

Tuesday, March 22nd, 2022, at 2:30pm

SPEAKER: Tien-Tien Yu, Assistant Professor at Department of Physics, University of Oregon

TITLE: "The Search for Dark Matter: from theory to experiment and back again"

ABSTRACT:

What is Dark Matter? This is one of the most outstanding questions in physics and has led to decades-long efforts on both the theoretical and experimental fronts. In this talk, I will highlight my efforts to search for and understand candidates of particle dark matter in which the mass of the dark matter is less than a proton; these candidates are known as sub-GeV dark matter. Historically, the sub-GeV mass range was relatively unexplored due to the difficulty of detecting such light dark matter with traditional techniques. In this talk, I will explain some of the theoretical principles and experimental strategies needed to detect sub-GeV dark matter candidates, and show how we have leveraged these strategies to create the first dedicated sub-GeV dark matter direct detection experiment: SENSEI. I will show how my group is exploring the properties of dark matter and more generally Beyond the Standard Model physics using sub-GeV dark matter direct detection experiments.