COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 3349

Konkoly Observatory
Budapest
7 July 1989
HU ISSN 0374 - 0676

MINIMA AND THE PERIOD OF THE ECLIPSING BINARY DF HYDRAE

Minima of the eclipsing binary star DF Hya were published by Whitney(1959), by Koch et al.(1962) and by Hoffmann(1983), respectively. Whitney(1959) derived the elements:

Min.= JD hel.2431138.231+0^d.3305990E.

Hoffmann(1983) revised the period of this system and he suggested that the period of DF Hya be 0.3302005 days.

In 1985 photoelectric observations of DF Hya were carried out in B and V with the integrating photometer at the 100 cm telescope of Yunnan Observatory. The minima of DF Hya were determined from our observations by the quadratic fit method.

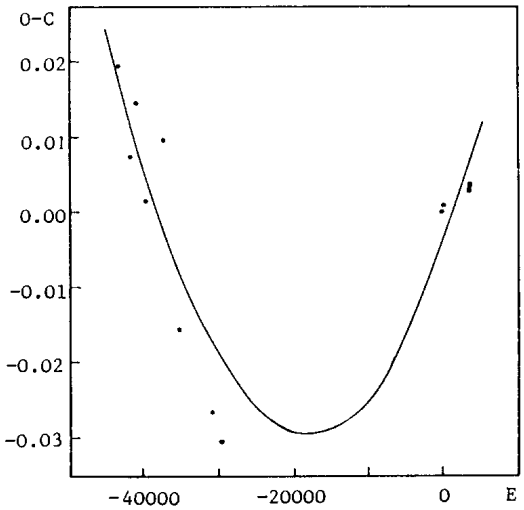

Fig. 1 o-c residuals of DF Hya

The list below contains seven minima obtained by Whitney (1959), one minimum given by Koch et al.(1962), two minima determined by Hoffmann(1983) and four minima derived from our observations. The columns contain: heliocentric time of minimum, phase of minimum, (o-c)I, (o-c)II and references.

Min.JD hel. 2400000+	phase	(o-c)I	(o-c)II	References
30677.048	I	-0.098	+0.020	Whitney (1959)
31204.677	I	-0.105	+0.008	Whitney (1959)
31497.927	I	-0.096	+0.015	Whitney (1959)
31937.615	I	-0.105	+0.002	Whitney (1959)
32675.856	I	-0.092	+0.010	Whitney (1959)
33382.658	I	-0.110	-0.015	Whitney (1959)
34847.708	II	-0.110	-0.026	Koch et al.(1962)
35242.608	I	-0.110	-0.030	Whitney (1959)
45021.3400	II	-0.0007	+0.0002	Hoffmann (1983)
45021.5060	I	0	+0.0009	Hoffmann (1983)
46115.1385	I	+0.0110	+0.0030	present paper
46115.3043	II	+0.0115	+0.0035	present paper
46117.1235	I	+0.0124	+0.0044	present paper
46117.2886	II	+0.0122	+0.0042	present paper

The values of (o-c)I were obtained by the following elements:

$$\text{Min.} = \text{JD hel.}2445021.5060 + 0^{d}.3305990E.$$

The values of (o-c)II were obtained according to the revised elements:

$$\text{Min.} = \text{JD hel.}2445021.5051 + 0^{d}.33060169E.$$

The accumulated effect of the o-c illustrated in figure 1 shows that the period of DF Hya was increasing in the years 1959 – 1985 and that the plot of o-c residuals can be well approximated with a parabola. Visual and photographic minima were assigned a weight of one while photoelectric minima were assigned a weight of five. Using the weighted least-squares method, a new ephemeris was derived as follows:

$$\text{Min. I} = \text{JD hel.}2445021.5009+0^{d}.33060443E+7^{d}.5*10^{-11}E^{2}.$$

YUNLIN ZHANG, QINGYAO LIU
YULAN YANG, BI WANG, and
ZHOUSHENG ZHANG

Yunnan Observatory
Academia Sinica
Kunming, P.O.Box 110
People's Republic of China

References:

Hoffmann, M., 1983, Inf. Bull. Var. Stars, No. 2344.
Koch, J.C. and Koch, R. H., 1962, Astro. J., 67, 462.
Whitney, B. S., 1959, Astro. J., 64, 258.