

Multicolor Photometry of Peculiar Cepheid Stars Observed in the Konkoly Observatory

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We present our preliminary light curves for Cepheid targets with the aim to check the possible period and color index variation of the stars.

The observations were carried out with the 60/90 Schmidt telescope at the Konkoly Observatory Piszkestető Mountain Station between 2011 and 2015 using Bessel *BVRI* filters. The reduction of the frames (including bias, dark, and flat corrections and aperture photometry) was performed with the FITSH package (Pál, 2012). Some of the program stars show strong period changes or even cycle to cycle variations that our observations clearly confirm. We display here the O–C diagram for S Vul in Fig. 1 and *V* band light curves for two Classical Cepheids: CF Cas and S Vul, two Anomalous Cepheids: BW Com and DT Gem, and two Type II Cepheid stars: AU Peg and IX Cas in Fig. 2, respectively.

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References

- Mahmoud, F., Szabados, L., *Information Bulletin on Variable Stars* **1895** (1980)
Pál, A., *MNRAS* **421**, 1825 (2012)
Pojmanski, G., Pilecki, B., Szczygiel, D., *Acta Astron.* **55**, 275 (2005)

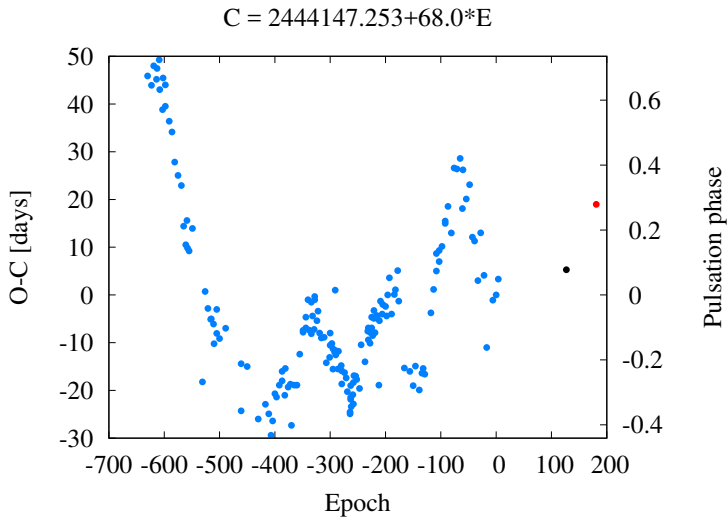


Fig. 1: O–C diagram for S Vul showing the period variation of the star. The blue points are from Mahmoud & Szabados (1980), the black point is from the ASAS Catalogue of Variable Stars (Pojmanski et al., 2005), while the red point is calculated from our new observations.

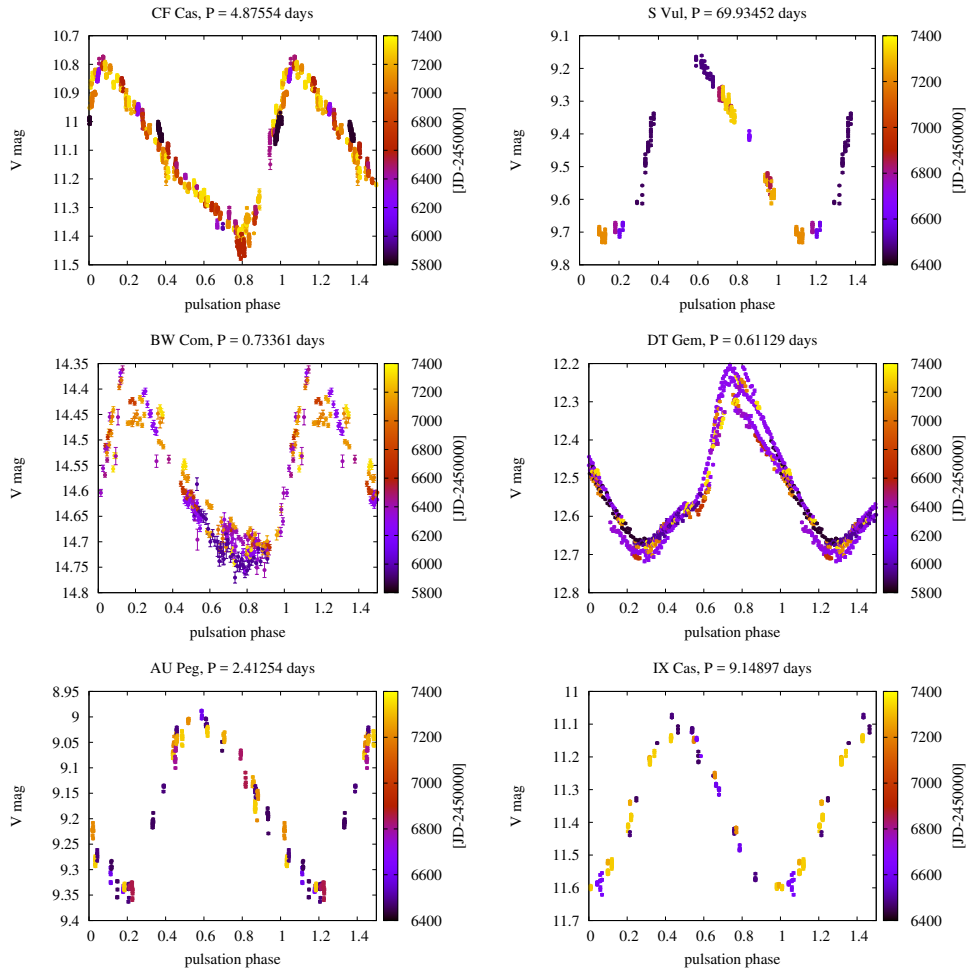


Fig. 2: V band light curves for Classical Cepheids: CF Cas and S Vul, Anomalous Cepheids: BW Com and DT Gem, and Type II Cepheid stars: AU Peg and IX Cas.