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UBV OBSERVATIONS OF SU INDI

The southern eclipsing binary system SU Ind (= HD198827, SAO 230428) has received relatively little attention hitherto. It was included in the short period EB-type list in Budding (1981) with the G5 spectral classification carried over from the Finding list of Wood *et al.*, (1980). That catalogue also gave the secondary minimum, at 0.2 mag, to be half the depth of the primary – which presumably derives from the old photographic light curve of Hoffmeister (1956), on which the secondary minimum is quite incomplete.

Giuricin *et al.* (1983), give the binary an *'a'* type classification, suggesting thereby some incipient evolutionary activity — mass exchange or Algol-like characteristics. This might also go with the appreciable squared term in the ephemeris equation of Wood and Forbes (1963), though those authors listed SU Ind in a group prone to relatively large errors on this specification, due to insufficient time of minima data. In fact, the *prima facie* evidence of the recent light curves shown below, for which Hoffmeister's old period 0.986323 d was used, indicates any change in this value over a thirty year interval to be fairly small.

The GCVS of Kholopov (1985) lists SU Ind with an F5-6 spectral type, which certainly accords better with the $b - y = 0.314$ value of Wolf and Kern (1983) than did the earlier G5. The earlier type implies that the star is more distant than originally considered ($\sim$100 pc) by Dworak (1976).

SU Ind was observed from the Black Birch outstation of Carter Observatory for some nights in 1983, 1989 and again in 1993, but the near unity day period value hindered rapid collection of complete light curves. It was placed also on the target list of the recently commissioned automatic photometric telescope (APT) of the Kotipu Place Observatory (Hudson *et al.*, 1992), and observed on 12 good nights during a period from August to October 1993, using UBV filters as provided with the commercial SSP 5 photometer manufactured by Optec Inc.

The data have been reduced on PCs using in-house software (cf. Budding, 1993), and are presented in Figure 1 as essentially raw results. These light curves are almost complete from the APT, though a little contemporaneous data from Black Birch has been added to properly locate the bottoms of the primary minima, which were not completely observed by the APT. Observations of standard stars with this instrument indicate the V filter to be quite close to the Johnson standard ($\epsilon = 0.02$), though the B filter is slightly longward of standard ($\mu = 1.14$). The less reliably determined U calibration also indicates that U is close to the standard specification ($\psi = 0.98$).

The light curves of Figure 1 are the first worked through set obtained with our SSP 5 photometer, and give a good indication of the APT's performance as a 0.36m telescope

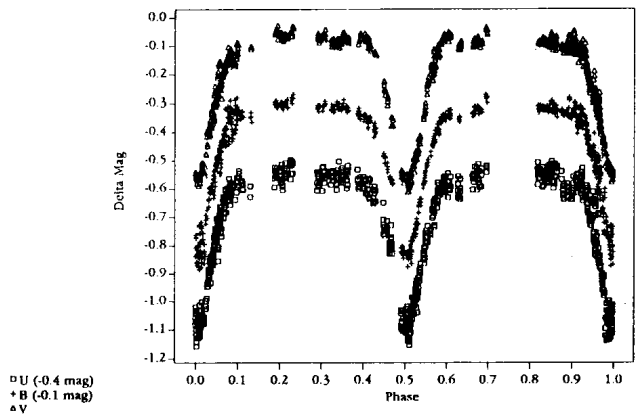

Figure 1. SU Ind – Delta Mag against Phase

on a $\sim$ 9.5 mag star in the dark suburban environment of Kotipu Place. They show the two minima to be of essentially equal depth, and a noticeable, though not pronounced, level of 'β-Lyrae type' proximity effect interaction between the components. These are probably a pair of very nearly equal, dwarf, F-type stars. Further processing and detailed analysis, including the backlog of Black Birch data, can be expected to follow this initial report.

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