



PHYSICS AND ASTRONOMY SEMINAR

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“The Pristine survey: An efficient search for extremely metal-poor stars”

Abstract

The most metal-poor stars in the Galaxy are relics from the first generations of star formation, and their properties can reveal key information about the formation and evolution of the Milky Way. However, only a small number of these extremely rare stars are currently known, due to the difficulty in finding them amongst the overwhelmingly more abundant stars of higher metallicity. In this talk, I will present the Pristine survey, a narrow-band photometric survey in the wavelength region around the Ca H&K absorption lines, designed to efficiently search for extremely metal-poor (EMP) stars. In the first three years of the survey, we have covered $\sim 3,000$ square degrees of sky in the Northern hemisphere using the CFHT on Mauna Kea in Hawaii, as well as a sizeable spectroscopic follow-up sample using mostly the INT and WHT in La Palma. With this data, we have demonstrated unprecedented success rates for finding EMP stars. I will explain just how efficient this method is in comparison to other techniques, and how the Pristine survey is poised to make a significant contribution to constraining the metal-poor tail of the metallicity distribution function, as well as increasing the number of known ultra metal-poor (UMP) stars in the literature. In addition, I will discuss some key scientific results that have and will come out of this data set, including the characterisation of many local group dwarf galaxies, an analysis of substructure in the Galactic Halo, and the discovery of one of the most metal-poor stars known to date.

Thursday, September 20, 2018

10:30 a.m.

Clearihue Building – Room B215