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**GSC 4767.894 - A NEW W UMa TYPE ECLIPSING BINARY
IN THE FIELD OF GG Ori**

During our observational project initiated in 1993 with the main purpose to monitor eclipsing binaries with eccentric orbit, we found in the field of GG Ori that the star GSC 4767.894 is a new eclipsing binary of W UMa type with a period of about 0.47 days.

The variability of this star was discovered at the R. Szafraniec Observatory, Metzerlen, Switzerland, in October 24, 1995 using a 35cm Cassegrain telescope equipped with an SBIG ST-6 CCD camera. The coordinates of this star are: $\alpha = 5^{\text{h}}42^{\text{m}}57^{\text{s}}.7$ s, $\delta = -0^{\circ}42'46''$ (equinox 2000.0), its V magnitude given in the Guide Star Catalogue is 12.93 mag.

The next precise CCD photometry of this star was carried out during 12 nights from December 27, 1995 to February 24, 1996 at Ondřejov Observatory, Czech Republic. A 65cm reflecting telescope with the same type of CCD-camera was used. The measurements were done using the standard Cousins R filter with exposure time between 30 and 180 s. The nearby stars GSC 4767.927 ($V = 12.8$ mag) and GSC 4767.727 ($V = 10.9$ mag) on the same frame as the new variable served as the comparison and check stars, respectively. No variations in the brightness of these stars were detected exceeding the standard errors of the measurements in R during observations. Altogether 376 frames of this field were obtained and analyzed. The CCD data were reduced using the software developed at Ondřejov Observatory by P. Pravec and M. Velen (Pravec et al. 1994). The precise times of minima and their errors were determined using the Kwee–van Woerden (1956) method. These moments are listed in Table 1. In this table, N stands for the number of observations used in the calculation of the minimum time. Figure 1 gives the finding chart, Figure 2 shows the composite R light curve. According to our measurements, the amplitude is 0.27 ± 0.01 mag. The light curve was solved using a new method of treating photometric data described by Mikulášek et al. (1995). This method is a weighted LSM iterative procedure, where the model function for the light curve of the W UMa eclipsing binaries has a form

$$K(f) = \overline{m} + \sum_{i=1}^3 A_i \cos(4\pi i f) + A_4 G(f), \quad (1)$$

where

$$G(f) = \frac{5}{8}(\cos(2\pi f) + 0.5 \cos(6\pi f) + 0.1 \cos(10\pi f)), \quad (2)$$

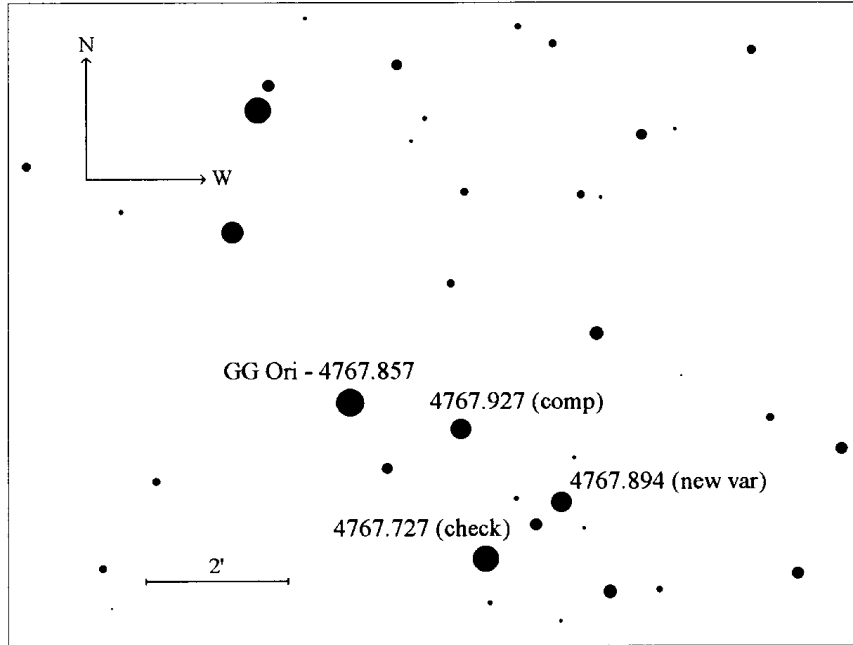


Figure 1. Finding chart of GSC 4767.894. The eclipsing binary GG Ori and the comparison and check stars are also plotted

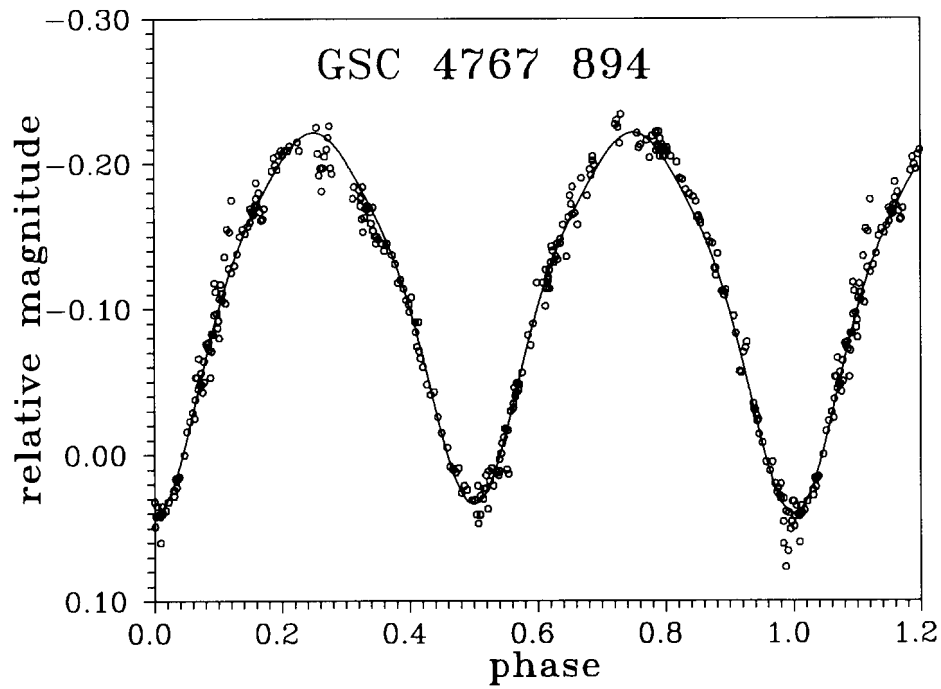


Figure 2. Composite *R* light curve of GSC 4767.894

Table 1. Moments of minima of GSC 4767.894

| JD Hel. – 24 00000 | Epoch | Error (days) | <i>N</i> |
|-----------------------|-------|-----------------|----------|
| 50081.4033 | –40.0 | 0.0002 | 27 |
| 50098.3755 | –4.0 | 0.0008 | 38 |
| 50120.2969 | 42.5 | 0.0002 | 40 |

where f is the photometric phase and \overline{m} is the average magnitude of the star. The coefficients A_1, A_2, A_3 describe the light curve with equal depths of primary and secondary minimum (see the paper mentioned above for more details). Using this method we derive the following linear light elements for the current use:

$$\text{Pri.Min.} = \text{HJD } 24\ 50100.26059 + 0^{\text{d}}4714399 \times \text{E.} \\ \pm 0.00008 \pm 0.0000022$$

As a reference time we have chosen the approximate midpoint of the observation interval.

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