

NSV 4219 UMa: AN RR Lyr VARIABLE

The variability of NSV 4219 UMa (= CSV 6652 = BV 28) was discovered by Strohmeier (Geyer et al., 1955) when he compared photographic plates taken at the Bamberg Observatory in 1929 and 1930. The magnitude changes were noted to be rapid and ranging between 11.1 and 11.9 (p).

NSV 4219 is a visual double star. Its companion is of magnitude 12.61 (V) with a B–V of 0.53.

The first photoelectric measurements of NSV 4219 UMa were obtained during a GEOS mission at the Jungfrauoch station, at the end of 1992. Others were obtained subsequently and I have now 47 measurements at my disposal made with the photometer attached to the Jungfrauoch Observatory 76-cm telescope equipped with the B and V filters of the Geneva photometric system. It covers most of the star's cycle with an instant of maximum.

To date, I have one photoelectric maximum and 21 maxima determined from visual estimates at my disposal (Vandenbroere, 1995).

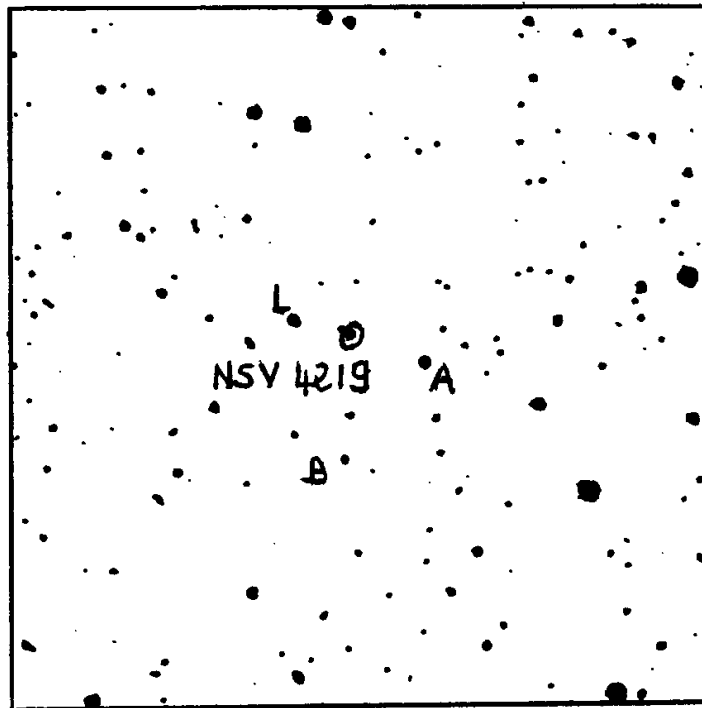


Figure 1. Identification chart of NSV 4219 UMa and its comparison stars.

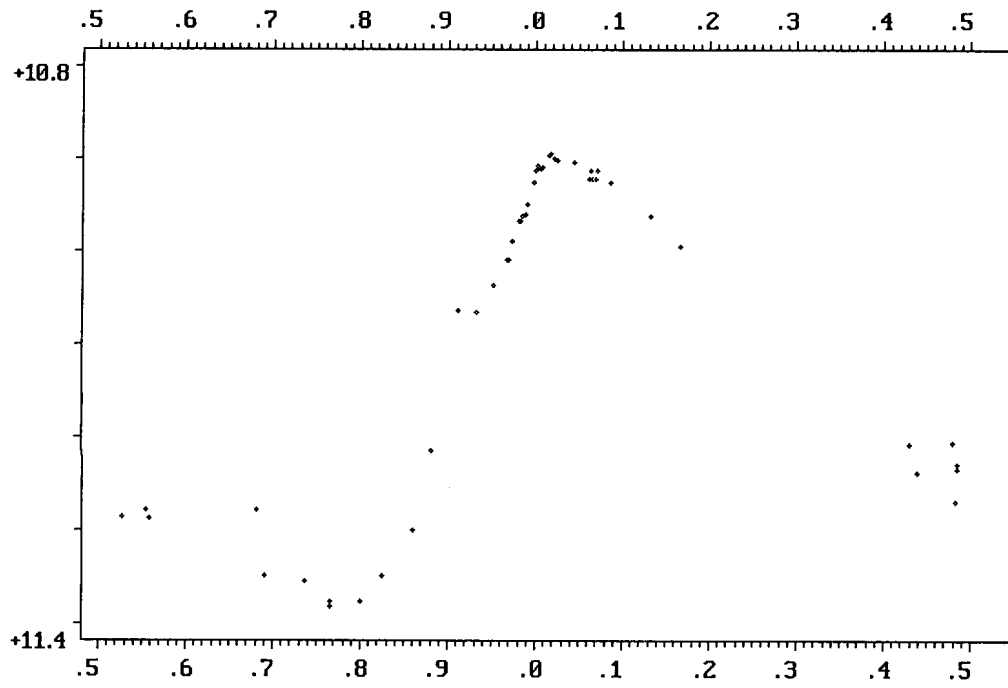


Figure 2. Composite light curve of the photoelectric measurements in V of NSV 4219 UMa using ephemeris (1).

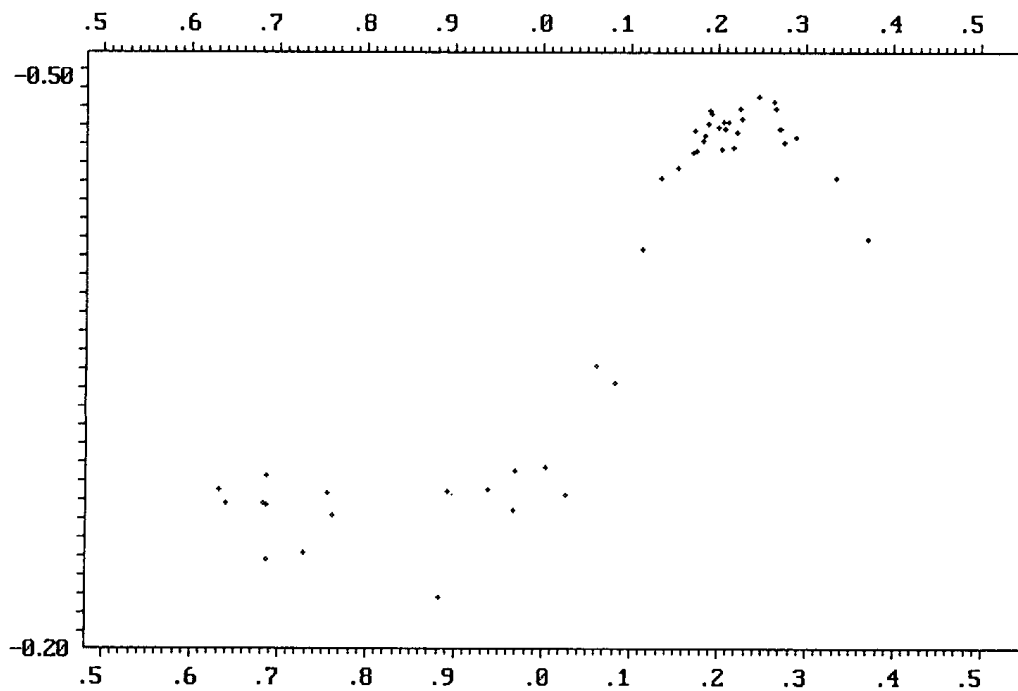


Figure 3. Phase curve of the photoelectric indices (B-V)G of NSV 4219 UMa using ephemeris (1).

Giving a triple weight to the photoelectric moment, I used the 22 instants to calculate the elements of the period of NSV 4219 UMa by linear regression and obtained the following ephemeris:

$$\begin{aligned} \text{Max} = \text{JD hel } 2449012.9896 + 0^{\text{d}}5428316 \times E & \quad (1) \\ \pm 0.0048 \pm 0.0000093 & \quad (\text{confidence } 95\%) \end{aligned}$$

The measurements shown in Figure 2 were obtained with the Jungfraujoeh telescope during the following nights: JD 48983 (4 measurements), 48984 (2 measurements), 49097 (2 measurements), 49721 (3 measurements), and 49722 (36 measurements).

Except when in the vicinity of the minimum, all the measurements between phase 0.7 and phase 0.2 were obtained during the same cycle of the variable. The accuracy is ± 0.03 magnitude in V and the non-alignment of the point at phase 0.91 not necessarily an actual change in the rate of light. The fluctuations at the end of the decreasing phase are probably real because they are typical of the light curve of RR Lyr stars with periods very close to that of NSV 4219 UMa (Lub, 1977).

The ascending phase (M–m) is 0.24 period, which indicates an RRab type star.

The (B–V)G indices of NSV 4219 UMa range from -0.49 to -0.22 (or from 0.39 to 0.61 in the Johnson and Morgan system). They are in agreement with the F spectrum of the New Catalogue of Suspected Variable Stars (1982). The shape of the colour index curve clearly shows that NSV 4219 UMa is a classical pulsating star of the RR Lyr type.

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