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REVISED PERIODS FOR TWO RR LYRAE STARS:
VARIABLE 24 IN NGC 6171 AND VARIABLE 23 IN NGC 6656

The globular clusters NGC 6171 (Messier 107, R.A. $16^{\text{h}}29^{\text{m}}7$, Dec. $-12^{\circ}57'$, 1950) and NGC 6656 (Messier 22, R.A. $18^{\text{h}}33^{\text{m}}3$, Dec. $-23^{\circ}58'$, 1950) have been studied as part of the program at the David Dunlap Observatory for more than 30 years. Now they have been observed with two telescopes at the Las Campanas Observatory of the Carnegie Institution of Washington. Both of the stars investigated here are in such crowded areas that it is not possible to determine magnitudes very accurately. This makes period determination difficult. The northern hemisphere observations could be made over only a short interval in one night, and from these the variables were thought to be of type c. However, the present study, with nine hour runs on some nights, shows that both are of type a. On Las Campanas, they have been photographed with the University of Toronto 24-inch telescope since 1972 and NGC 6656 has also been photographed with the Carnegie 40 inch on five consecutive nights in 1976.

Variable 24 in NGC 6171 was discovered by Oosterhoff (1938) who published magnitudes from 15 photographs but did not have sufficient data for period determination. A period of 0.3462153 days was determined by Coutts and Sawyer Hogg (1971) who commented that an alternate value 0.529586 days was possible. Our Las Campanas plates have been measured with a Cuffey iris astrophotometer and reduced with the aid of sequence by Sandage and Katem (1964). This study indicates that the period is approximately 0.523 days and is changing. We therefore include only 1977 observations in the light curve. A more detailed study of

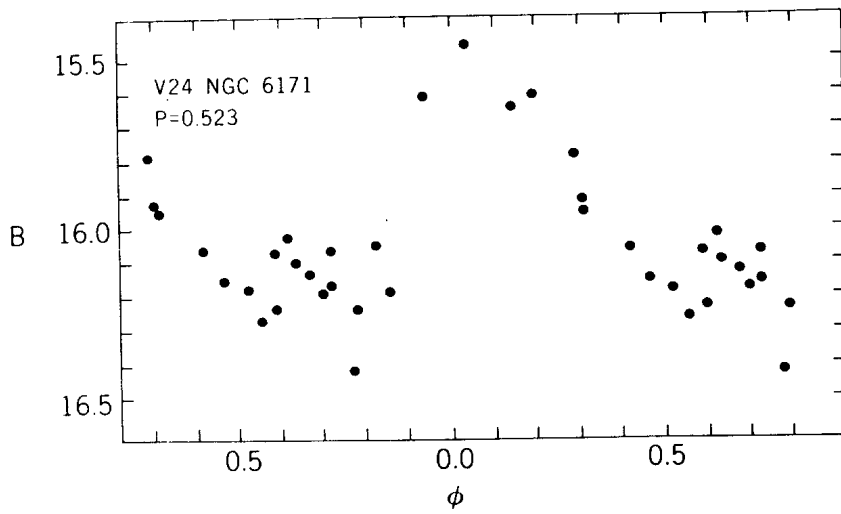


Fig. 1

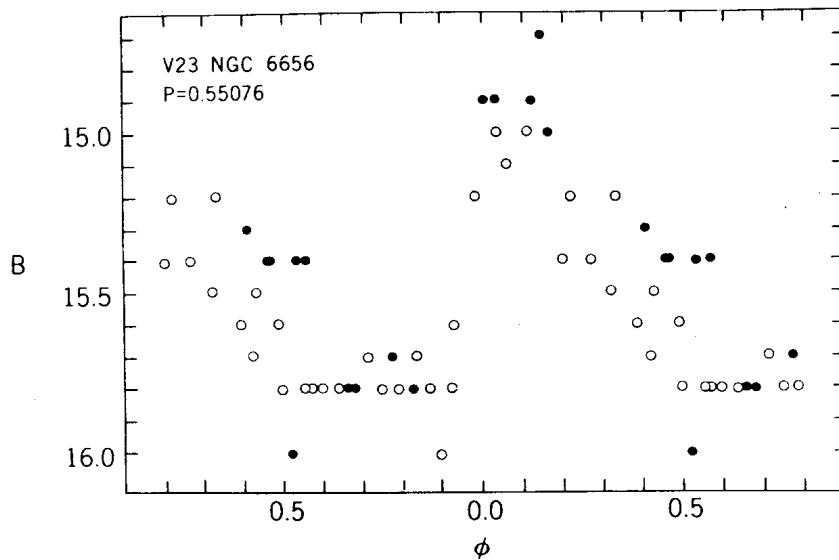


Fig. 2

the period changes of this and other RR Lyrae variables in NGC 6171 will be presented in a future paper.

Variable 23 in NGC 6656 was discovered by Sawyer (1944) who also determined a period, 0.3557 days. She commented that this variable was one of the most difficult in the cluster to estimate owing to its position near the centre. In the present study, we have estimated the magnitudes by eye, using a sequence by Arp and Melbourne (1959). A period of 0.55076 days fits all the observations presented here. This period is accurate to two figures, but further observations will be necessary to determine reliably the last three figures. On the light curve, open circles represent the 40-inch observations and closed circles the 24-inch observations.

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