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ON THE NATURE OF VARIABLE STARS
IN M 67 AND NGC 188

The discovery of ultra-shortperiod variables in old galactic clusters M 67 (N. Kuročkin, 1960a, 1960b) and NGC 188 (C. Hoffmeister, 1964a, 1964b) is extremely interesting. The presence of these stars in old galactic clusters is perhaps typical. According to the discoverers these variables are RR Lyrae-type or RR Lyrae-similar stars.

Recently photometrical investigations of the stars in M 67 (O. J. Eggen, A. R. Sandage, 1964) and NGC 188 (A. R. Sandage, 1962) have been published. The colour excesses $E(B-V)$ in M 67 and NGC 188 are very small ($0^m.05$ and $0^m.06$ respectively).

The variable S 8280 (C. Hoffmeister, 1964b, $P = 0^d.15$) is identical with the star No 114 (Ring II) in NGC 188. It has $(B-V)_0 = +0^m.87$ and $M_V = +4^m.8$.

The variable C Π 3 1284 (N. Kuročkin, 1960b, $P = 0^d.13$) is identical with the star Vanderlinden 687 (H. L. Vanderlinden, 1945) of spectral class GO (Trümpler) and $M_V = +3^m.2$. This variable is also identical with the star III-33 on Eggen and Sandage's map.

It is also significant that the variable C Π 3 1277 (N. Kuročkin, 1960a, $P = 0^d.15$) near M 67 has $M_V = +3^m.6$ and spectrum KO (G. Herbig, 1961).

All these variables are situated on the upper boundary of the main sequence and there is no similarity of their position in the HRD to that of ordinary RR Lyrae stars or dwarf RR Lyrae stars. Very probably all these variables belong to the W Ursae Majoris type and it is necessary to double their periods.

The presence of W UMa variables in old galactic clusters is very surprising. The search for these variables in old galactic and globular clusters is extremely desirable.

We should like to thank Prof. Dr. C. Hoffmeister for identification map of the variable stars in NGC 188.

REFERENCES

- O.J. Eggen, A.G. Sandage, ApJ 140, 130, 1964.
G. Herbig, private communication, 1961.
C. Hoffmeister, MVS Bd. 2, Heft 3, 1964a.
C. Hoffmeister, Inf. Bull. V.S. 67, 1964b.
N. Kuročkin, Astr. Circ. USSR, 210, 1960a.
N. Kuročkin, Astr. Circ. USSR, 212, 1960b.
A.R. Sandage, ApJ 135, 333, 1962
H.L. Vanderlinden, Medd. Univ. Gent, No. 10, 1945.

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