

CSU PHYSICS COLLOQUIUM

“The Marvelous Milky Way”

Prof. Heidi Jo Newberg

Rensselaer Polytechnic Institute

Monday January 25th at 4:00 pm

Virtual via Zoom (see announcement for link)

Abstract

The Milky Way galaxy is the only galaxy that we can study in three dimensions and is an important key to understanding galaxy evolution. A recent flood of data has revolutionized our understanding of the dynamics of the Galaxy. Dwarf galaxies orbiting the Milky Way can be ripped apart by tidal forces into tidal streams of stars that can surround the entire galaxy. As they fall in, the dwarf galaxies excite oscillations in the Milky Way disk, which could be responsible for maintaining the Galaxy's spiral structure. The Large Magellanic Cloud, once considered a small galaxy inside our own, is now thought to be as much as 10% of the mass of the Milky Way, and thus shapes the disk and halo. Most recently, we have discovered the remnant of a dwarf galaxy that passed through the Galactic center and deposited shells of stellar debris that can help us determine the time of collision. All of these dynamic structures can help us understand the distribution of dark matter in our galaxy.

Biography

Prof. Newberg earned her PhD in Physics from UC Berkeley, where she was an inaugural member of the Supernova Cosmology project that went on to discover the presence of dark energy that accelerates the expansion of the Universe. She was the first postdoc on the Sloan Digital Sky Survey, and helped to build the software system, survey design, and operations plan for this experiment that transformed astronomy to include large collaborations creating large surveys of data. She then joined Rensselaer Polytechnic Institute as a faculty member. At Rensselaer, she led participants in LAMOST, US, and created MilkyWay@home, a petaFLOPS-scale volunteer computing facility that uses ~20,000 volunteered computers to understand the Milky Way. She is most known for her discoveries of tidal streams in the Milky Way halo and contributions to the Sloan Digital Sky Survey, for which she was named a Fellow of the APS.