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NSV 7020 Boo = BV 100 : RRab VARIABLE

Geier, Kippenhahn and Strohmeier (1955) discovered the variability of the star NSV 7020 Boo = BV 100. They reported brightness variations on a short time scale. Filatov (1960) gave photographic observations of the star, stating 12 epochs of maximum light. Finally, Götz and Wenzel (1964) communicated the spectral type of the variable (F4). They also remarked that they found a pair of stars of similar brightness and spectral type at the given location. According to the bibliographical file on variable stars kept at Sonneberg Observatory, Germany, no other source of information on NSV 7020 Boo is known.

One of us (LM) observed NSV 7020 Boo photographically in 1985 with the 25 cm Ritchey–Chrétien reflector of the public observatory ("Sternwarte Eschenberg") in Winterthur, Switzerland. His 100 observations were secured on 10 nights over a timespan of 85 days. These observations have never been published. They showed convincingly that NSV 7020 Boo = BV 100 is an RRab type variable. But unfortunately, the period of variation could not be determined, because only one–rather uncertain–time of maximum light (JD(max,hel) = 2446210.579 ± 0.010) was observed.

In the course of an observational stay at the Rosemary Hill Observatory of the University of Florida, RD reobserved NSV 7020 Boo photoelectrically in 1993. The details of the instrumental setup were reported elsewhere (Diethelm, 1993). A total of 71 observations in V and 32 measurements in B were secured between JD 2449104 and JD 2449125. As reported by Götz and Wenzel (1964), NSV 7020 Boo is the following of a close pair of stars. We used the leading member of the pair as the comparison star. We found this star to be constant to within the accuracy of our photometry by occasional checks using the standard star HR 6092. From this differential photometry B = 11.99 ± 0.02 and V = 11.61 ± 0.02 can be deduced for the primary comparison star.

The short time base of only 21 days prevents the determination of accurate elements of variation for the star from the photoelectric data. The period value of P = 0.45845 days yields the smoothest light curve in V, while the photographic data are best represented by a period of 0.45912 days. We have assumed that 6328 pulsations have taken place between the photographic maximum determined by LM and the photoelectric maximum observed by RD (JD 2449111.674 ± 0.004) for the computation of the provisional elements

$$\mathrm{JD(hel,max)} = 2449111.675 + 0.458455 \times \mathrm{E}. \qquad (1)$$

Figures 1 and 2 show the photoelectric V and B−V light curve folded with the elements given in (1).

The photoelectric data yield the following basic parameters describing the light curve of NSV 7020 Boo:

ΔV: 11.59-12.76 V; ΔB: 11.71-13.08 B; M−m = $0\overset{\mathrm{m}}{.}15$.

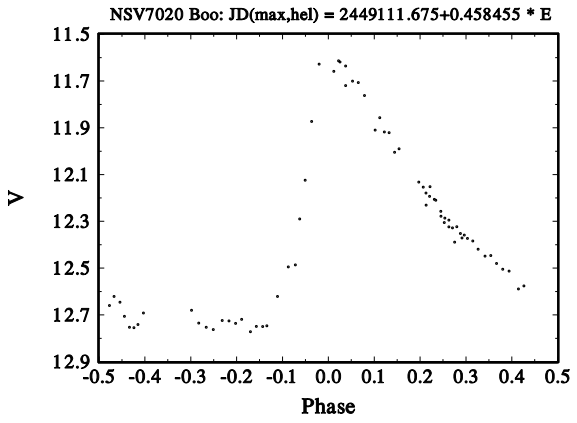

Figure 1. Photoelectric V light curve of NSV 7020 Boo

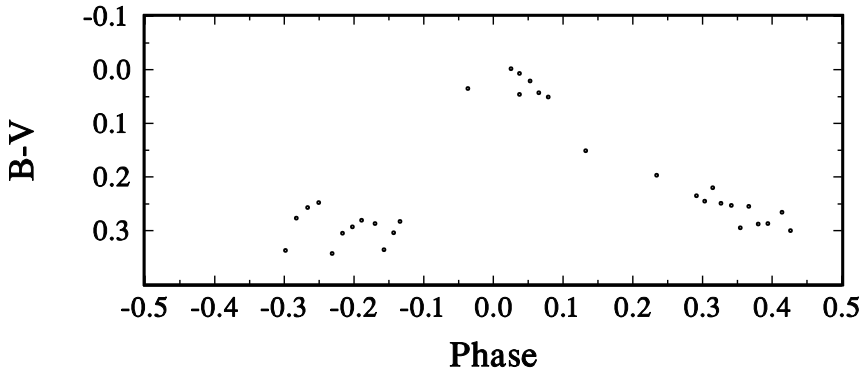

Figure 2. Photoelectric B−V colour curve of NSV 7020 Boo

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