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NSV 13826: A β LYRAE TYPE ECLIPSING BINARY

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NSV 13826 (≡ GSC 2189.704 ≡ HV 06152 ≡ P 5616) is catalogued as a possible eclipsing or irregular variable from a list published by Shapley and Hughes (1934) and from irregular variations detected by Sandig (1950) on photographic plates. The β Lyrae shape of its light curve was obvious from the visual estimates of several GEOS members and its orbital period appeared to be 1.0803 days (Vandenbroere, 1996).

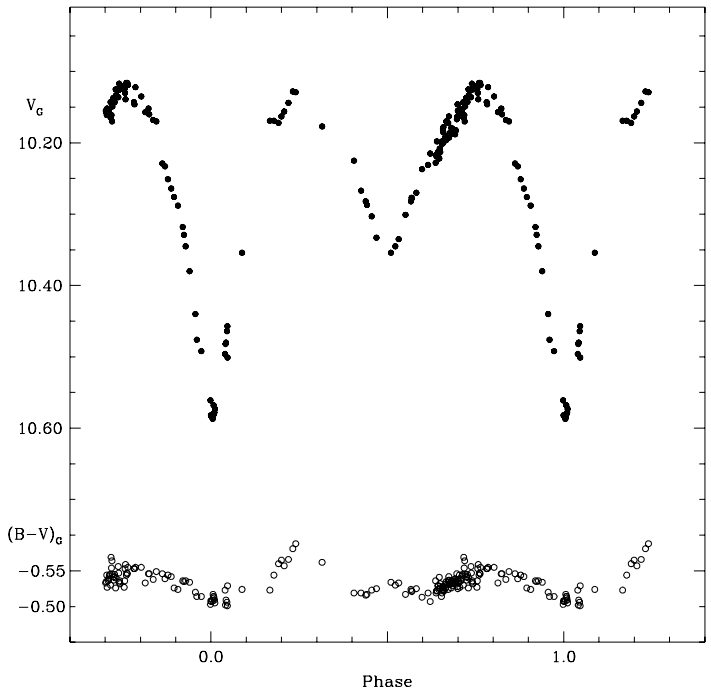

Figure 1. V and $B-V$ (Geneva system) light curves of NSV 13826

This value was used to collect new and more accurate photoelectric data. Therefore, NSV 13826 ($2^h39^m28^s$, $+23°01'.5$, 2000.0) was measured with the 76-cm telescope of the Jungfraujoch station through the B and V filters of the Geneva system. 144 measurements were obtained in each filter between January 1995 and December 1998. The folded V and

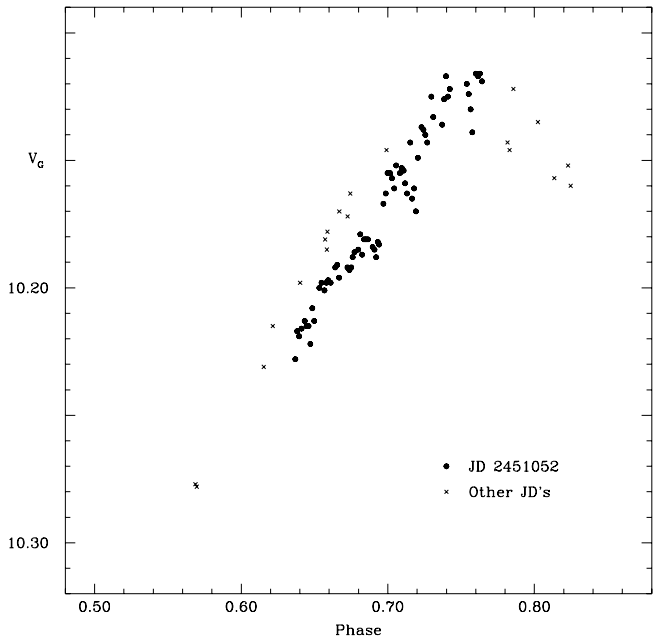

Figure 2. Different behaviours were observed in the 0.65–0.73 phase interval

$B-V$ light curves are shown in Fig. 1. NSV 13826 is a β Lyrae star with $V = 10\overset{\mathrm{m}}{.}12$ at maximum light, a primary minimum as faint as $V = 10\overset{\mathrm{m}}{.}59$ and a secondary one going down to $V = 10\overset{\mathrm{m}}{.}35$. The $(B-V)_G$ colour indices vary slightly from -0.59 to -0.50, which corresponds to a $(B-V)_J$ index of 0.31 to 0.38 after transformation with the formulae described by Meylan and Hauck (1981) and using the luminosity class III.

A more accurate orbital period was calculated by means of the primary and secondary photoelectric minima and of 30 instants extracted from the visual estimates of three GEOS members. The result of the linear regression, giving a triple weight to the photoelectric moments, is:

$$\begin{array}{c} \text{Min I} = \text{HJD } 2449639.835 + 1\overset{\mathrm{d}}{.}080313 \times E. \\ \pm 0.012 \quad \pm 0.000033 \end{array}$$

A close inspection of Fig. 1 shows irregularities in the shape of the light curve, particularly on the shoulders before both maxima. Note also the related behaviour of the $B-V$ curve which mimics the V one. Probably the star is undergoing mass exchanges and short-time scale variability is responsible for the scatter around the 0.65-0.73 phase interval, as better evidenced in Fig. 2.

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