PhD Summer School on Neutrinos

Here, There & Everywhere

July 11-15, 2022
Niels Bohr Institute, Copenhagen

Contribution ID: **75**   Type: **Oral**

Background modeling in GERDA

Thursday 14 July 2022 14:48 (12 minutes)

Since 2011, the GERmanium Detector Array (GERDA) collaboration has searched for the double-beta decay without neutrinos ($0\nu\beta\beta$) of ^{76}Ge by operating bare germanium detectors, enriched in ^{76}Ge, in liquid argon. The technological challenge of GERDA was to operate in a "background-free" regime in the region of interest (ROI) after analysis cuts for the full 100 kg·yr target exposure of the experiment.
A precise knowledge of background intensity and distribution is essential to search for faint signals.
The background model obtained by studying the PhaseII data was able to well describe the data and the results were compatible with the expectations from material screening measurements.
The background event distribution in the ROI around $Q_{\beta\beta}$ (~2039 keV) could be well approximated with a constant function.
Since 2018, a lower energy threshold has been applied, and a background model in the new range is fundamental because it enables more sensitive signal searches. Furthermore, the next-generation experiment LEGEND will perform new signal searches at low energy.
This talk will focus on background modeling in GERDA, with a particular emphasis on the low energy range.

Author: BIANCACCI, Valentina

Presenter: BIANCACCI, Valentina

Session Classification: Student Talks