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A LONG-PERIOD ECLIPSING BINARY

MMO 705 at $18^{\text{h}} 45^{\text{m}}.0, -8^{\circ} 35'$ (1900) was observed on 149 24-inch Bruce plates by V.M.Swain and on 47 48-inch Palomar Schmidt plates by L.J.Robinson. These yielded only three minima, indicating an eclipsing star of long period. Several hundred Harvard patrol plates were then examined to establish the period. All minima are given in the table, together with O-C's computed from these elements:

Hel. JD = 2,427,805.94 + 31 $\frac{1}{2}$ 9384 E.

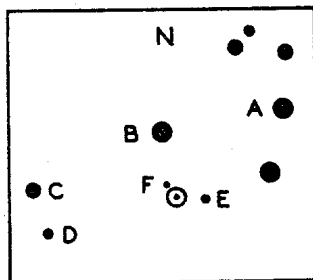


Fig.1

Photographic magnitudes of the comparison stars identified in Fig. 1 (4' by 3 $\frac{1}{2}$ ' in size) were derived from photoelectric standards: A, 12.14; B, 13.03; C, 13.91; D, 14.23; E, 15.01; F, 15.60. Means of magnitude estimates are plotted in Fig. 2, the large dots representing more than five observations. In the phase interval 0.57-0.66, some individual estimates are also included.

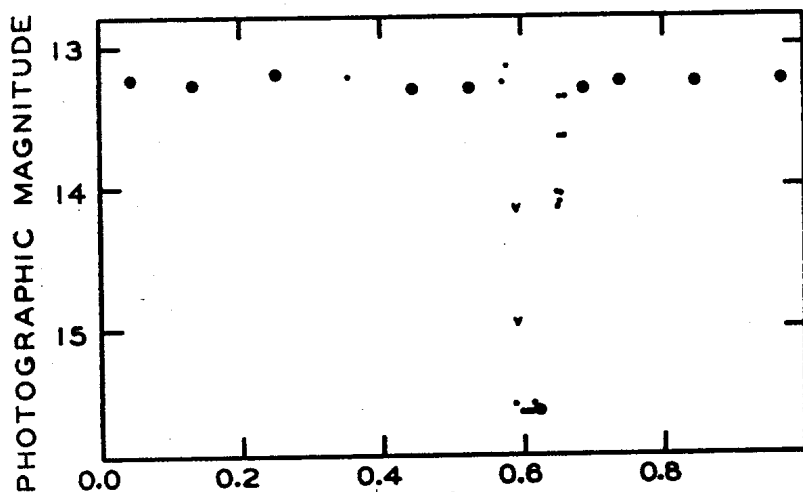


Fig.2

JD	E	O-C	Camera	JD	E	O-C	Camera
2420300.77	-235	+0.35	MC	2429849.64	+ 64	-0.36	BM
25889.53	- 60	-0.11	MC,RH	30521.56	+ 85	-0.14	RB
26177.49	- 51	+0.41	MF	30553.32	+ 86	+0.68	RB
26208.43	- 50	-0.59	MF	30872.62	+ 96	+0.59	A
26240.35	- 49	-0.61	MF	30999.26	+100	-0.52	RB
26815.60	- 31	-0.25	MF,RB	31670.40	+121	-0.09	RB
27933.82	+ 4	+0.13	RH	32021.57	+132	-0.24	RB
28700.74	+ 28	+0.52	BM	32054.24	+133	+0.49	RB
28731.59	+ 29	-0.56	A	32404.66	+144	-0.41	RH
29434.57	+ 51	-0.23	RB	33938.28	+192	+0.17	RB
29466.41	+ 52	-0.33	RB	35279.86	+234	+0.33	PS
29818.68	+ 63	+0.62	EM				

A 24-inch Bruce, BM 3-inch Ross-Lundin, RB 3-inch Ross-Fecker, RH 3-inch Ross-Fecker, MC 16-inch Metcalf, MF 10-inch Metcalf, PS 48-inch Palomar Schmidt.

The photographic range of MMO 705 was found to be 13.3-15.6. The eclipses last about $3\frac{1}{4}$ days with about $1\frac{1}{2}$ days of constant light at mid-minimum. These durations are somewhat uncertain due to poor distribution in phase of the plates.

For the length of its period, this star is notable for the long duration of primary eclipse and of mid-minimum.

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