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**BV-PHOTOMETRY AND THE FIRST EPHEMERIS
OF THE ECLIPSING BINARY SYSTEM GV Dra**

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GV Dra (HIP 87576, $V_{\max} = 8^m53$, $B - V = 0^m42$, F2) was between the stars with accurately known position even before the Hipparcos mission so it was included in the extension of the Fifth Fundamental Catalogue (Oja 1985; Fricke et al. 1991). Hipparcos satellite discovered that GV Dra is an eclipsing binary and it is listed in the Hipparcos catalogue (ESA, 1997) as an unsolved EA variable.

Here we present the results of regular photometric monitoring in B and V bands that spanned 122 nights between March 1998 and September 2000. We observed from a private observatory near Cembra, Italy. The instrument was a 28-cm Schmidt–Cassegrain Celestron telescope equipped with Optec SSP5 photometer and standard B and V filters. The diaphragm had the size of 77 arcsec, and usual exposure time was 10 seconds. HD 162131 (HIP 86982, $V = 7^m60$, $B - V = 0^m16$, A2) was chosen as a comparison and HD 162035 (HIP 86955, $V = 8^m27$, $B - V = 0^m03$, A0) as a check star.

All the observations were corrected for atmospheric extinction and colour corrections and the instrumental differential magnitudes were transformed into standard UBV system. The variable, comparison and check stars are very close to each other so the atmospheric corrections were rather small. Altogether we obtained 228 observations in the B and 371 in the V band. Typical error of the B and V magnitudes is 0^m01 . The light curves of GV Dra in each band as well as the $B - V$ colour variations are shown in Fig. 1. Expanded plots around primary and secondary eclipse are shown in Fig. 2.

The ephemeris for GV Dra, estimated on the base of our B and V photometric observations is:

$$\text{Min. I} = \text{HJD } 2451738.411 + 23^d85433 \times E.$$

± 5 ± 3

The B and V light curves show that the depths of the eclipses are remarkably different. The estimated values are 0^m58 and 0^m28 for the primary and the secondary minima respectively. The duration of the primary eclipse is about 11.5 hours. The secondary one lasts significantly longer, about 19 hours. The system is detached with both components well inside their Roche lobes. The position of the secondary minimum at phase 0.736 indicates a considerable eccentricity of the orbit ($e > 0.38$).

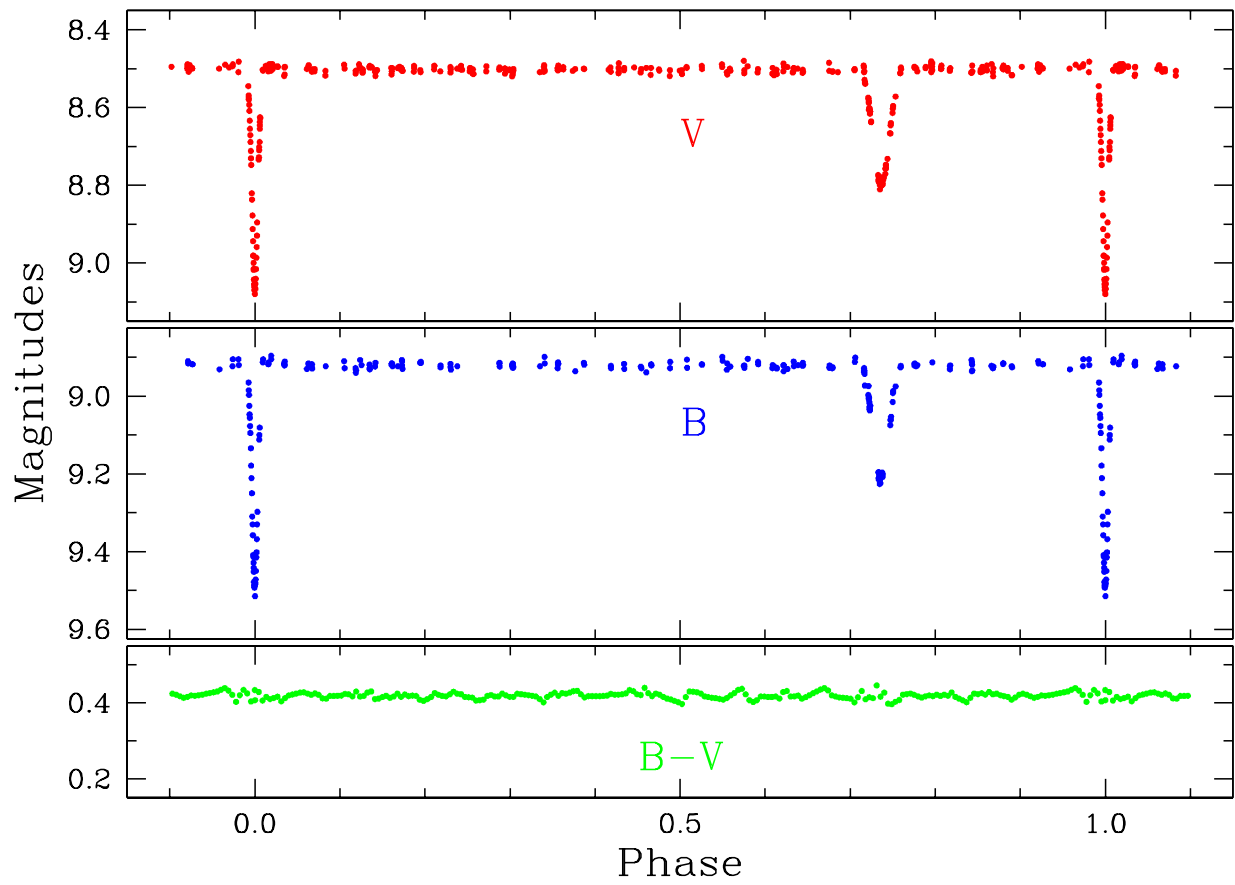


Figure 1. Light curves of GV Dra in B and V filters for the estimated period of 23^d85433 . The bottom panel gives the $B - V$ colour variations.

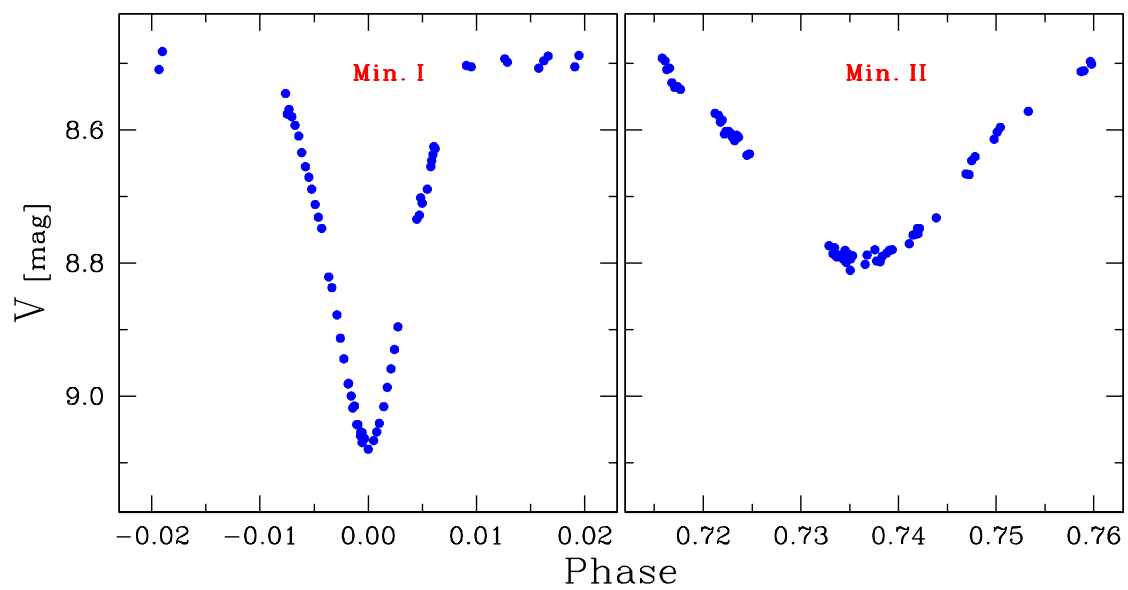


Figure 2. Expanded view around the primary and secondary eclipses in the V band.

The high orbital eccentricity makes GV Dra an interesting target for further spectral and photometric observations in order to determine the physical parameters of this eclipsing system.

The data are available upon request from dallas@inwind.it.

References:

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