Contribution ID: **96** Type: **Oral**

LEGEND: Searching for 0νββ in 76-Ge

Tuesday, May 14, 2024 2:00 PM (20 minutes)

Despite being the most abundant particle in the universe with mass, several key characteristics of the neutrino remain unknown. A theorized decay process called neutrinoless double beta decay (0νββ) offers a unique method to probe properties of the mysterious neutrino, including its quantum nature and mass. The Large Enriched Germanium Experiment for Neutrinoless double-beta Decay (LEGEND) is utilizing the benefits of High Purity Germanium (HPGe) detectors to investigate 0νββ in the 76Ge isotope. Building on the successes of the Majorana Demonstrator (MJD) and Gerda experiments, LEGEND is using a phased approach to achieve a 1 tonne array of HPGe detectors enriched to > 90% in 76Ge with a goal to be sensitive to a 0νββ half-life of > 1028 years. The first phase, LEGEND-200, has been actively taking data with 142 kg of HPGe detectors at the Laboratori Nazionale del Gran Sasso (LNGS) since March of 2023.
The full tonne scale experiment, LEGEND-1000, will begin construction soon at LNGS. This talk will cover the extensive efforts of the LEGEND collaboration and the utilization of technologies from the MJD and GERDA experiments. This work is supported by the U.S. DOE and the NSF, the LANL, ORNL and LBNL LDRD programs; the European ERC and Horizon programs; the German DFG, BMBF, and MPG; the Italian INFN; the Polish NCN and MNiSW; the Czech MEYS; the Slovak SRDA; the Swiss SNF; the UK STFC; the Russian RFBR; the Canadian NSERC and CFI; the LNGS,
SNOLAB, and SURF facilities.

Primary author: BOS, Brady (THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL)

Presenter: BOS, Brady (THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL)

Session Classification: Double Beta Decay

Track Classification: Double Beta Decay