A REVISION OF EARLIER FINDINGS ON UU CANIS MAJORIS

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The article we published earlier on this star (Baldwin et al. 1976) requires major revision and correction. Following our announcement of the extraordinarily large change of period in this eclipsing binary we looked forward to the arrival of the next observing season and collection of additional visual data for further refinement of the period. However, when the first minima of the season were obtained they failed to confirm the new ephemeris. Minima continued to occur more than six hours early as compared to elements by Kukarkin et al. (1976),

$$JD \ (min) = \ 2442109.354 + 2.1665191 \ E \qquad (1)$$

but the period remained little changed from that given by (A). At this juncture the O-C diagram contained a huge offset of 6 hours with no change of period to account for it. Faced by this apparent huge discontinuity in an otherwise routine O-C curve we reviewed all available observational data.

The results we had published were critically dependent upon our three visual minima observed in early 1976 and upon five visual minima obtained by Swiss observers two and four years earlier (Locher 1972, 1973, 1974a, 1974b). Following a thorough re-examination of our own data we concluded that their validity was indisputable. Baldwin, then communicated with K. Locher, explaining the problem, and asking for an evaluation of the BBSAG visual data. Following an exchange of charts and examination of comparison stars used by each group of observers, Locher concluded that the UU Canis Majoris minima published by the BBSAG were invalid. Announcement of this fact (Locher and Peter 1977) cleared the way for a complete re-evaluation of the period of UU Canis Majoris.

The remaining valid minima known to the authors are listed in Table I. These include eight visual minima obtained by two of us, Samolyk and Wedemayer, during the past two observing seasons. Elements based upon the star's mean period since JD 2427860 are:

$$JD \ (min) = \ 2427860.173 + 2.1664848 \ E \qquad (2)$$

However, these linear elements do not fit well with the existing minima times. A determination of elements based upon the data available from the last two years yields:

$$JD \ (min) = \ 2442843.585 + 2.16644 \ E \qquad (3)$$

We suspect these elements, (3), best represent the current behavior of this star. This conclusion is well supported by an examination of Harvard plates from the 1970-1972 era, Table II.

At least one change of period during the 37-year interval the star remained unobserved is indicated. Continued observation during the next few years should permit refinement of this new period.

REFERENCES

Baldwin, M., Samolyk, G., and Wedemayer, G. 1976, Journ.
   A.A.V.S.O., 5, 1.
Kukarkin, B.V. et al. 1976, General Catalog of Variable Stars,
   Third Supplement, Moscow.
Locher, K. 1972, Orion, 128.
_____ 1973, BBSAG Bull., 12.
_____ 1974a, BBSAG Bull., 13.
_____ 1974b, BBSAG Bull., 14.
Locher, K., and Peter, H. 1977, BBSAG Bull., 32.
Syczyrbak, S. 1939, Acta Astronomica, Series C, 4, 53.
Tsesevich, V.P. 1954, Odessa Izvestia, 4, 150.

TABLE I

Observed minima of UU Canis Majoris

JD helio min 2400000+	Eqn. A E	Eqn. A O − C	Eqn. B E	Eqn. B O − C	Eqn. C E	Eqn. C O − C	Observer
27860.155	−6577	−0.003	0	−0.018	−6916	−0.0331	V. Tsesevich
29318.236	−5904	+0.011	673	+0.019	−6243	−0.264	S. Syczyrbak
42843.584	339	−0.220	6916	+0.003	0	−0.001	G. Wedemayer
42843.585	339	−0.219	6916	+0.003	0	0.000	G. Samolyk
42856.582:	345	−0.221:	6922	+0.002:	6	−0.001:	G. Samolyk
43055.893:	437	−0.230:	7014	−0.004:	98	−0.003:	G. Wedemayer
43055.898	437	−0.225	7014	+0.001	98	+0.002	G. Samolyk
43094.889	455	−0.231	7032	−0.005	116	−0.003	G. Samolyk
43094.893	455	−0.227	7032	−0.001	116	+0.001	G. Wedemayer
43170.717	490	−0.231	7067	−0.004	151	0.000	G. Wedemayer

TABLE II

Results from measurement of UU Canis Majoris images on Harvard plates, 1970 − 1972

JD at Mid-exposure Geocentric	Mean Step Estimate	Phase Eqn. A	Phase Eqn. C
2440917.583 [1]	6.0	.914	.983
0948.494	0.0	.182	.251
0949.491	0.0	.642	.711
1299.533	0.0	.211	.286
1306.514	0.0	.433	.508
1354.382	1.0	.528	.604
1357.381 [1]	4.7	.912	.988

[1] According to Kukarkin (1976) duration of the eclipse is
from phase .915 to .085. Plate exposure time (2 hours
in each case) amounts to .038 cycle. Detection of the
eclipse on the first and last sets of exposures seems
unlikely had the star been following an ephemeris
according to (1). An ephemeris according to (3) would
more likely give the observed results. Plate images
were measured by Josefa Manella.