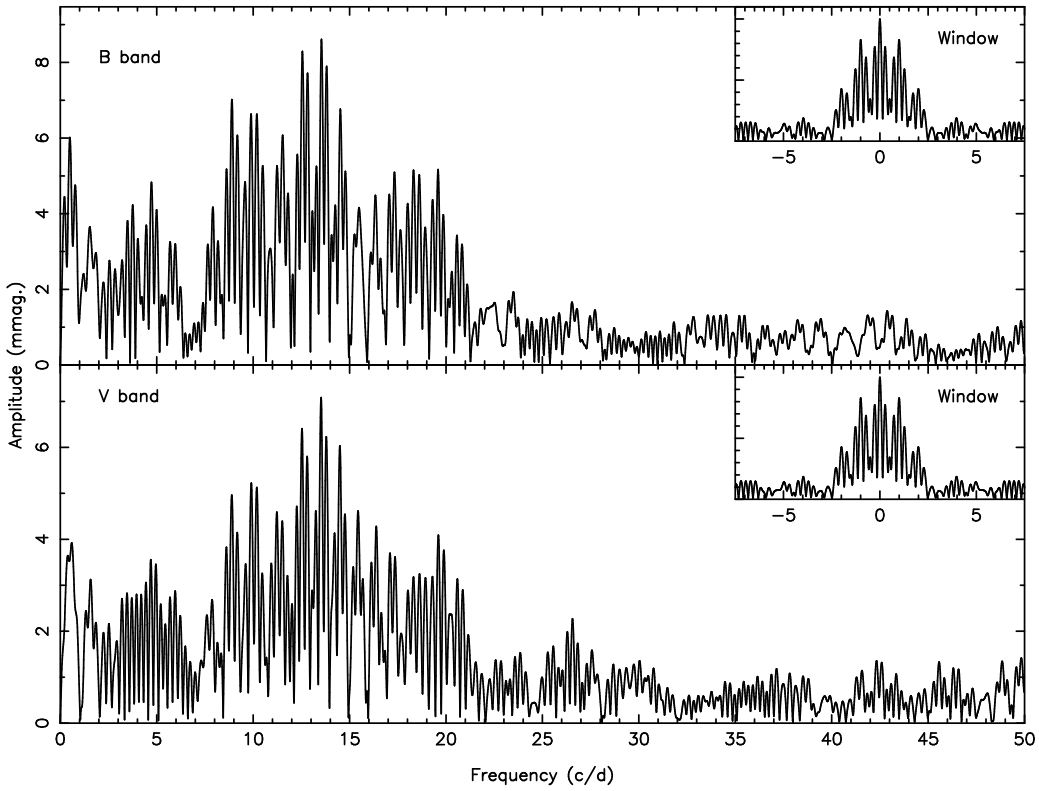

Figure 2. Amplitude spectrum of all the data

References:

Høg, E., Kuzmin, A., Bastian, U., Fabricius, C., Kuimov, K., Lindegren, L., Makarov, V.V., Roeser, S., 1998, *A&A*, **335**, L65

Lenz, P., Breger, M., 2005, *Comm. in Asteroseismology*, **146**, 53

Zhang, X.B.; Deng, L.; Zhou, X.; Xin, Y., 2004, *MNRAS*, **355**, 1369