

Fall 2021 Colloquium

Department of Physics & Astronomy, A&M-Commerce

Sep 16, Thursday, 4-5 PM in Science Building 127

(No refreshment temporarily due to COVID-19)

Astronomy

Characterization of Ultra-faint Dwarf Galaxies through Statistical Inference

Dr. Sarah Cantu

Texas A&M University - College Station



Sarah Cantu recently graduated with her Ph.D. in Astronomy from Texas A&M University (College Station). She received her B.S. in Physics and Mathematics from Texas A&M University-Commerce in 2015. During graduate school, she co-founded the department's Society for Underrepresented in Physics and Astronomy (SUPA) and was an active volunteer for the mentoring program for incoming graduate students and Astronomy on Tap. During her final year at TAMU, Sarah completed a NASA internship working on the automation of a controller for a simulated rocket ship. She is currently interviewing with Raytheon and other companies for data science/machine learning engineering positions. Her covid-induced hobbies include the typical plant obsession, crocheting, and baking...

Abstract

We present updated structural parameters of 13 Ultra-faint Dwarfs (UFDs) in the Dark Energy Survey (DES) footprint. We use final Year 6 coadded DES data that has a limiting magnitude of $g \sim 24.7$. In all cases, where the UFD is resolved, it is consistent with an old, metal poor stellar population. Tuc II and Cet II were found to be larger than previously thought.

We also, for the first time, present the slope of the Initial Mass Function (IMF) of two UFDs in the DES footprint. Both Ret II and Tuc III are well populated ~ 3 magnitudes below the Main Sequence (MS). Ret II was found to have a slope of 1.68 ± 0.5 and Tuc III was found to have a slope of 1.56 ± 0.8 . These results contribute toward our growing ability to explore low-mass IMF distributions with ground-based data.