

**PHOTOMETRIC OBSERVATIONS OF NSV 01651 AND
THE NEW VARIABLE STAR GSC 0669.0468**

Variability of NSV 01651 (HV 10389, CSV 000418) was announced by Hanley and Shapley (1940) based on plates of the MF series taken with the 10-inch Metcalf triplet in South Africa. They indicated that the object might be an RR Lyrae star with a photographic variation range from 13.0 to 13.6 magnitudes. NSV 01651 can unambiguously be identified with star GSC 0669.1442.

During 18 nights, from 28 August to 13 November 1995, NSV 01651 was observed in the V band using a Starlight Xpress CCD camera attached to the Newton focus of the 0.41-m telescope at Observatorio de Mollet (Spain). GSC 0669.1279 was used as the comparison star, and GSC 0669.1167 and GSC 0669.1030 as check stars (Figure 1).

The result of this surveillance program proved that NSV 01651 is not an RR Lyrae star but an overcontact eclipsing binary star with a period close to 10 hours and 10 minutes. Figure 2 shows the obtained light curve in the V band. Light curve dispersion did not allow us to determine the exact shape and depth of the primary and secondary minima. Nevertheless we observed a systematic magnitude difference between both minima, resulting in an average variation range of 0.52 magnitudes for minimum I and 0.50 magnitudes for minimum II. We also derived the following ephemeris:

$$\begin{aligned} \text{Min. I} = & \text{HJD } 2450006.3486 + 0.42382 \times E \\ & \pm 0.0001 \pm 0.00003 \end{aligned}$$

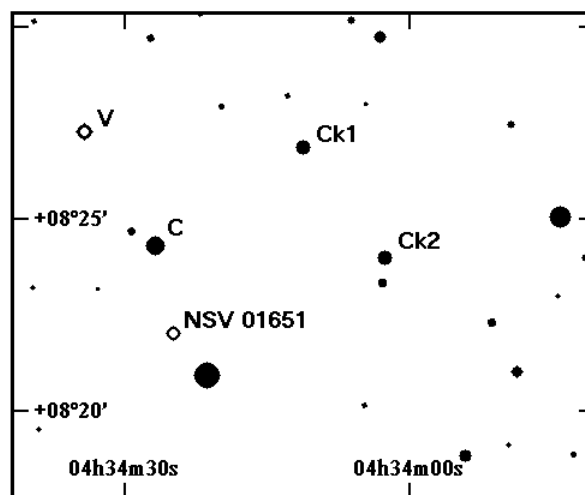


Figure 1. C = Comparison star, Ck1 and Ck2 = Check stars, V = GSC 0699.0468.

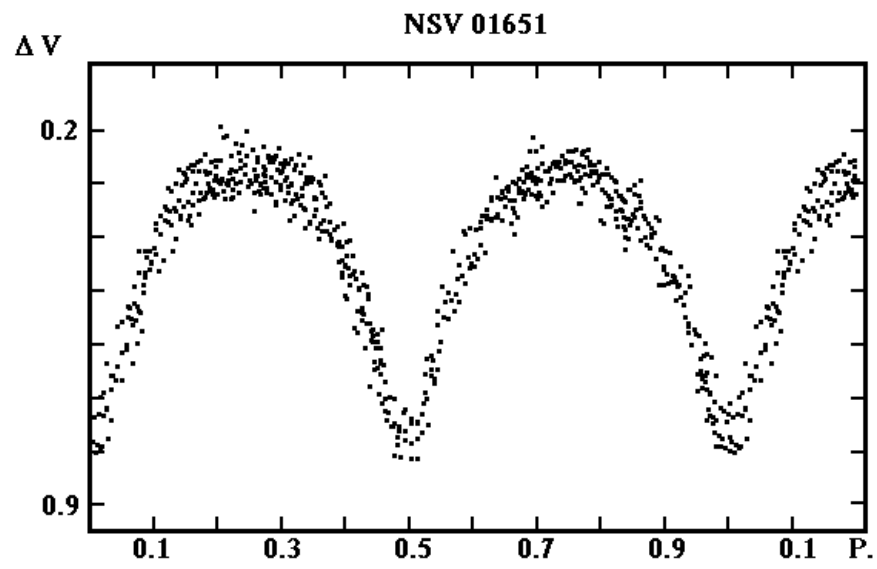


Figure 2

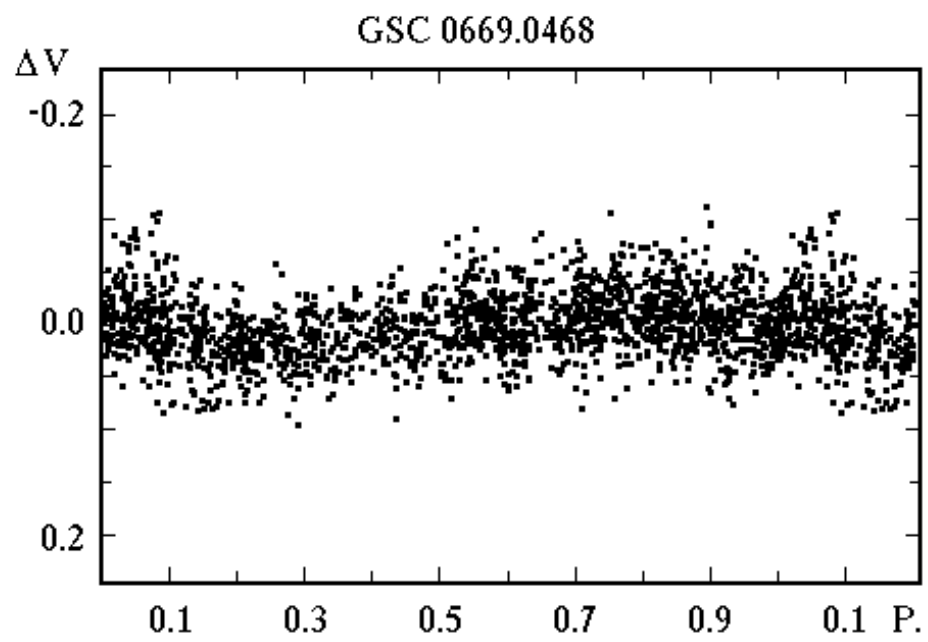


Figure 3

As part of the observing program of NSV 01651, we initially used another comparison star: GSC 0669.0468, a 12.7 yellow photographic magnitude star (PAL-V1 filter) according to the Guide Star Catalog, but when it was checked against C, Ck1 and Ck2 (see Figure 1), it became evident that this star did not present a constant light. Although almost 2,000 photometric measurements of GSC 0669.0468 were obtained, light curve dispersion did not allow us to determine the type of variability. The variation range is about 0.04 magnitudes and there is evidence for a period shorter than 2 days. In Figure 3 we represent the light curve folded on a period of 0.6195 days after performing a periodogram analysis between 0.0 and 1.0 days using Scargle's (1982) methods. It cannot be ruled out, however, that the true period is different from the value we utilized.

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Scargle, J.D., 1982, *Ap.J.*, **263**, 835