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EPOCHS OF MINIMUM LIGHT,
DISPLACED SECONDARY ECLIPSE OF SW LACERTAE

SW Lac (BD+37°4717) is a W Ursae Majoris - type system which has long been noted for its period changes and variations in the shape of its light curve. Recent period studies have been conducted by Frasincka and Kreiner (1977) and Faulkner and Bookmyer (1980).

Two Indiana University telescopes were used to observe SW Lac during the autumn of 1983. Three of the present authors (E.E.E., D.H.G., E.J.M.) used the 30-cm refractor of the Kirkwood Observatory, while one author (DRF) used the 41-cm reflector of the Morgan-Monroe Station of the Goethe Link Observatory. The Morgan-Monroe observations were made with standard B and V filters and a 1P21 photomultiplier tube cooled with dry ice. The Kirkwood observations were made with an unfiltered and uncooled Optec SSP-3 photometer, which employs a silicon photodiode. At both observatories differential measurements were made, using BD+37°4715 as the comparison star and BD+37°4711 as the check star.

The Hertzprung method was used to determine times of minimum light from the observations and are presented in the table below.

<u>Hel. J.D.</u>	<u>Min.</u>	<u>(O-C)</u>	<u>Inst.</u>
2445000+			
542.8279	I	0.0002	M-M
554.8542	II	-0.0005	M-M
575.8630	I	0.0012	M-M
579.8695	II	-0.0013	M-M
586.7678	I	0.0015	M-M
610.6588	II	-0.0011	Kirk
634.7124	II	-0.0014	M-M
646.7412	I	0.0004	Kirk
660.5327	I	0.0009	M-M

The final column in the table identifies the instrument used to observe each eclipse, where "M-M" stands for Morgan-Monroe and "Kirk" stands for Kirkwood. The epochs of minimum light from the Morgan-Monroe observations represent the average of individual determinations made in each filter.

The following light elements were obtained from a linear least squares fit to the times of minimum light in the table:

$$\text{JD Hel.Min.I} = 2445586.7663 + .3207195$$

$$\pm 8 \qquad \qquad \qquad \pm 22$$

Residuals were formed using these elements, and are also presented in the table. From these it can be seen that all of the secondary eclipses have negative residuals, indicating that secondary minimum was displaced toward the preceding primary minimum. The magnitude and sense of the displacement is similar to the displacement which Bookmyer (1965) found to occasionally be present. Bookmyer further argued that the displacement was not due to orbital eccentricity, but rather to variations in the shape of the light curve that would affect the determination of times of minimum light. Small variations in the shape of the light curve similar to those noted by Bookmyer were indeed seen in the present observations.

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