

UU OPHIUCHI REVISITED

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Abstract

One recent visual time of minimum is presented and used to suggest new elements for the seldom-observed eclipsing binary, UU Ophiuchi.

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The Algol eclipsing variable UU Ophiuchi was discovered by Leavitt (1907). Subsequently, Waterfield (1927) derived equation (1) from examination of the Harvard patrol plates:

$$JD_{\min}(\text{hel.}) = 2418833.505 + 4.396766 E. \quad (1)$$

To date, no finder chart has been published for this star. Szafraniec (1976) reported that no time of minimum had been recorded since 1928. However, further research has uncovered six minima by Soloviev (1944) from the years 1939-1943. Table I is a list of all available minima, including one by the author, together with their cycles and O-C residuals calculated from (1). Figure 1 is a chart (roughly to scale) of the area, showing the variable and comparison stars used in this investigation.

The author's time of visual minimum was derived from a light curve composed of observations on JD 2444783, 2444796, and 2444809. The minimum occurred approximately 4.9 hours later than predicted by equation (1). The length of totality, $d = 0.022$, is in agreement with that listed in the General Catalogue of Variable Stars (Kukarkin et al. 1969), $d = 0.026$. Step values for the comparison stars are listed in Table II.

For the period analysis, the twenty-two times of minima from Table I were combined into eleven normal points. The final minimum was assigned a weight of five, while all others remained at unity. Equation (2) resulted from a regression analysis:

$$JD_{\min}(\text{hel.}) = 2420750.489 + 4.3968025 E. \quad (2)$$

$$\pm 0.002 \quad \pm 0.0000011$$

This ephemeris is of course tentative; more data are needed to confirm or deny the validity of equation (2), and to determine whether or not variation of the period exists.

REFERENCES

- Gaposchkin, S. 1953, Ann. Harv. Coll. Obs. 113.
 Kukarkin, B. V. et al. 1969, General Catalogue of Variable Stars, Moscow.
 Leavitt, H. 1907, Circ. Harv. Coll. Obs., No. 135.
 Soloviev, A. 1944, Astron. Circ. USSR 28, 4.
 Szafraniec, R. 1976, Suppl. Int. Ann. Cracoviense, No. 47, 95.

Waterfield, W. H. 1927, Bull. Harv. Coll. Obs. 852, 8.

Zessewitsch, W. 1954, Izvest. Astron. Obs. Odessa 4, No. 2, 219.

1928, Suppl. Int. Ann. Cracoviense, No. 6, 69.

TABLE I Available Minima for UU Ophiuchi

JD(hel.) 2440000+	Type	e	Cycle	O-C	Source
16608.804	pg		-506	0.063	Waterfield (1927)
17241.880	pg		-362	0.004	"
17404.627	pg		-325	0.071	"
17448.525	pg		-315	0.001	"
18081.678	pg		-171	0.020	"
18481.682	pg		-80	-0.082	"
19233.621	pg		91	0.010	"
19589.689	pg		172	-0.060	"
20653.768	pg		414	0.002	"
20750.487	pg		436	-0.008	"
21062.591	pg		507	-0.074	"
21427.538	pg		590	-0.059	"
25090.145	v		1423	0.042	Zessewitsch (1954)
25112.18	v		1428	0.093	Zessewitsch (1928)
26598.280	pg		1766	0.086	Gaposchkin (1953)
29403.327	pg		2404	-0.003	Soloviev (1944)
29425.283	pg		2409	-0.031	"
29790.273	pg		2492	0.027	"
29812.251	pg		2497	0.021	"
30876.318	pg		2739	0.071	"
30898.258	pg		2744	0.027	"
44796.612	v	± 0.008	5905	0.204	This paper

TABLE II Values for Comparison Stars

Comp. Star	Step Value
a	10
b	15
c	22
d	25

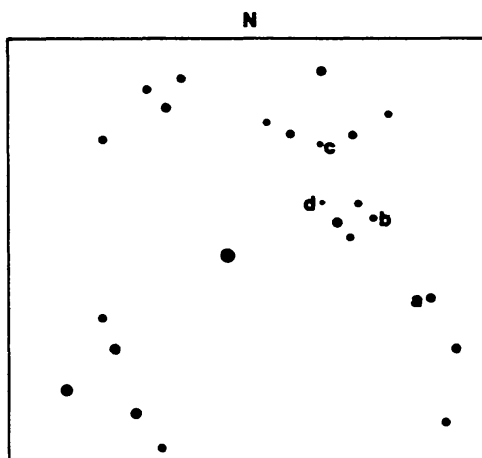


Figure 1. Finder chart for UU Ophiuchi (roughly to scale); $\alpha = 16^{\text{h}}54^{\text{m}}18^{\text{s}}.5$, $\delta = 25^{\circ}43'2$ (1950). The area covered is approximately $1^{\circ} \times 5^{\text{m}}$.