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# A DISTORTION WAVE IN THE LIGHT CURVE OF MM HERCULIS

The purpose of this note is to announce the existence of a wave-like distortion in the out-of-eclipse light curve of MM Her. To our knowledge a wave in MM Her has not been detected before this (Hall 1976). The most recent photometry is that of Oliver (1974). The most recent spectroscopic study is that of Imbert (1971).

Using the No. 3 16-inch (40-cm) Cassegrain reflector at Kitt Peak National Observatory, Burke and Mullins obtained 45 differential UBV observations with respect to the comparison star BD $+21^{\circ}3274$ between J.D. 2,442,944.5 and 2,442,962.5. Using the same comparison star, Henry obtained 69 UBV observations between J.D. 2,442,972.5 and 2,443,070.5 with the 32-inch (80-cm) Cassegrain reflector of the Ohio State University at Perkins Observatory. These observations were corrected for differential atmospheric extinction and transformed differentially to the UBV system. Nightly means of the V observations are plotted in the figure where phase is computed with the ephemeris

$$JD\ (hel.) = 2,431,302.451 + 7^{d}.96037 \cdot E.$$

There is a faint visual companion for which we estimate $\rho = 18$ arcseconds, and $\theta = 120^{\circ}$. A correction of $+0^{m}.025$ has been added to the Kitt Peak data to allow for the fact that Burke and Mullins included the companion in the diaphragm during photometry while Henry excluded it. One relatively uncertain measurement of the companion relative to the comparison star yielded $\Delta V = 4^{m}.92:$. Combined with the brightness of the comparison star, $V = 8^{m}.46 \pm 0^{m}.03$ according to Oliver (1974), this yields $V = 13^{m}.4$ for the companion. Inclusion of a $V = 13^{m}.4$ companion would increase the deflections of MM Her outside eclipse by $0^{m}.03$, in fair agreement with the

$0^m.025$ shift we actually applied. No observations were obtained during the relatively short (D = 10 hours) eclipses.

A nearly sinusoidal wave approximately $0^m.08$ in amplitude (from max. to min.) is apparent in V. The observations in B and U indicate amplitudes of approximately $0^m.07$ and $0^m.06$, respectively. Wave minimum occurs at phase $0^p.8$. The authors are continuing to observe MM Her in 1977 to see if the wave exhibits any migration in phase or variation in amplitude.

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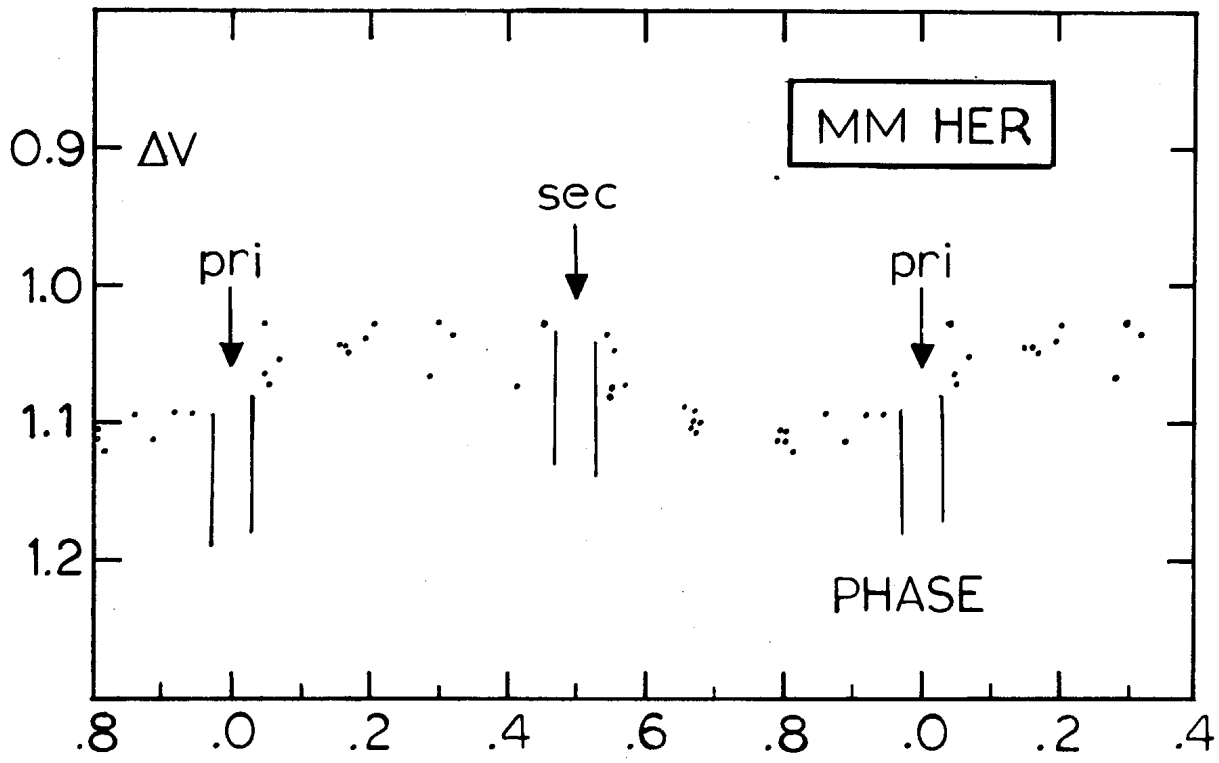
MM HER
ΔV
0.9
1.0
1.1
1.2
pri
sec
pri
PHASE
.8
.0
.2
.4
.6
.8
.0
.2
.4