

RESULTS OF OBSERVATIONS OF V 1081 TAU AND A NEW EA-TYPE VARIABLE STAR BD+23°770 IN THE TAURUS

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ABSTRACT. The stars V 1081 Tau = NSV 1702 and BD+23°440 (GSC 1832.1631) are found to be EA-type eclipsing variables with the elements $2449215.51 + 1.0078 \cdot E$ and $2448597.342 + 1.95558 \cdot E$ based on 142 Ipv negatives of the "Betelgeuse" collection.

Key words: Stars: eclipsing: V 1081 Tau, BD+23°440.

History of Study of V 1081 Tau

The information on the variability of NSV 1702 (=V 1081 Tau = BD+22°743, $6^m6 - 8^m0$ V, Sp B9) was published in the Binoc. Sky Soc.Rep. (1967/68) where slow brightness variations were mentioned. Chinarova and Andronov (1993) have measured the star on 125 negatives of the Odessa plate collection and pointed out that the histogram of brightness is characteristic for an eclipsing binary.

We have measured the star according to the call for observations by I.L.Andronov.

The Observations

V 1081 Tau was measured on 144 negatives of the amateur Sky patrol collection (the photographic camera "Zenith-3", the objective "Helios-44", the "yellow-blue" filter ZhS-17, the photo film RF-3) in the interval J.D. 2448509-2449763. The finding chart and the brightness of the comparison stars were published by Chinarova and Andronov (1993).

Description of the light curve of NSV 01702 = V 1081 Tau

During each observational night the object was slightly variable in a range $6^m5 - 6^m9$, but no periodicity was found. However, at the negatives obtained at J.D. 2449073.377, 2449215.5076, 2449221.55: and 2449597.454 we have found at the image and at the secondary image the Algol-like weakenings down to $7^m2 - 7^m4$.

The time series analysis was carried out by using the program by D.Kolpakov (SAI) realizing the method by Lafler and Kinman (1965). It was found that the star is an eclipsing variable with the ephemeris

$$J.D.min = 2449215.51 + 1.0078 \cdot E, \quad (1)$$

duration of the eclipse $D = 0.13$, and the range of brightness variations $6^m5 - 7^m3$. The phase light curve is shown in Fig.1.

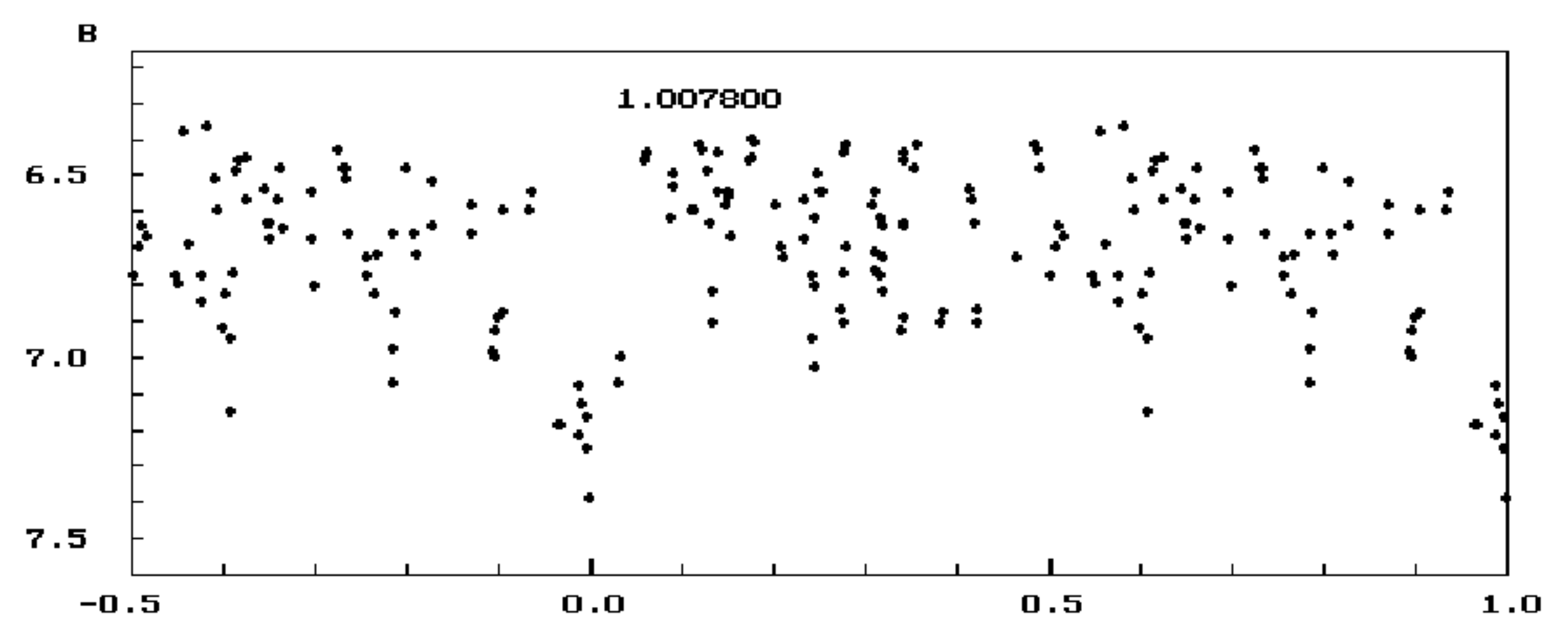


Figure 1. The phase curve of V 1081 Tau according to the elements (1).

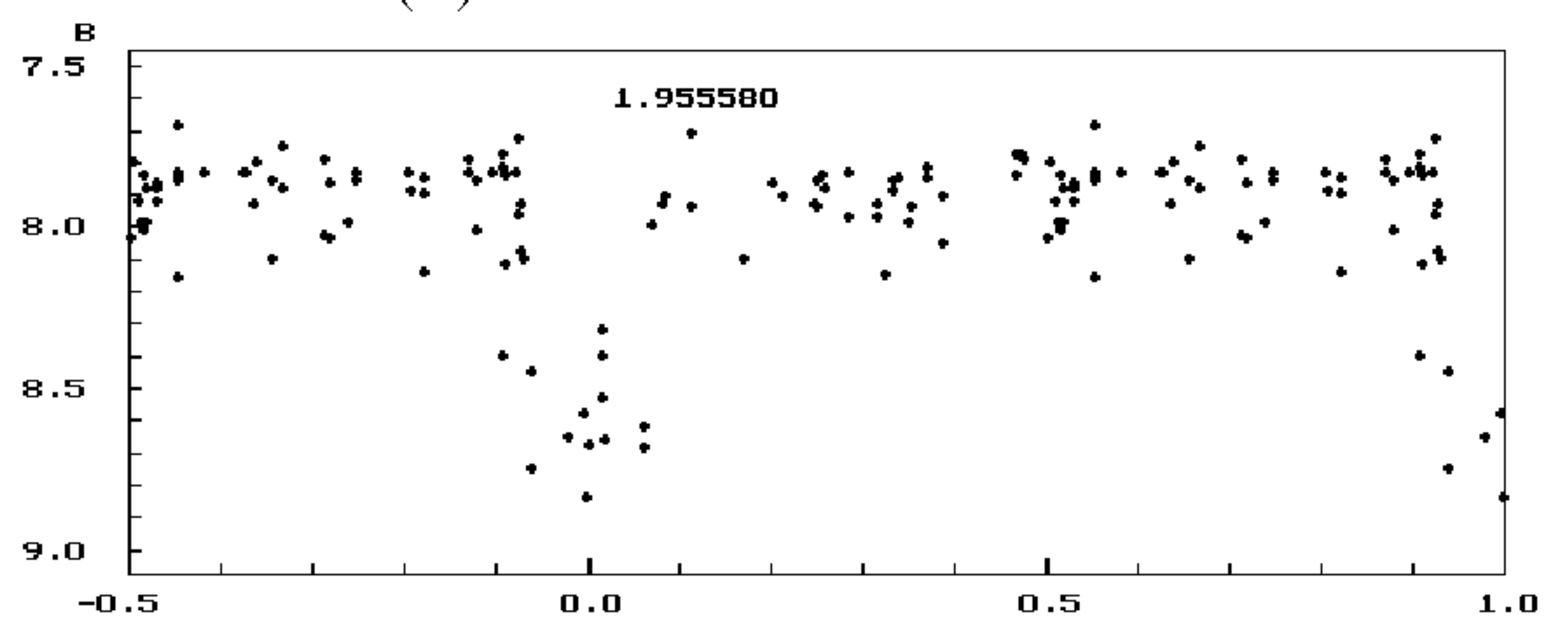


Figure 2. The phase curve of BD+23°770 according to the elements (2).

BD+23°770

While measuring the star V 1081 Tau, we have found on the same negatives another variable star BD+23°770 (HD 31353, Sp B9). The similar time series analysis have shown that the suspected variable is an EA-type eclipsing star with the elements

$$J.D.min = 2448597.342 + 1.95558 \cdot E, \quad (2)$$

$D = 0.2$, range $7^m8 - 8^m7$. The phase light curve

stars is shown in Fig. 2. We have used the comparison GSC 1832.0923, GSC 1832.0809, GSC 1832.0849 and GSC 1832.1874.

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NEW EA-TYPE VARIABLE STAR IN THE FIELD OF NGC 2174 AND NGC 2175

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ABSTRACT. New Algol-type star is found with $\alpha = 06^h 09^m 16^s.9$, $\delta = +20^\circ 25' 06''$ (2000.0), JD Min = $2449311.467 + 2.210345 \cdot E$, range $13^m 9 - 15^m 3$, duration of eclipse $D = 0.07$.

Key words: Stars: eclipsing

The variability of the star in the field of NGC 2174 and NGC2175 was discovered by the author. The brightness was measured on 46 negatives of the Moscow (Sternberg Astronomical Institute) plate collection which were obtained in J.D. 2429362 - 2449359 and on 84 negatives of the Odessa plate collection (Astronomical Observatory, Odessa State University) in J.D. 2436252 - 2448919. The finding chart is shown in Fig. 1. The brightness of the comparison stars was determined by linking to the photometric standard SA 74 in the photometric system.

The data were analyzed by using the computer code by Yu.K.Kolpakov based on the method by Lafler and Kinman (1965). The star was found to be eclipsing with the parameters of the light curve (Fig. 2) listed in the Abstract. At the Palomar Atlas the star is not coloured, possibly its spectral class is A or F.

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References

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Lafler J., Kinman T.D.: 1965, *Ap.J.Suppl.*, **11**, 216.

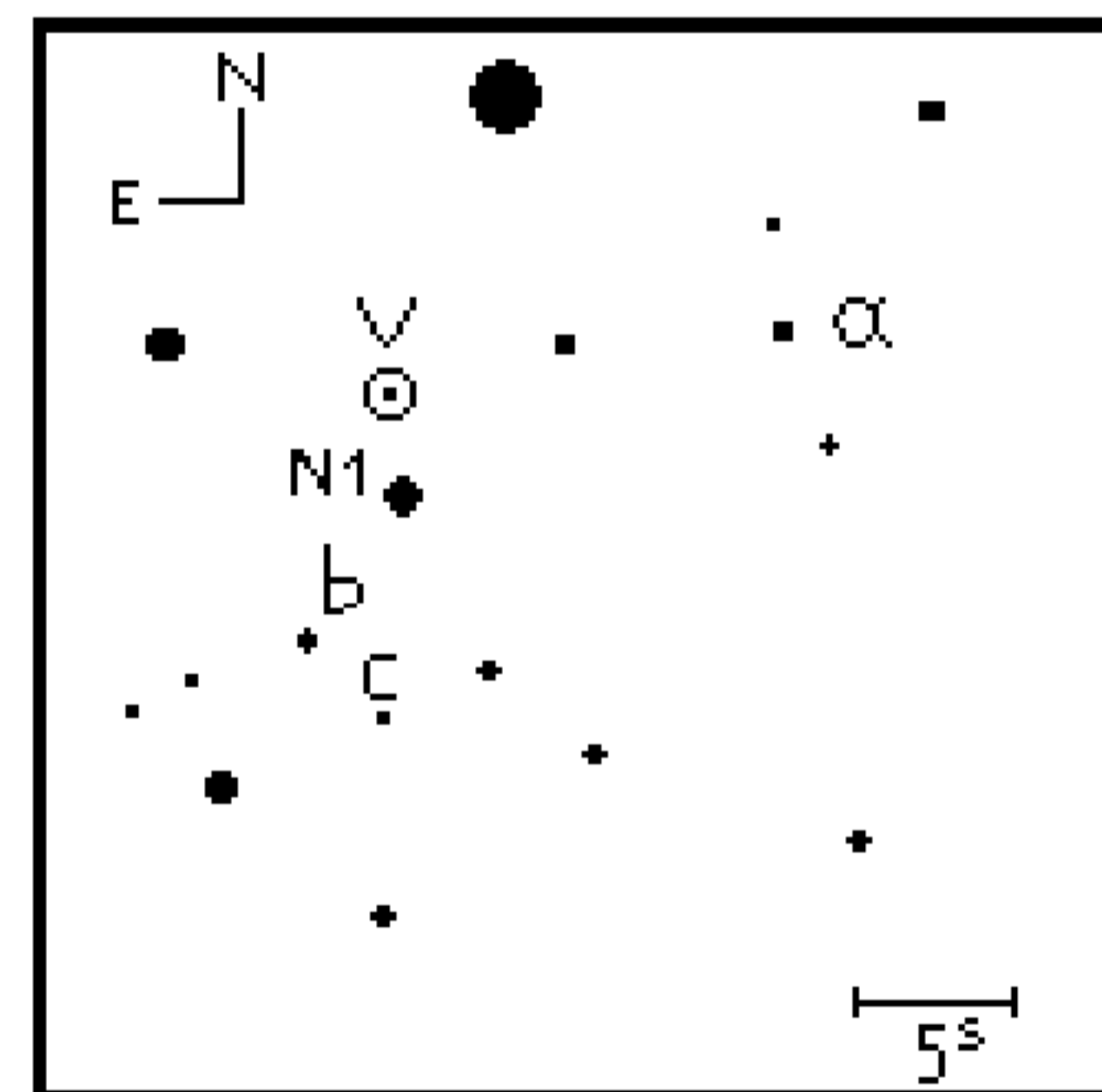


Figure 1. The finding chart for the new variable. The nearby star N1 = GSC 1322.0029, the brightness of the comparison stars = $13^m 91$, $b = 14^m 72$, $c = 15^m 43$.

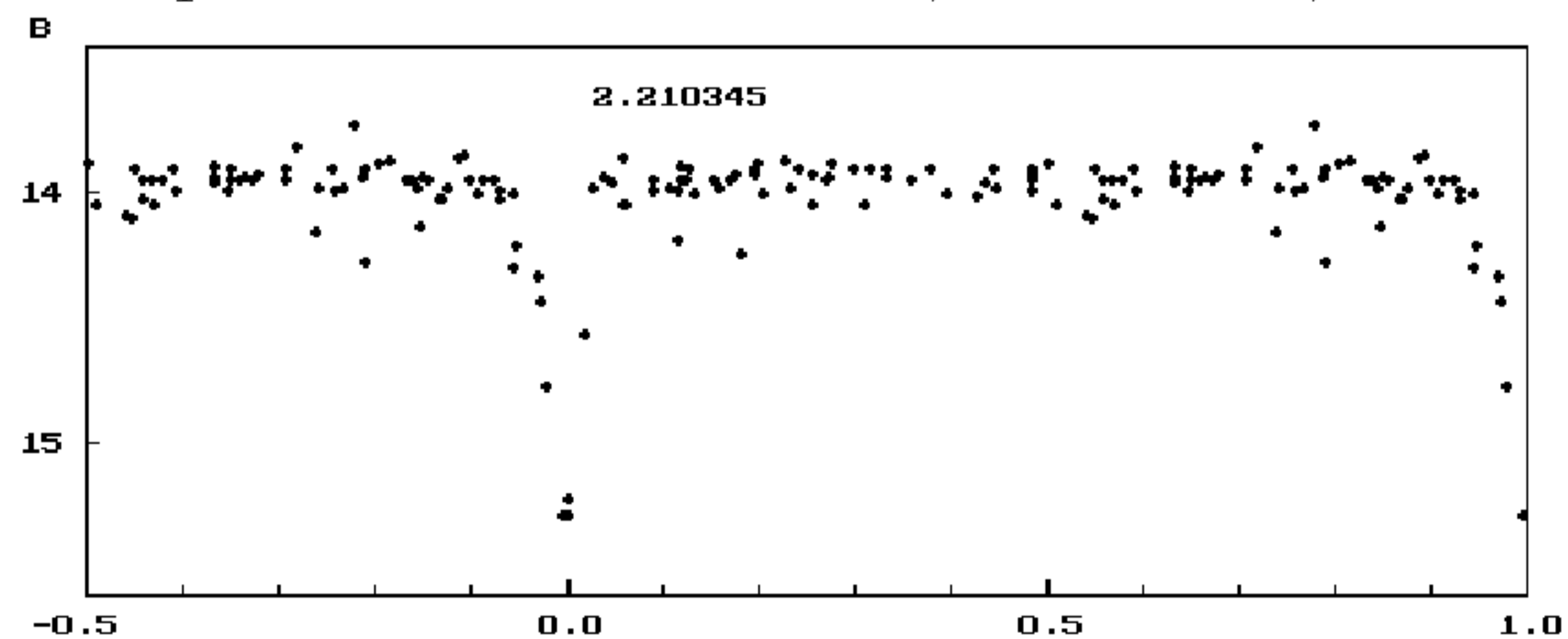


Figure 2. The phase curve.

References

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