San Mateo County Astronomical Society

SMCAS General Meeting and Presentation on Friday February 2, 2018

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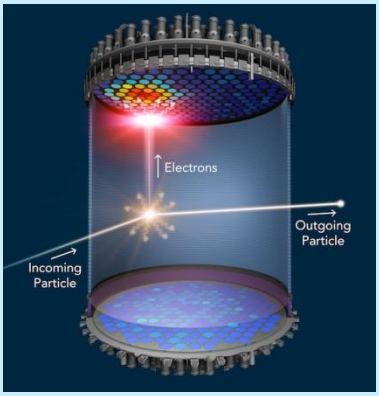
Direct Detection of Dark Matter

Friday, February 2, 2018 , 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 (recommend lots 5 or 6).



Every object that we can see in the entire Universe constitutes a mere 15% of all matter. The remaining 85% is the mysterious dark matter - a type of particle which only interacts with the other 15% extremely rarely. Between the time dark matter's presence was conclusively discovered in the 1970s and the present day, the evidence for the existence of dark matter has been mounting. But to date, no one has directly observed the illusive particle. There are several common ways to search for dark matter, one being the direct interaction of dark matter with regular matter - called direct detection. The LZ experiment is a next-generation dark matter direct detection experiment to be located at the Sanford Underground Research Facility (SURF) in South Dakota. When completed, the experiment will be the world's most sensitive detector for WIMPs (Weakly Interacting Massive Particles) over a large range of WIMP masses. In this talk Kelly will give a dark matter primer, a brief overview of a few different dark matter searches, and will finish with a detailed look at the science of the LZ detector.

Kelly Stifter is a Physics Ph.D. student and NSF fellow at Stanford University who does most of her work at SLAC National Accelerator Laboratory. Previously, she has worked at several different particle physics facilities including CERN, Fermilab, and the Soudan Mine. She also has a passion for science communication and outreach, and has worked as a SLAC tour guide for the past two years, and has been involved in many outreach events including the Bay Area Science Festival and Astronomy on Tap Bay Area. In her free time she enjoys rock climbing, backpacking, and sewing. Her current research at SLAC involves designing, building, and operating mid-scale prototypes for the upcoming LZ detector, which will be looking for illusive Dark Matter particles called WIMPs. SLAC's participation in LZ is part of the research program of the SLAC–Stanford Kavli Institute for Particle Astrophysics and Cosmology.