

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

Number 1386

Konkoly Observatory
Budapest
1978 February 10

ON THE PERIOD CHANGE OF THE β CMA VARIABLE BW Vul

β Cma variable BW Vul was observed photoelectrically in uvby system at EGE University Observatory during the summer season of 1977. HD 198820 was used as the comparison star. The observations were carried out with the 48 cm Cassegrain telescope equipped with an unrefrigerated 1P21 photomultiplier.

Valtier (1976) has given the period of this star as:

$$P = 0.2010298 + 5.902 \times 10^{-10} t$$

and the ephemeris as:

$$\text{Max} = 24\ 27\ 999.9574 + 0.2010298 E + 5.932 \times 10^{-11} E^2.$$

This corresponds to rate of increase of about 1.86 s/cent. A year ago, Cherewick (1975) had also found the ephemeris as:

$$\text{Max} = 24\ 28\ 802.670 + 0.201032 E + 6.04 \times 10^{-11} E^2.$$

They admitted that the (O-C) residuals exhibit a parabolic curve using a period P_0 .

The new maximum times together with those given by Valtier (1976) were used in computations.

Using the period $P_0=0.20103$ and the epoch $T_0=24\ 34\ 247.8210$, the (O-C)_I residuals have been plotted against time. At first, we assumed that a parabolic curve can be fitted to the (O-C)_I residuals and therefore computed the period and ephemeris as:

$$P = .20103278 + 8.129 \times 10^{-10} t$$

$$\text{Max} = 24\ 34\ 247.8214 + 0.20103278 E + 8.1714 \times 10^{-11} E^2.$$

The rate of increase is about 2.56 s/cent.

However, when we reexamined the (O-C)_I variation, we found that it would be necessary to compute a new period and ephemeris for the reason that the (O-C)_I residuals did not in fact show a parabolic form, but a broken line (see Fig.1). The first segment of the broken line lies between JD 24 33 750 and 24 41 400 approx-

imately, while the second part from JD 24 41 400 to the present time.

Therefore we assumed two linear variations for $(O-C)_I$ values and computed the following results:

For the first segment (from JD 24 33 750 to JD 24 41 400 approx.)

$$\text{Max} = 24\ 34\ 247.8215 + .201035135 E$$

$$\text{Correlation coefficient } r = .9981$$

For the second segment (from JD 24, 41 400 to the present time)

$$\text{Max} = 24\ 41\ 537.7724 + .20104071 E$$

$$\text{Correlation coefficient } r = .9938$$

We can assume that the period was constant up to the years 1970-71, but afterwards showed a sudden increase and now stays stable.

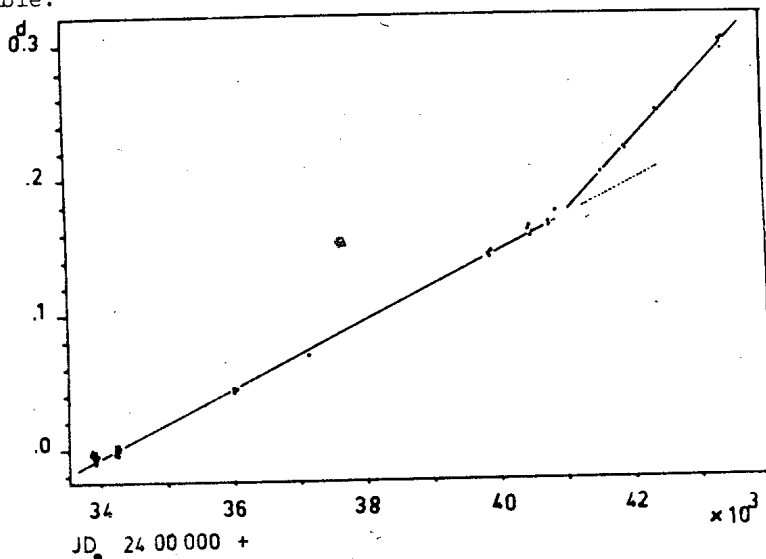


Fig.1. The $(O-C)_I$ variation.

ZEYNEL TUNCA

EGE University Observatory
Izmir, Turkey

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