San Mateo County Astronomical Society

SMCAS General Meeting and Presentation on Friday February 7, 2020

Dr. Ekta Patel

UC Berkeley, Miller Fellow, Astronomy Department

Satellite Galaxies and Dwarfs in the Local Group

Friday, February 7, 2020 , College of San Mateo, Building 36
SMCAS General meeting at 7:00 p.m. ISC Room, room 110
Presentation at 8:00 p.m. Planetarium
Free and open to the public, free parking.

Our Local Group of galaxies is composed of our Milky Way; its twin galaxy, Andromeda (M31); and the dozens of small "satellite" galaxies orbiting around each of them. Satellite galaxies are thought to be the building blocks of more massive galaxies, therefore tracking the orbital histories of satellite galaxies in the galactic neighborhood is crucial to our understanding of how the Milky Way and Andromeda arrived at their current properties. Since galaxies are embedded in halos of dark matter -- the invisible matter that makes up 85% of the matter in the Universe -- satellite galaxies also act as tracers of this massive, mysterious matter. In this talk, I will explain how the individual orbital histories of these galaxies help us learn about the evolution of satellites themselves. Additionally, I will demonstrate how the collective motion of these systems of satellite galaxies can reveal important characteristics of their host galaxies, including the properties of their dark matter halos.

Dr Patel is a Miller Fellow in the Department of Astronomy at the University of California Berkeley. She received her B.A. in Physics from New York University in 2014, and her PhD in Astronomy & Astrophysics from the University of Arizona in 2019. At the U of A's Steward Observatory, she worked to analyze high resolution cosmological simulations, such as Illustris, to help us understand the dynamical history of the Local Group. At UCB, she is continuing her work on understanding the dynamics of satellite galaxies orbiting around the Milky Way and Andromeda. She has actively engaged with the public in a variety of ways in her career so far, including past involvement with Colors of Nature, Project Astro, and NOAO Teen Astronomy Café.