THE ACCURATE PERIOD OF GX AURIGAE

Jiří Borovička
Stefánik Observatory
Petrín 205
Prague 1, Czechoslovakia

Presented at the First European Meeting of the AAVSO
Brussels, July 24-28, 1990

Abstract

Published times of minima and ten new visual timings of minima are used to derive new light elements for GX Aur, a β Lyrae type star.

GX Aur was discovered by Parenago (1937) as a variable star ranging between 11.4 and 12.5 mpg. Parenago published ten photographic observations from 1899-1910, five of them showing the star to be faint. Kurochkin (1950) inferred from further photographic observations that GX Aur is probably a β Lyrae type eclipsing binary with the limits of brightness 12.0 and 13.1 mpg. He published four new times of diminished of brightness from 1904-1913 and seven from 1937-1939. He derived the possible period of 1.1475 days, but this period was in agreement with the minima from 1937-1939 only.

I have observed GX Aur visually on 18 nights during October 1986 and during the winter 1988-1989. Ten minima were determined from these observations. All available times of minima are listed in Table 1. They yielded the new light elements:

$$\text{Min I}(JD_{\text{hel.}}) = \underset{\pm 0.012}{2447516.309} + \underset{\pm 0.0000007}{1.1432124}\ E. \qquad (1)$$

These light elements are in agreement with all observations. The mean light curve based on my visual estimates is presented in Figure 1. The β Lyrae type is confirmed, the primary and the secondary minima being almost equally deep. The visual amplitude is 0.7 magnitude.

Table 1. Observed times of minima of GX Aur. The residuals are computed according to equation (1).

JD	*Epoch*	*(O-C)*	*Observer*
2415103.29	-28352.5	-0.09	Parenago
2416504.46	-27127	+0.07	Kurochkin
2416575.30	-27065	+0.04	Parenago
2417318.30	-26415	-0.05	Kurochkin
2418028.28	-25794	-0.01	Parenago
2418327.28	-25532.5	+0.04	Parenago
2418742.26	-25169.5	+0.04	Parenago
2419501.30	-24505.5	-0.02	Kurochkin
2419800.20	-24244	-0.07	Kurochkin
2428794.45	-16376.5	-0.04	Kurochkin
2428817.34	-16356.5	-0.02	Kurochkin

Table 1 (continued)

JD	*Epoch*	*(O-C)*	*Observer*
2428818.50	-16355.5	+0.00	Kurochkin
2429200.50	-16021.5	+0.03	Kurochkin
2429283.30	-15949	+0.09	Kurochkin
2429285.51	-15947	+0.01	Kurochkin
2429588.46	-15682	+0.01	Kurochkin
2446704.638	-1420	+0.009	Borovicka
2447516.300	0	-0.009	Borovicka
2447524.321	7	+0.009	Borovicka
2447536.311	17.5	-0.005	Borovicka
2447538.609	19.5	+0.007	Borovicka
2447565.432	43	-0.036	Borovicka
2447571.191	48	+0.007	Borovicka
2447592.321	66.5	-0.012	Borovicka
2447609.482	81.5	+0.001	Borovicka
2447613.483	85	+0.000	Borovicka

References

Kurochkin, N.E. 1950, *Perem. Zvez.*, **7**, 295.
Parenago, P. 1937, *Perem. Zvez.*, **5**, 114.

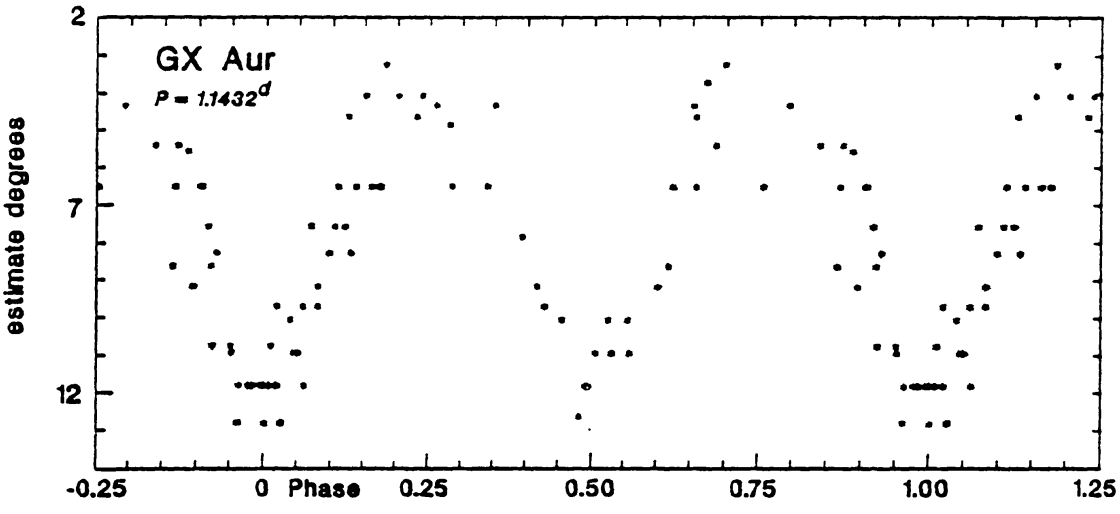

Figure 1. The mean light curve of GX Aur constructed from author's visual estimates.