LNGS SEMINAR SERIES

John F. Wilkerson

University of North Carolina

The Majorana Demonstrator ^{76}Ge Experiment

The MAJORANA collaboration is constructing the DEMONSTRATOR, an ultra-low background array consisting of 40 kg of germanium detectors, of which ~30 kg will be enriched to 87% in ^{76}Ge. The primary goal is to demonstrate backgrounds low enough to justify proceeding with building a large (tonne) scale ^{76}Ge based neutrinoless double-beta decay experiment. The DEMONSTRATOR utilizes p-type point contact detectors, which offer attractive features including low-energy (sub keV) thresholds and superior pulse shape discrimination of multisite events. With its anticipated low energy threshold, the array should also be able to search for physics beyond the standard model, including light mass WIMP dark matter. The Ge detectors are mounted in cryostats that are constructed out of ultra-low activity electroformed copper which are situated in a conventional compact shield that includes an inner layer of electroformed copper shielding. The experiment is located in a clean room at the 4850' level (4300 mwe) of the Sanford Underground Research Facility (SURF) in Lead, South Dakota. This talk will report on the current status of the DEMONSTRATOR and discuss future prospects for a large scale Ge experiment that combines the best features of GERDA and the MAJORANA DEMONSTRATOR.

SEPTEMBER 24, 2014 – 2:30 PM

LNGS - "B. PONTECORVO" ROOM