

Gamma Ray Spectroscopy at an external neutron beam of the Institut Laue-Langevin

Wednesday, June 12, 2013 8:45 AM (30 minutes)

Gamma ray spectroscopy at external neutron beams offers unique possibilities for nuclear structure studies. The present talk summarises the recent efforts within the EXILL campaign, in which a highly efficient HPGe detector cluster was put around the intense cold neutron beam Pf1b at the Institut Laue Langevin (ILL). The setup consisted of clover detectors from the EXOGAM array, coaxial detectors from the GASP array and clover detectors from the ILL. All detectors were mounted with AntiCompton shields at a close distance to a sample to allow prompt spectroscopy studies. Data were taken with a trigger free digital acquisition system. The campaign included several detailed (n,gamma) studies and spectroscopy of fission products populated in neutron induced fission of ^{235}U and ^{241}Pu . Lifetime measurements with the fast timing technique using 16 $\text{LaBr}_3\text{:Ce}$ scintillators in combination with 8 clover detectors were also done. A comparison of first results to experimental data obtained from in-pile (n,gamma) experiments and from measurements with spontaneous fission sources will be presented. Finally an outlook of further developments for multi detector setups at neutron beams will be given. Here the concept of the ILL project FIPPS will be introduced, a combination of a fission fragment mass spectrometer with HPGe-detector clusters.

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