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REVISED ELEMENTS AND LIGHT CURVE FOR LS DELPHINI

The small amplitude W UMa type eclipsing binary LS Del (= BD+19°4574, HD 199497, SAO 106694) was discovered by Bond (1976) on spectroscopic and photoelectric observations. According to Kholopov et al. (1981) the visual magnitude varies from 8.61 to 8.76.
The period given by Bond (1976), 0.3638 days, was improved by Ruyou et al. (1987). Based on photoelectric observations of 4 nights these authors of the Beijing Astronomical Observatory noted the period to be 0.3639207 days.

To test the new elements, we did an observing run on LS Delphini in the years 1987 and 1989. The telescope used was a 0.34 m Cassegrain, equipped with a 1P21 phototube. All measurements were done in V colour.

As a result the ephemeris given by Ruyou et al. (1987) fails to represent our observations and the quoted period turned out to be spurious.
Indeed the true period is 7.2 seconds shorter, so the O-C against the ephemeris of Ruyou et al. (1987) will add up to 0.5 cycles within about 2 years. Therefore the quoted ephemeris will seem roughly correct in an even year, but will clear up as erroneous in odd years. Unfortunately all yet published observations were done in even years. Subsequently primary and secondary minima will be mixed up.

Table: Times of photoelectric minima of LS Delphini. O-C values are calculated against the elements of this paper.

JD hel.	E	O-C	Observer	Reference
42687.418	-13992.5	+.002	Bond	IBVS 1214
46668.1609	-3051.5	-.006	Ruyou et al.	IBVS 2982
46670.1686	-3046	+.001	Ruyou et al.	IBVS 2982
46671.0744	-3043.5	-.003	Ruyou et al.	IBVS 2982
47028.362	-2061.5	-.004	Wunder	this paper
47729.486	-134.5	+.004	Wieck	this paper
47737.490	-112.5	+.004	Wieck/Wunder	this paper
47778.421	0	+.003	Wieck/Wunder/ Skaberna	this paper
47790.423	33	-.002	Wunder	this paper

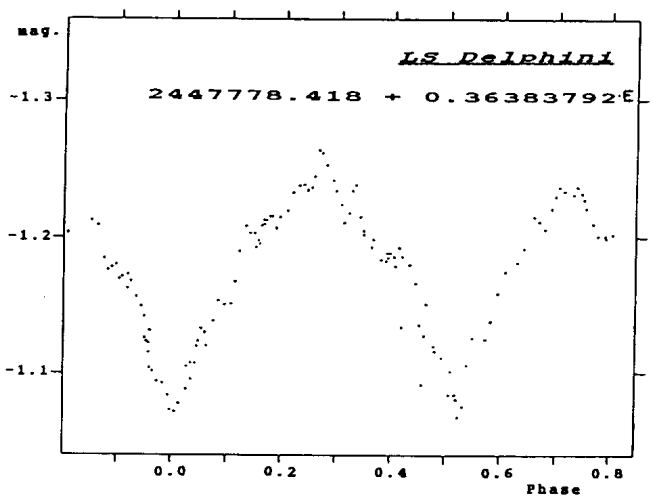

Figure 1

On base of the data shown in the table we calculated the new ephemeris, namely:

$$\text{JDhel. MinI} = \underset{\pm 16}{2447778.4180} + \underset{\pm 16}{0.36383792} * E$$

The time of minimum published by Bond (1976) is not, as Ruyou et al. (1987) stated, a primary but a secondary minimum. Finally, a minimum published by Diethelm (1987) turned out to be incorrect and is therefore omitted.

A light curve in V colour of LS Delphini was made from selected data in 1989 and is illustrated in the figure.

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