



SCHRÖDINGER

COLLOQUIUM

www.physik.uzh.ch/schroedinger

PROF. ELENA APRILE Columbia University, USA

The XENON project: at the forefront of Dark Matter Direct Detection

What is the Dark Matter which makes 85% of the matter in the Universe? We have been asking this question for many decades and used a variety of experimental approaches to address it, with detectors on Earth and in space. Yet, the nature of Dark Matter remains a mystery. An answer to this fundamental question will likely come from ongoing and future searches with accelerators, indirect and direct detection. Detection of a Dark Matter signal in an ultra-low background terrestrial detector will provide the most direct evidence of its

existence and will represent a ground-breaking discovery in physics and cosmology. Among the variety of dark matter detectors, liquid xenon time projection chambers have shown to be the most sensitive, thanks to a combination of very large target mass, ultra-low background and excellent signal-to-noise discrimination. Experiments based on this technology have led the field for the past decade. I will focus on the XENON project and its prospects to continue to be at the forefront of dark matter direct detection in the coming decade.

