Contribution ID: **248**   Type: **Oral**

The Sanford Underground Research Facility (SURF)

Thursday 12 September 2013 17:20 (20 minutes)

The concepts for SURF were developed with the support of the US National Science Foundation as the site for the Deep Underground Science and Engineering Laboratory (DUSEL). The US Department of Energy Office of High Energy Physics now supports the facility operation through Lawrence Berkeley National Laboratory that in turn support very important efforts in direct detection of dark matter and neutrinoless double beta decay.

SURF is being developed in the former Homestake Gold Mine, in South Dakota. Barrick donated the site to the State of South Dakota in 2003, following over 125 years of mining, which created over 600 km of tunnels and shafts in the facility, extending from the surface to over 8000 feet below ground.

The philanthropist, T. Denny Sanford, gifted US$70M, to convert the former mine into a laboratory and develop an education facility. The access to the underground has been rehabilitated and improved. The facility has been stabilized and the accumulated underground water has been pumped below the 6000L. The Davis Cavity at the 4850L has been enlarged and adapted primarily for dark matter experiments. A new laboratory has been excavated and outfitted adjacent to the Davis Cavity to host a neutrinoless double beta decay experiment. Additional science efforts are hosted throughout the facility, including an ultrapure detector development laboratory, multiple geoscience efforts, and a public outreach program.
The science program for the coming ~ five years consists of the MAJORANA DEMONSTRATOR, the LUX dark matter search, the Center for Ultralow Background Experiments, and geoscience installations. Plans are advancing to host the Department of Energy's Long-Baseline Neutrino Experiment located at the 4850L, a nuclear astrophysics program, and subsequent 2nd and 3rd generation dark matter experiments.

The SURF facility and its science programs will be presented.

Author: LESKO, Kevin (LBNL)

Presenter: LESKO, Kevin (LBNL)

Session Classification: Underground Laboratories/ Large Detectors II

Track Classification: Underground Laboratories/Large Detectors (incl. Nucleon Decay)