COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1023
Konkoly Observatory
Budapest
1975 July 23

A CRITICAL REMARK ABOUT THE DETERMINATION OF MINIMUM TIMES

While investigating the period changes of the W UMa star 44i Boo, I looked through more than 25 years of photoelectric minimum time determinations. A closer inspection of the material revealed an increasing scatter in the more recent O-C data, and it seems very likely that this effect is not an intrinsic property of the star, whose small amplitude ($\Delta m \approx 0^m.15$) makes it a difficult object, but originates from a changing approach on the observer's part.

Fig. 1 illustrates this effect. The data have been compiled from various sources (Schneller 1965, Svechnikov and Surkova 1973, IBVS 530, 647, 789, 884, and 937). The following light elements, which satisfy the observations very well, have been used for the determination of the O-C values:

$$2438513.4166 + 0.2678143 \cdot E \quad (1947 - 1967) \quad \text{(Pohl 1967)}$$
$$2439852.4903 + 0.2678159 \cdot E \quad (1968 - 1973)$$

Each point of the diagram gives the standard deviation, derived from five O-C values, which are so closely spaced that the period variation during this time interval can be neglected. Around 1964, the scatter of the data increased from about 0.0009 to 0.0022 days.

A possible explanation of this general trend is, that the early observers were interested in the complete light curve and measured always large parts of it, while the more recent observations are "only" used for minimum time determinations, with probably short observing runs and only a few data points for each minimum.

The accuracy of $0^d.0022$ equals that of a visually determined minimum time of a typical Algol variable (Duerbeck 1975), and Herczeg and Frieboes-Conde (1974) have shown that this accuracy is not sufficient to draw any conclusion about the character of the period changes.

I therefore strongly request that the observers of minimum times

1. increase the accuracy by using more observations, and
2. apply methods for the determination of minimum times which include the derivation of errors (e.g., Kwee and van Woerden 1956, Breinhorst et al. 1973), so that the compiler can judge the quality of the material.

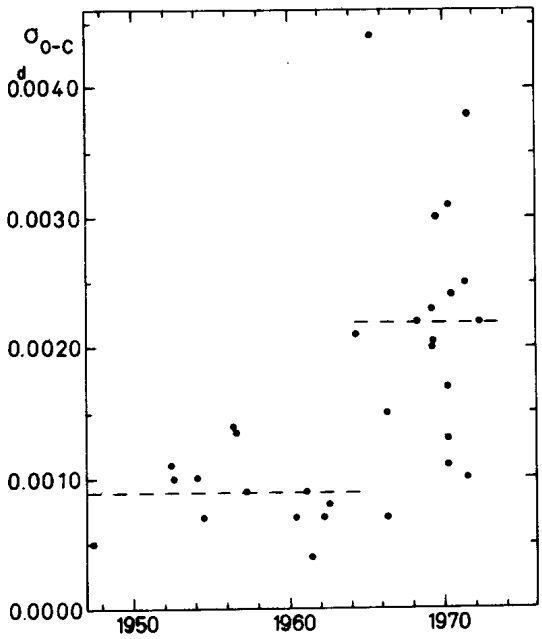

Fig. 1. Standard deviation of the O-C values of 44i Boo.

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