REVISED ELEMENTS FOR V462 CYGNI

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Abstract

Recently acquired data and information from a previous paper were used to revise the elements for V462 Cygni, a Mira variable. The new data confirm neither of two previously suggested forms for the deviations from a constant period.

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V462 Cygni is a Mira variable previously studied at the Maria Mitchell Observatory (MMO) by Kehoe (1976) using over 1000 plates spanning the years 1926 through 1975. The present study extends the work through 1986 and adds data obtained for the years 1890 through 1925 using Harvard College Observatory I series plates.

The period of V462 Cyg is not constant. Kehoe uses a sine term to predict maximum light:

$$JD_{(max)} = 2439650 + 371\ E + 50\sin(7.2\ E). \qquad (1)$$

The Fourth Edition of the **General Catalogue of Variable Stars** (Kholopov et al. 1985) (GCVS) gives two sets of linear elements:

for JD 2416000 to 2435200,

$$JD_{(max)} = 2428540 + 376\ E, \qquad (2)$$

and after JD 2435200,

$$JD_{(max)} = 2439650 + 366.68\ E. \qquad (3)$$

The first is equivalent to

$$JD_{(max)} = 2439780 + 376\ E \qquad (4)$$

when E is redefined to be consistent with the epoch counts in Equation (1).

The more recently acquired data also indicate a changing period, but of a more complicated form. Also, as expected for a Mira variable, there are cycle-to-cycle changes in the shape of the light curve and the magnitude of maximum light.

An O-C diagram was constructed using for C the first two terms of equation (1), and a least squares line was calculated to fit the data. See Figure 1. The values of O-C are in column 3 of Table I. The new elements implied by this line are intended to represent the average length of a cycle and do not exactly predict the occurrence of maximum light. The new elements are as follows:

$$JD_{(max)} = 2433737 + 372.5\ E, \qquad (5)$$
$$\pm 5 \qquad \pm 0.2$$

or, with E' = E + 16:

$$JD_{(max)} = 2439692.2 + 372.5\ E'. \qquad (6)$$

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Deviations from this ephemeris are given as O-A in Table I. Deviations from the GCVS elements are given in Table I under the heading O-B.

REFERENCES

Kehoe, B. 1976, **Journ. Amer. Assoc. Var. Star Obs.** 5, 78.
Kholopov, P. N. et al. 1985, **General Catalogue of Variable Stars,** Fourth Edition, Moscow.

TABLE I

Observed Maxima of V462 Cyg and Deviations from Three
Ephemerides Discussed in the Text

Observed Maximum	E	O-C (days)	O-A (days)	O-B (days)
2412441	-73	-126	-81	69
2413540	-70	-140	-98	40
2413950	-69	-101	-60	74
2414350	-68	-72	-33	98
2415090	-66	-74	-37	86
2424020	-42	-48	-40	-8
2424844	-40	34	40	64
2425235	-39	54	59	79
2425600	-38	48	51	68
2426327	-36	33	34	43
2426730	-35	65	65	70
2427102	-34	66	65	66
2427470	-33	63	61	58
2427838	-32	60	56	50
2428198	-31	49	44	34
2428572	-30	52	46	32
2428935	-29	44	37	19
2429312	-28	50	41	20
2429655	-27	22	12	-13
2430060	-26	56	45	16
2430400	-25	25	13	-20
2430732	-24	-14	-28	-64
2432616	-19	15	-4	-60
2433000	-18	28	7	-52
2433333	-17	-10	-32	-95
2433683	-16	-31	-54	-121
2434060	-15	-25	-49	-120
2434445	-14	-11	-36	-111
2434781	-13	-46	-73	-151
2435180	-12	-18	-46	-128
2435577	-11	8	-21	-40
2435920	-10	-20	-50	-63
2436305	-9	-6	-37	-45
2438930	-2	22	-18	13
2439292	-1	13	-28	9
2439675	0	25	-17	25

TABLE I (cont'd)

| Observed Maximum	E	O-C (days)	O-A (days)	O-B (days)
2440050	1	29	-14	33
2440418	2	26	-19	35
2440780	3	17	-29	30
2441160	4	26	-21	43
2441538	5	33	-15	55
2441905	6	29	-20	55
2442278	7	31	-20	61
2442648	8	30	-22	65
2443032	9	43	-10	82
2443400	10	40	-14	83
2443777	11	46	-9	94
2444176	12	74	17	126
2444541	13	68	10	124
2444970	14	126	67	186
2445300	15	85	25	150
2445685	16	99	38	168
2446090	17	133	71	206
2446440	18	112	48	190
2446838	19	139	74	221
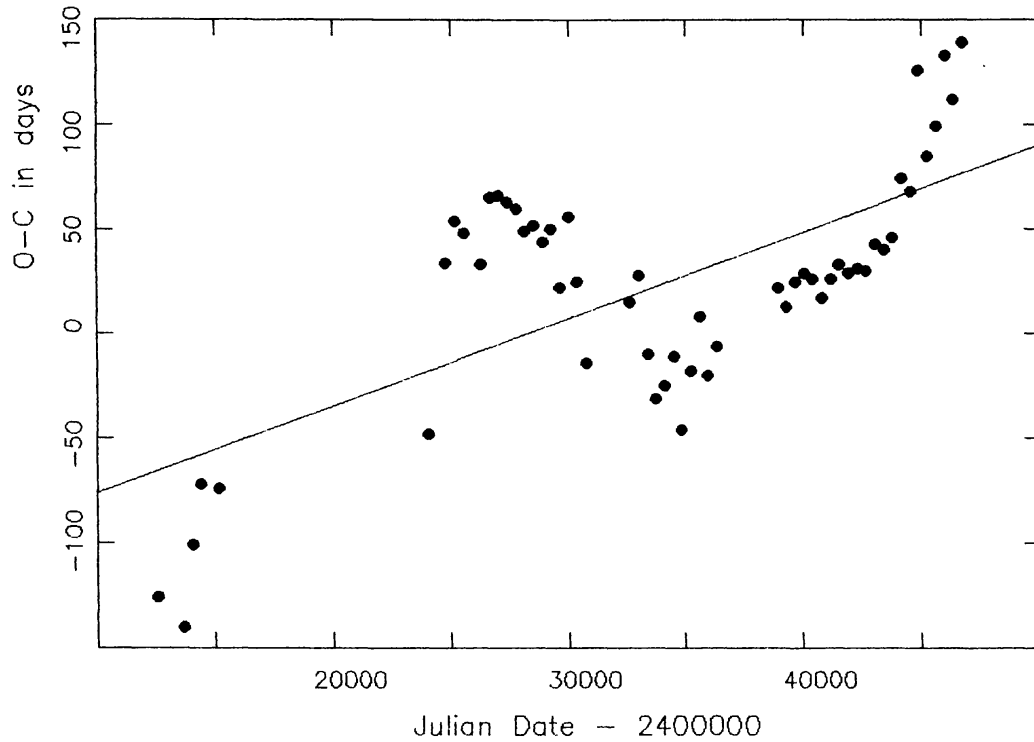
Figure 1. O-C in days plotted against Julian Date with least squares line for V462 Cyg.

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