Progetto	Analysis of new LEGEND-200 data with an innovative techniques
Esperimento / sigla proponente	LEGEND-200 / GERDA
Laboratorio ospitante	LNGS
Contact person presso il laboratorio	Nicola Rossi
Periodo previsto:	01/06/23 - 31/10/23
Sezioni e tutor proponenti:	LNGS, Roma3 /Nicola Rossi
Descrizione attività (max 1000 caratteri)	The project consists in the analysis of recent data from LEGEND-200, an experiment searching for neutrinoless double beta ($0\nu\beta\beta$) decay. The core of the experiment is an array of High Purity Germanium (HPGe) detectors deployed directly in liquid argon (LAr) and enriched in the double beta isotope 76Ge up to 92%. The surrounding LAr is able to shield external particles and veto events, thanks to the detection of the LAr scintillation light with an instrumentation composed of wavelength shifting fibers and Silicon PhotoMultipliers (SiPMs). The first part of activity of the project concerns the implementation of an innovative signal processing technique on data acquired with HPGe detectors and SiPMs using a custom Python software currently in development. That technique is based on the Digital Penalized Least Mean Squares (DPLMS) method, consisting of the estimation of the pulse amplitude minimizing the deviations between experimental samples and a reference curve. The second part of the project aims at studying and optimizing the pulse shape discrimination (PSD) for Coaxial HPGe detectors (ICPC) with the new LEGEND200 data. The performance of the PSD is crucial for the background rejection in the region of interest for the $0\nu\beta\beta$ search.
Altre indicazioni: (max 500 caratteri)	
Facility che il laboratorio ospitante mette a disposizione	Mensa
Note:	