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A LIKELY 15.5 YEAR APSIDAL MOTION PERIOD IN HS Her

The purpose of this note is to draw attention to HS Her, an eclipsing binary which seems to have an apsidal motion period of only 15.5 years. A complete discussion will be published later. Times of primary (and secondary) minimum observed in the next very few years could confirm this value. A 15.5 year apsidal motion period would be the shortest known, the shortest until now being the 25-year period of GL Carinae.

HS Her is ideal for observing. It is bright ($V=8^m6$ at maximum); the orbital period is short and convenient ($P = 1^d64$); the eclipses are brief ($D = 5^h$); and both minima are reasonably deep ($\Delta V_{pri} = 0^m50$ and $\Delta V_{sec} = 0^m15$).

All of the data available at this time can be satisfied only by the following ephemeris for primary minimum, with the sine term attributed to apsidal motion:

$$\text{Hel. JD} = 2\ 437\ 854.194 + 1^d6374333 E + 0^m17 \sin(E/3450 - 360^\circ)$$

These data include spectroscopic orbital elements (Cesco and Sahade 1944) and times of minimum, both published (Martynov 1940, 1951; Hall 1967) and unpublished (Hall and Hubbard 1970; Atkins and Devinney 1970; and Martynov 1970).

The above ephemeris predicts there should be no displacement of secondary minimum with respect to primary in the summer of 1971, when HS Her next becomes observable. But after that, for the next 7 or 8 years, secondary minimum should occur later than 0^m50 .

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