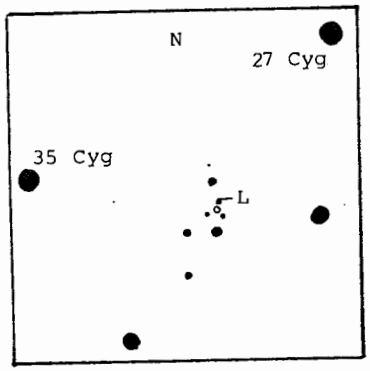
On the Period and Type of NSV 12892 and NSV 13595

Introduction

NSV 12892 and NSV 13595 are two stars in the constellation Cygnus, which are noted in the New Catalogue of Suspected Variables (NSV) to be rapid variables. They were observed visually by Belgian observers in 1983-1984 to determine their type of variation and their period.

The charts used (figures 1 and 2) were adapted from the Atlas of Finding Charts of Variable Stars by V. P. Tsesevich and M. S. Kazanasmas (1971).



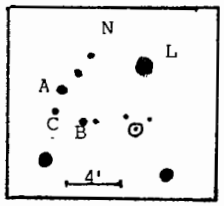
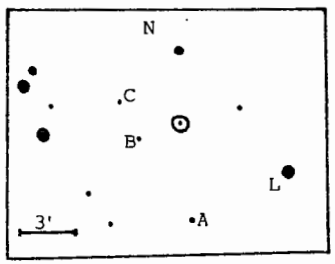


Figure 1: Finding charts for NSV 12892.



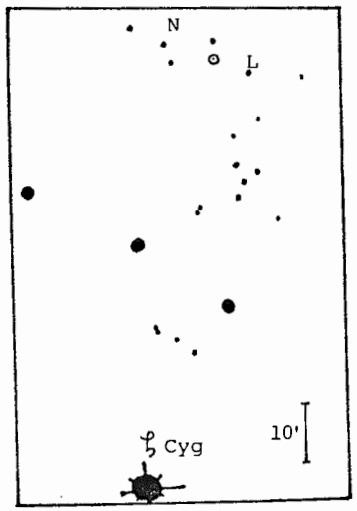
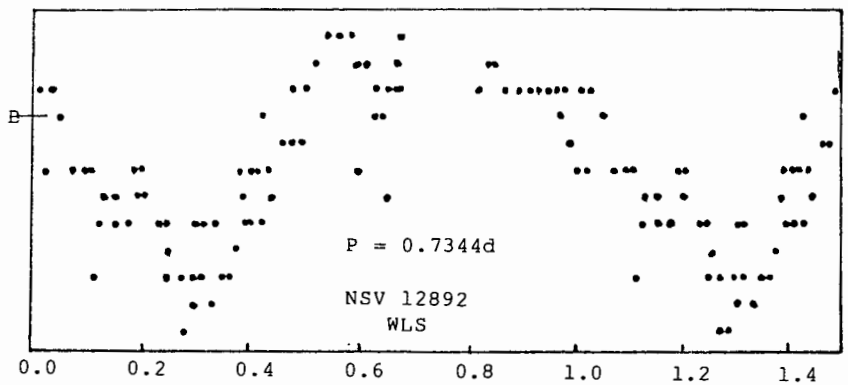


Figure 2: Finding charts for NSV 13595.

NSV 12892 = CSV 5076

This star was suspected to be an EW or RR variable by Cuno Hoffmeister (1949). Its 1950 position is $20^h10^m07^s$ +34°29'. The NSV gives the possible range as 12.5-13.5p.

In the period June-November 1984, the author made 132 observations of NSV 12892, using a 254mm Jones-Bird telescope. A lesser number were made by Roland Boninsegna, using a 300mm Newtonian. Only the first set was used in the analysis. It became soon clear that the star was indeed variable, but that it would not be possible to observe a full period during one observing night. It was however evident that the rising branch of the light-curve was steeper than the descending one, so that NSV 12892 probably is an RR Lyr-variable, with a visual amplitude of about 0.6 mag. A method proposed by P. Renson was used to search for the period. Two possible periods appeared from this analysis: 0.4227 and 0.7344 days, related by the formula $1/0.4227 = 1 + 1/0.7334$, so that one of these is in fact the one day alias of the other. The analysis shows that the longer period is the more probable, and this is also more or less clear from figure 3. The ambiguity can however only be solved by more observations, preferably by observing the star as long as possible during a night, and if possible, on consecutive nights.



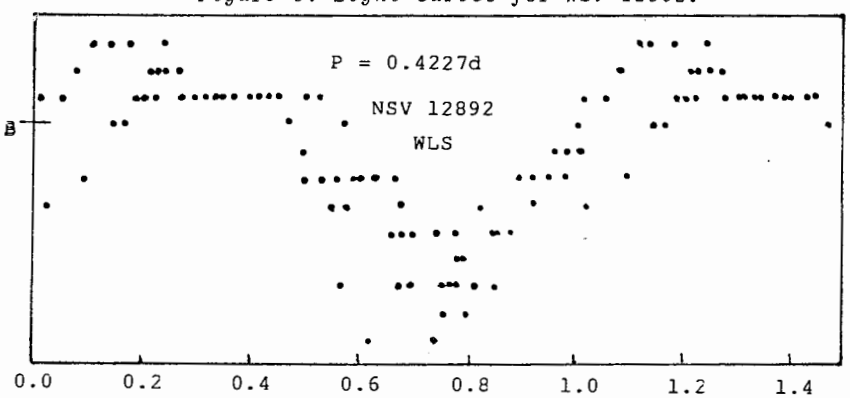


Figure 3: Light-curves for NSV 12892.

NSV 13595 = CSV 5374

This star is situated about one degree north of Zeta Cygni, at the 1950 position $21^h09^m58^s$ +31°10!6. It was suspected to be variable by S. Beljavski(1934) with a possible range of 13.3-14.1p.

A total of 355 observations were obtained by Roland Boninsegna, Robert Dequinze, Patrick Louis and the author from September 1983 until November 1984. From the observations made in 1984 (a total of 264) a period of 0.8095±0.0010 days was deduced, using the method of Renson(1978). Although less pronounced, this periodicity is also present in the 1983 observations. The star appears to be an EW-variable, with an amplitude of about 0.7 mag, and slightly unequal maxima. A light-curve is given in figure 4. An ephemeris is not provided, since the period obtained is not accurate enough to give reliable predictions, even for the next observing season.

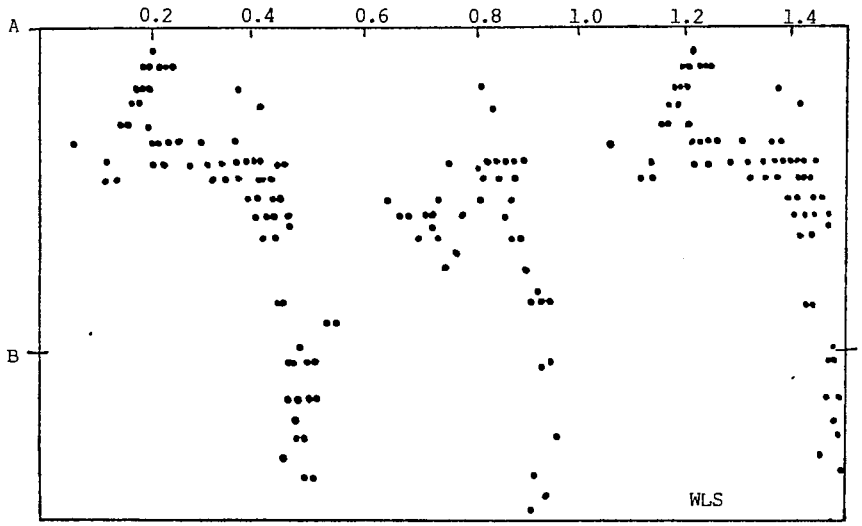


Figure 4: Light-curve of NSV 13595 for 1984.

Conclusion

From visual observations it appears that NSV 12892 is an RR-variable with a period of 0.734 or 0.423 days, and NSV 13595 an EW-variable with period 0.810 days. Both stars are excellent targets for further study.

References

S. Beljavski, πΣ 4, 265 (1934)
C. Hoffmeister, Erg. AN 12,N° 1 (1949)
P. Renson, Astron. Astroph. 63, 125 (1978)

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