Characterizing the WLM Galaxy Using the Properties of RR Lyrae Variable Stars

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The Wolf-Lundmark-Melotte galaxy is a dwarf, irregular galaxy located in the constellation Cetus, that has yet to be fully and accurately analyzed. RR Lyrae variable stars are short-period variable oscillators that have a variety of well defined relationships that make them extremely useful in evaluating the properties of the galaxies they inhabit. Utilizing Hubble Space Telescope photometric data of thousands of stars in the WLM galaxy, RR Lyrae stars were identified based on collected light curve data that was filtered through the light curve fitting program FITLC. From there, using the properties of RR Lyraes, the WLM galaxy was characterized through the creation of color magnitude diagrams, Bailey diagrams, metallicity histograms, period- luminosity relations, and distance modulus histograms. A small digression was made in order to explore the relation between the residuals of the period-luminosity graphs and the metallicity of stars, and a linear relation was found between the two parameters. All graphs were created through the MatPlotLib plotting module in Python

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