OPEN EUROPEAN JOURNAL ON VARIABLE STARS
January 2007 http://var.astro.cz/oejv ISSN 1801-5964

# NEW ECLIPSING BINARY STAR IN FIELD OF OQ Cas

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**Abstract:** The new EW eclipsing binary star (R.A. = 00h 47m 12.68s, Decl. = +61o 02' 03.4", equinox 2000.0, m = 15.2 - 15.8 mag; Min. I = HJD 2454008.5783 + 0.649435 x E) has been found near variable star OQ Cas by 0.40-m f/5 reflector at Hradec Králové observatory.

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The new eclipsing binary star HKV3 Cas = CzeV129 Cas = VSX J004712.6+610203 = USNO-B1.0 1510-0027592 (R.A. = 00h 47m 12.68s, Decl. = +61o 02' 03.4", equinox 2000.0, m = 15.2 - 15.8 mag) has been found near variable star OQ Cas on 11th September 2006 by Martin Lehký at Hradec Králové observatory (HPHK) using a 0.40-m f/5 JST (Jan Šindel Telescope) reflector and SBIG ST-7 CCD camera + R band filter. Discovery has been preliminary published in the Czech Variable Star catalogue (CzeV# 129) on 13th September 2006 and in the International Variable Star Index (# VSX J004712.6+610203) on 03rd October 2006.

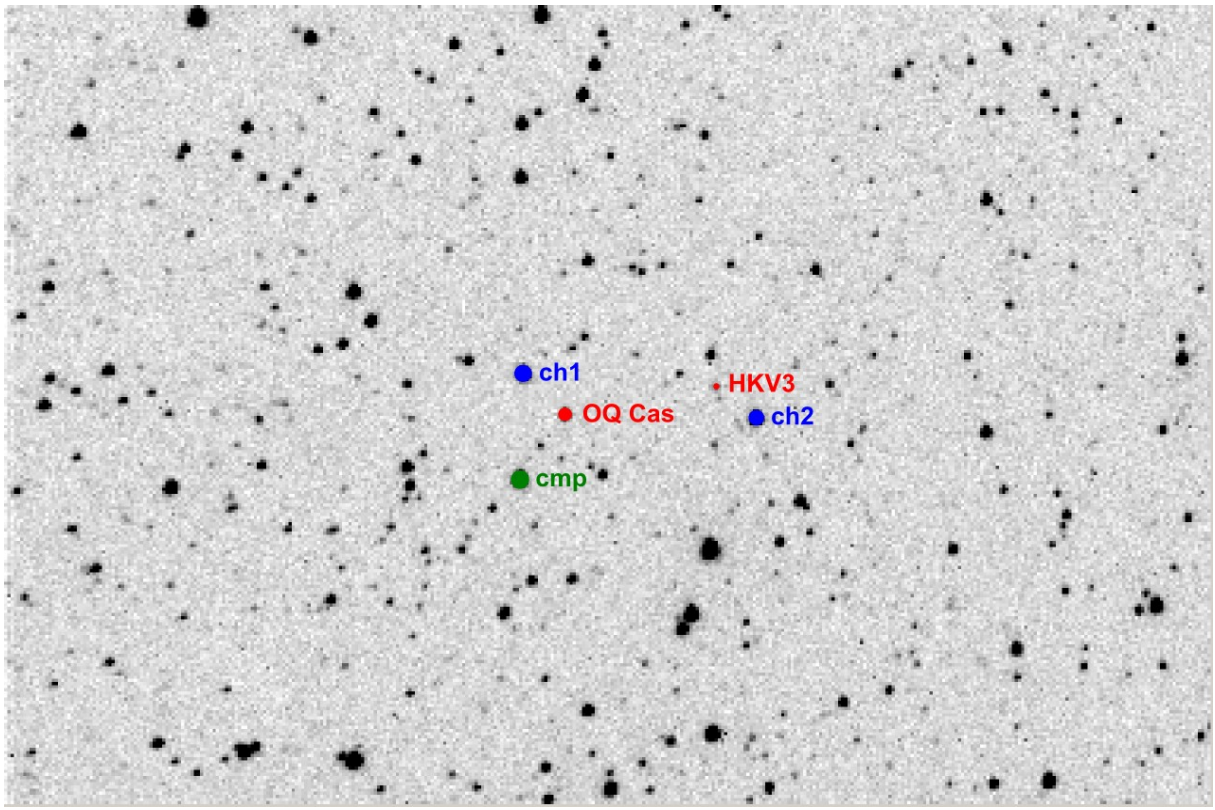


**Figure 1.** Close vicinity of HKV3 Cas (field of view is 13' x 9', north is to the top, east to the left)

During five 2006 September nights and one 2007 January night we obtained a total of 1250 CCD frames of HKV3. Images were processed using C-Munipack (Motl, 2006). All data are available upon request. From computer analysis of these CCD observations we have concluded that HKV3 Cas is a W UMa type eclipsing binary with amplitude 0.57 mag. We were also able to derive 5 times of minimum light seen in Table 1, which

were determined using Kwee and Van Woerden method implemented in AVE (Barbera 2000). Period has been found using optimal period search method by A. Schwarzenberg – Czerny implemented in PerSea 2.01, period search program for Windows (Maciejewski 2004). Final ephemeris is:

$$\text{Min. I} = \text{HJD } 2454008.5783 + 0.649435 \times E$$
$$\pm 0.0007 \pm 0.000145$$

The best observed primary minimum was chosen as the basic one. Our phased R band light curve (folded with period 0.649435 d) is shown in Figure 2.

**Table 1**: Minima timings of HKV3 Cas

| Hel. J.D. | Error | Type | O – C | Observer | Remarks |
|---|---|---|---|---|---|
| 2453990.4023 | 0.0005 | Min I | 0.0082 | ML | DISCOVERY |
| 2453993.329: | 0.001: | Min II | 0.0122 | ML | uncertain |
| 2454003.394: | 0.001: | Min II | 0.0112 | ML PH | uncertain |
| 2454005.3354 | 0.0005 | Min I | 0.0042 | ML PH | |
| 2454008.5783 | 0.0007 | Min I | 0.0000 | ML | basic minimum |
| 2454115.4083 | 0.0004 | Min II | 0.0109 | ML | |

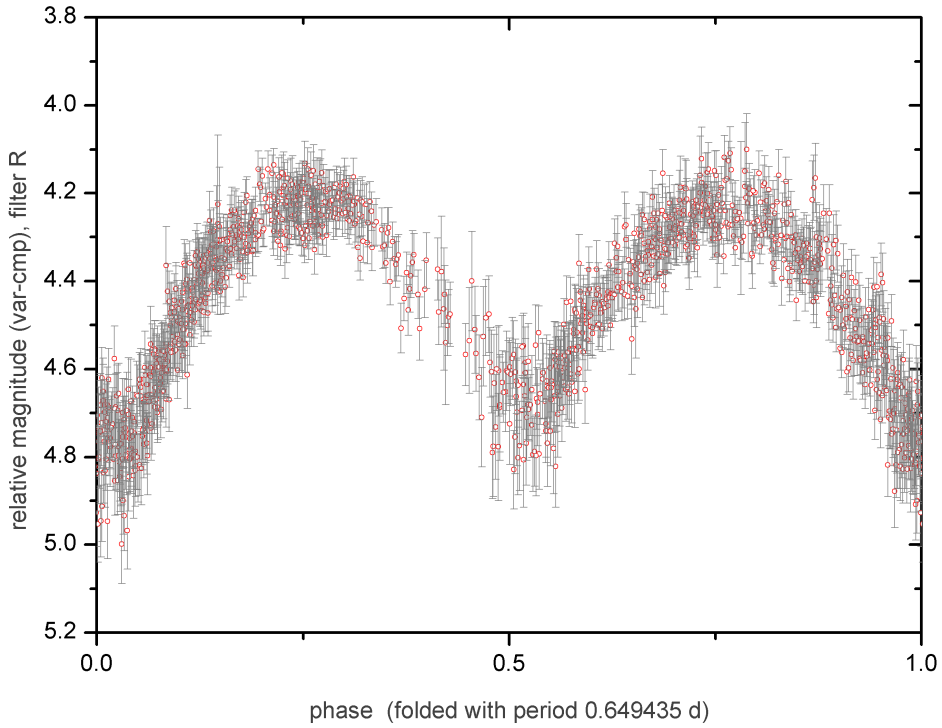


**Figure 2.** Our phased CCD R band light curve of HKV3 Cas.

*Acknowledgements:* We acknowledge overall support and used telescope with CCD camera of the Hradec Králové observatory (HPHK) and Astronomical Society at Hradec Králové (ASHK). We would like to thank Ondra Pejcha for his help and assistance.

**References:**

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Maciejewski, G., 2004, PerSea 2.01, http://sun.astri.uni.torun.pl/~gm/down.html
Motl, D., 2006, C-Munipack, http://integral.sci.muni.cz/cmunipack/index.html