

NOTE

ON THE MAXIMUM OF SZ LYNCIS

The ultrashort-period variable SZ Lyncis has been observed photo-electrically, e.g., by VAN GENDEREN (1967), JOSHI and SRIVASTAVA (1967), and BINNENDIJK (1968). Van Genderen showed that the photo-electric epochs could not be represented by a straight line and he suspected a variation in the height and the shape of the maxima, in a sense that the high maxima are sharp. In this note his results are compared with those of Joshi and Srivastava, Binnendijk, and ours.

We were able to observe SZ Lyncis during one cycle at the Netherlands Southern Observing Station in Greece. The instrument will be described by Heintze *et al.* in a forthcoming paper. The star has been observed in blue light only, using the same comparison star and blue filter as used by Van Genderen. The differences $m_v - m_c$ are given in table 1.

TABLE 1
Individual observations

Hel. J.D. -2440349	$m_v - m_c$	Hel J.D. -2440349	$m_v - m_c$
0.33291	-0.198	0.37294	-0.198
0.33673	-0.300	0.37683	-0.142
0.34093	-0.405	0.38037	-0.130
0.34467	-0.450	0.38481	-0.113
0.34946	-0.500	0.38981	+0.020
0.35403	-0.488	0.3936	-0.030
0.35752	-0.480	0.3975	+0.065
0.36169	-0.410	0.4019	+0.015
0.36627	-0.315	0.4063	+0.053
0.36947	-0.240		

In figure 1 we have plotted the observations near maximum brightness. The top of the curve ($m_v - m_c = -0.504$) is at least 0.03 mag lower than those of the above mentioned authors; the shape of the light-curve is rather symmetrical. The difference in height between our maximum and the highest maxima found by Van

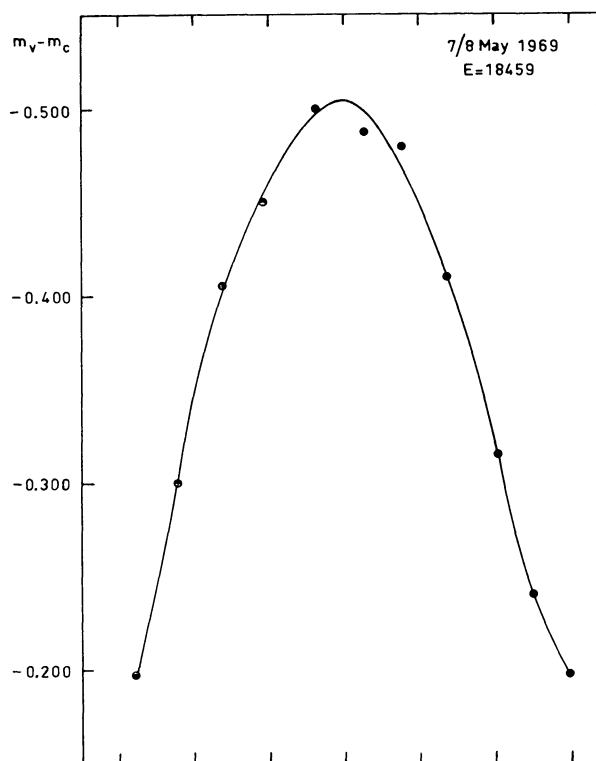


Figure 1. Light-curve near maximum of SZ Lyncis. The unit of the horizontal axis is 10 minutes.

Genderen and Joshi and Srivastava is about $0^m.07$. We therefore also studied the individual observations near maximum brightness of Joshi and Srivastava and those of Binnendijk, and found that the same phenomenon is also present in these light-curves. Height and shape appear to be roughly correlated and we are inclined to consider these variations as real.

We further studied the variation in the epoch of the maximum. Van Genderen showed that the epochs follow a sine-curve, and we computed the residuals $(O-C)_2$ with respect to this curve (Van Genderen's

TABLE 2
Maxima and residuals from sine-formula

Epoch (Hel. J.D.)	E	$(O-C)_2$ (days)	Observer*
2438460.210	2786	-0.0004	JS
2438463.342	2812	-0.0002	JS
2438464.189	2819	+0.0008	JS
2438465.276	2828	+0.0029	JS
2438466.238	2836	+0.0006	JS
2438467.200	2844	-0.0016	JS
2438471.297	2878	-0.0030	JS
2438476.249	2919	+0.0069	JS
2438483.241	2977	+0.0076	JS
2438701.8878	4791	+0.0008	B
2438834.234	5889	+0.0014	JS
2439092.7729	8034	+0.0004	B
2439092.8931	8035	-0.0000	B
2439121.7004	8274	+0.0002	B
2439121.8208	8275	+0.0001	B
2439531.401	11673	-0.0007	JS
2440349.3521	18459	+0.0035	WW

* JS = Joshi and Srivastava, B = Binnendijk, WW = Wisse and Wisse.

formula 2) for the maxima mentioned above. They are given in table 2. For the numbering of the cycli we adopted Van Genderen's zero-point. The maxima of Joshi and Srivastava show a large dispersion at $E \approx 2900$, but those of Binnendijk fit the sine-curve very well. Our maximum ($E = 18459$) lies about 5 minutes above the curve. The error in the determination of the maximum is about ± 2 min, so we are inclined to consider the deviation as real.

We thank Mr. A. M. van Genderen for many helpful discussions, and Dr. M. de Groot for introducing us to the telescope.

26 June 1969

MARIJKE WISSE

P. N. J. WISSE

References

- L. BINNENDIJK, 1968, *Astr. J.* 73 29
 A. M. VAN GENDEREN, 1967, *Bull. Astr. Inst. Netherlands* 19 74
 S. C. JOSHI and H. N. SRIVASTAVA, 1967, *Z. Ap.* 67 456