

Experimental measurements of neutron-induced reactions at the GANIL-NFS facility

Thursday, 19 October 2017 16:30 (20 minutes)

Experimental measurements of neutron-induced reactions at the GANIL-NFS facility

Diego Tarrío*, Alexander V. Prokofiev, Stephan Pomp
and the Medley group

Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden

*diego.tarrio@physics.uu.se

Despite long efforts on experimental and theoretical studies of nuclear reactions, it is still not possible to predict the cross sections of most reactions from the first principles, and therefore accurate measurements are still necessary in order to improve evaluated nuclear data files and to benchmark nuclear model codes. In particular, studies of neutron-induced reactions in medium-energy range are demanded by both fundamental research and applications.

For that purpose, a new facility called Neutrons For Science (NFS) is being built at GANIL (Caen, France). It will provide quasi-mono-energetic and white neutron beams with energies up to 40 MeV.

Our research group at Uppsala University is preparing two kinds of experiments to be performed at the NFS facility: one is devoted to improve neutron cross section standards, by doing a simultaneous measurement of $^{235}\text{U}(n,f)$ and $^{238}\text{U}(n,f)$ relative to neutron-proton elastic scattering; the other is aiming at measuring double-differential cross-sections of light-ion production in different materials, starting with a measurement on Carbon, that has been already approved by the GANIL Program Advisory Committee.

More details on the ongoing work on these projects at Uppsala University will be presented in this contribution. The main characteristics of the NFS facility will be shown, as well as an overview of some of the other projects that will be making use of the NFS.

Primary author: Dr TARRÍO, Diego (Uppsala University)

Co-authors: Dr PROKOFIEV, Alexander V. (Uppsala University); POMP, Stephan (Uppsala University)

Presenter: Dr TARRÍO, Diego (Uppsala University)

Track Classification: SFS - KF