University of Victoria

PHYSICS AND ASTRONOMY SEMINAR

(In Person)

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Dartmouth College

"RR Lyrae Stars as Distance Indicators"

Abstract

RR Lyrae stars are relatively low mass, radially pulsating variable stars. In the visible, RR Lyrae stars follow a luminosity-metallicity, though with a relatively large dispersion. In the near-infrared, RR Lyrae stars follow a period-luminosity-metallicity relation with dispersion of about 3% in luminosity at a given period and metallicity. As such, RR Lyrae stars make excellent distant indicators. They are commonly found in older stellar populations. Compared to Cepheid stars, RR Lyrae stars are much more common, are found in galaxies of all types and can be found in halos of galaxies, which have low reddenings and are relatively uncrowded. Their chief disadvantage as distance indicators is that they are considerably fainter than Cepheid stars. All sky surveys are finding large number of RR Lyrae stars in our galaxy and nearby galaxies. For example, the Gaia DR3 RR Lyrae catalog contains over 250,000 stars. In this talk, I will review the properties of RR Lyrae stars and the calibration of their near-infrared period-luminosity-metallicity relation using Gaia DR3 parallaxes.

Tuesday, April 11, 2023

2:30 pm PST in ELL 160