Titolo del progetto:	**Calibration and simulation of POLYFEMO detector**
Esperimento/sigla proponente	ASFIN2
Laboratorio ospitante	LNS
Contact person presso il laboratorio	Dott. D. Lattuada, Dott.ssa R. Spartà
Periodo previsto:	aprile-settembre 2024
Sezioni e tutor proponenti :	PG Prof. S. Palmerini LNS Dott. M. La Cognata PD Prof. Mazzocco
Descrizione attività (max 1000 caratteri)	During the r process a large number of n-rich nuclei are formed later beta-decaying to the valley of stability. If the daughter-nucleus excitation energy is larger than the neutron emission threshold, neutrons are emitted leading to less neutron-rich nuclei, while enriching the expanding debris of neutrons after freezeout, leading to more neutron capture reactions. Such interplay is a key element in the understanding of the r-process. The development of POLYFEMO (POLYcube detector array For Experimental Multimessenger astrOnomy) requires the assembling and upgrade of the POLYcube ^{3}He neutron counter available at LNS and complement it with an implantation chamber, containing two silicon detectors for beam tagging and electron detection, and a Ge detector. The purpose of this research activity is to begin with the implementation of the POLYFEMO multidetector into a GEANT4 simulation, to carry out calibration using the neutron sources available at LNS, and to compare the resulting spectra with the simulated ones, in collaboration with LNS researchers. This would allow to validate the simulations and determine with high accuracy the combined efficiency of the multidetector.
Altre indicazioni: (max 500 caratteri)	Basic knowledge of C++ and ROOT
Facility che il laboratorio ospitante mette a disposizione	Guesthouse
Note:	L'esperienza svolta presso il laboratorio ospitante può essere parte integrante della attività richiesta per un progetto di tesi magistrale.