SACRAMENTO STATE

Department of Physics and Astronomy

FALL 2022 Colloquium Series

“Simulating the Formulation of our Milky Way Galaxy”

Dr. Andrew Wetzel

University of California, Davis

The Gaia space telescope, together with a multitude of ground-based observational surveys, now measure 6-D orbital phase-space coordinates and elemental abundances for billions of stars across the Milky Way. Theoretically, modeling this new era of "galactic archeology" and "near-field cosmology" demands a new generation of simulations that achieve high dynamic range to resolve scales of individual stellar populations within a cosmological context. I will describe our suite of massively parallelized cosmological zoom-in simulations, run on the nation's most powerful supercomputers, that model the formation of Milky Way-like galaxies at parsec-scale resolution. I will discuss the formation of the Milky Way disk, including resolving the dynamics of giant molecular clouds and stars clusters. I also will discuss synthetic Milky Way surveys that we created from these simulations, which are publicly available, to provide theoretical modeling insight for the era of Gaia.

Thursday, September 15, 2022

4:00 – 5:20PM

MND1015

Open & Free to all students, faculty and public