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Validating the Reliability of Distance Estimation Using RR Lyrae gri-Band Period-Luminosity-Metallicity Relations

We compared several empirical period-luminosity-metallicity (PLZ) and period-Wesenheit-metallicity (PWZ) relations of RR Lyrae stars to evaluate their validity and precision in distance estimation. Our analysis used data from various observations and surveys of the Large Magellanic Cloud as benchmarks. We further investigated intrinsic factors contributing to discrepancies among the empirical relations. A detailed analysis of RR Lyrae PLZ/PWZ relations can help reduce distance estimation biases in future surveys, including LSST and others equipped with Sloan-like filters.

Section

Stars/Star Clusters

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