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CONCERNING A SUSPECTED VARIABLE STAR IN M13

In 1964 Tsoo Yu-Hua of the Purple Mountain Observatory announced that he suspected two stars in the neighborhood of the globular cluster M13 to be low amplitude variables (reported in the Draft Reports of IAU General Assembly XIII,p.556). One of these stars, Savedoff A-18 (Savedoff 1956, Astron.J. 61, 254) is sufficiently close to the cluster that it could possibly be an outlying RR Lyrae member. This star has been denoted Variable 16 of the cluster in the Third Catalogue of Variable Stars in Globular Clusters (Sawyer Hogg 1972, preprint). If the variability and membership were confirmed the star would be of interest both because only a small number of RR Lyrae stars are known for M13, and because with a color index of -0.19 as found by Savedoff,which corresponds to approximately B-V = 0.0, the star would be unusually blue for a variable. This is of importance because the blue edge of the instability region for a cluster depends on the cluster's helium abundance.

As part of our investigation of the short period variables of M13 we have measured the brightness of Savedoff A-18 on the 57 blue plates of the cluster at our disposal. The measures were made with an iris photometer in relation to four nearby comparison stars. As a control, the non-variable star Savedoff A-328, which is of approximately the same brightness as A-18, was also measured and magnitudes determined in the same manner as for the suspected variable. We find that during the three years covered by our plates the star A-18 did not vary within the accuracy of our measures, i.e. the variations if any were less than 0.15 mag. The standard deviation for our measures of A-18 with respect to the mean is $\pm$0.05mag., identical to the value found for the control star. In both cases the individual values are distributed in roughly Gaussian fashion about the mean value, whereas measures from the same plates of the confirmed low amplitude variable, Variable 7, have a distinctly non-Gaussian distribution. Thus, the present results taken together with the very blue color index indicate that the star is probably not variable.

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