

Progetto per borse CSN3 per gli studenti della laurea magistrale	
Titolo del progetto:	Capture barrier distribution from large-angle scattering measurement
Esperimento/Sigla proponente:	Gamma Giovanna Montagnoli (giovanna.montagnoli@unipd.it)
Laboratorio ospitante:	LNL
Contact person presso il laboratorio	A. Goasduff
Descrizione attività (max 1000 caratteri):	The excitation function for elastic and quasi-elastic scattering at backward angles will be measured, for the system $^{64}\text{Ni} + ^{238}\text{U}$ at several energies from $\approx 10\%$ below to $\approx 10\%$ above the Coulomb barrier. This will be done by detecting the Ni-like ions in the angular range $\theta_{\text{lab}} \approx 132^\circ - 156^\circ$, by using a double-sided silicon detector DSSD installed in the scattering chamber at LNL. By differentiating the excitation function with respect to the energy, the barrier distribution for capture will be extracted. The hot fusion of $^{64}\text{Ni} + ^{238}\text{U}$ might lead to the production of the still unknown $Z=120$ superheavy nuclei. The capture barrier distribution is likely to be strongly influenced by the low-lying collective structure of ^{238}U as well as by its strong octupole vibration. In such a heavy system the usual methods (fusion-evaporation excitation function and its second energy derivative) to extract the barrier distribution cannot be applied. The capture barrier distribution will indicate the optimum energy for the possible synthesis of $Z=120$. The student will participate in the experiment and will perform the first part of the data analysis.
Altre indicazioni (max 500 caratteri):	
Facility che il laboratorio ospitante mette a disposizione:	Mensa, risorse informatiche, foresteria in caso di turni di misura
Note:	