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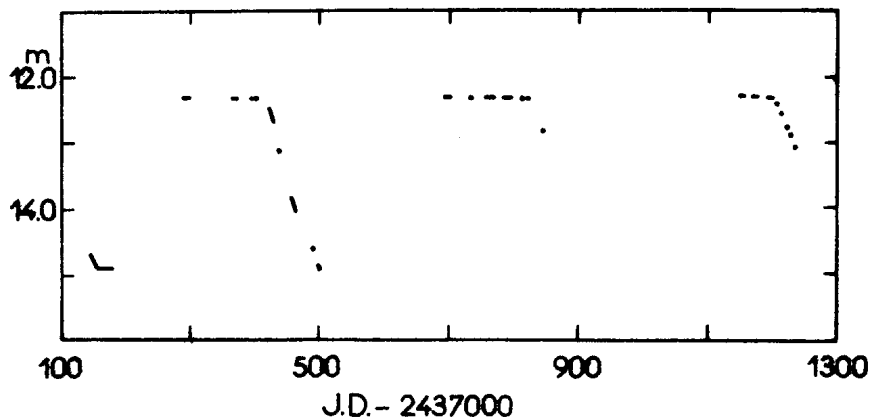
Konkoly Observatory
Budapest
12 February 1964

NOTE ON Z CIRCINI

While the first edition of Kukarkin and Parenago's "General Catalogue of Variable Stars" listed Z Cir as a probable eclipsing binary, the second edition mentions the eclipsing and the semiregular types of variability as equally possible.

An investigation, just carried out at Louvain, proves that the star cannot be an eclipsing variable, but that it is almost certainly an R Coronea Borealis star with a strong tendency towards periodicity and with a short characteristic interval between the minima. Both properties make it a really interesting object for observers in the southern hemisphere.

The brightness of Z Cir was estimated on 326 Metcalf plates, taken by the writer and by several other observers at the Boyden



Observatory between 1960,6 and 1963,6. The results of the estimates are shown in the Figure. Magnitudes were derived from star-counts and the tables in Groningen Publication No. 43.

As can be seen, the estimates confirm the existence of the long-living flat maximum which had been noticed earlier by the Harvard observers and had led them to presume variability of the Algol type. +/

The beginning of the descending branch could be well located on three occasions, namely on JD 2437409, 2437829 and 2438197. The interval between the two outer data covers two unequal cycles of 394 days mean length. If this trial period is corrected to 394,6 days, it accounts fairly well for our own minima and for all those communicated in Harvard Bulletin No. 883⁺/.

But this characteristic interval leaves no possibility that the star could be an eclipsing binary because:

1/ either $394^d.6$ is the orbital period (the observations require an eccentric orbit), but then we are forced to the conclusion that the eclipse lasts for about half a period, which is absurd. The descending branch is indeed seen to last for more than 90 days and the never observed ascending one should have approximately the same duration in case of an eclipse, hence the foregoing conclusion;

2/ or $394^d.6$ is only half the orbital period. But this assumption is excluded at once by the fact that both the odd and the even minima have amplitudes greater than $2^m.5$.

Hence our general conclusion: it appears most probable that Z Cir is a variable of the R CrB type, and a very interesting one, because of the trend to periodicity in the occurrence of the minima and of the rather high frequency (1 in 13 months) of the latter.

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+/ H. H. Swope, Harvard Bulletin No. 883, 1931.