

Titolo del progetto:	<b>Data analysis of the photodisintegration of <math>^{112}\text{Sn}</math> in the astrophysical p-process</b>
Esperimento/sigla proponente	ASFIN2
Laboratorio ospitante	LNS
Contact person presso il laboratorio	Dott. G.L. Guardo
Periodo previsto:	aprile-settembre 2024
Sezioni e tutor proponenti :	LNS      Prof. D. Lattuada Dott. G.L. Guardo
Descrizione attività (max 1000 caratteri)	<p>The nucleosynthesis of the so-called p-nuclei is one of the most puzzling problems yet to be solved. In order to explain the abundances of these proton-rich nuclei (with mass A between 74 and 196) that cannot be synthesized by neutron-capture processes (s- or r-process), a third mechanism called p-process has been introduced. This mechanism, which is supposed to take place in explosive scenarios, involves s-nuclei as seeds and a succession of <math>(\gamma,n)</math>, <math>(\gamma,p)</math>, <math>(\gamma,\alpha)</math> reactions and their inverse processes happening at high temperatures (<math>T &gt; 10^9\text{K}</math>) and short time scales. Among the others, the crucial <math>(\gamma,\alpha)</math> photodisintegration cross section of <math>^{112}\text{Sn}</math> is still not directly measured.</p> <p>Thus, an experiment was performed at the High Intensity Gamma-Ray Source (HIgS, Duke University) with a collimated photon flux with energies from 11 MeV to 20 MeV using the SIDAR array. The research activity aims to analyze the experimental data (in ROOT format) starting from the calibration of the detectors involved and performing devoted simulation using GEANT4 in order to cross check the results.</p>
Altre indicazioni: (max 500 caratteri)	Basic knowledge of C++, GEANT4 and ROOT
Facility che il laboratorio ospitante mette a disposizione	Guesthouse
Note:	<u>L'esperienza svolta presso il laboratorio ospitante può essere parte integrante della attività richiesta per un progetto di tesi magistrale.</u>



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