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## **Nuclear spectroscopy with thermal neutrons and actinide targets in ILL**

Institute Laue-Langevin (ILL) is a reactor based European neutron source, which delivers a very intense neutrons for ~40 different instruments. There are two nuclear physics instruments in ILL, which use actinide targets. Lohengrin [1,2] is a fission recoil separator with very high mass and energy resolving power ( $A/\Delta A = 1500$ ,  $E/\Delta E = 100 - 1000$ ). In 2018 series of successful experimental campaign was carried out with such as fast timing, conversion electron and fission studies using fission fragments. The overview of the campaign and preliminary results of the experiments will be presented.

FIPPS [3,4] is the new nuclear physics instrument of ILL for the prompt  $\gamma$ -ray spectroscopy of nuclei produced in neutron-induced reactions. Currently, (Phase 1) FIPPS consists of an 8 array of HPGe clover detectors and a pencil-like intense thermal neutron beam. The overview of the first fission experimental campaign with an active actinide target diluted in scintillator will be presented. In the near future upgrade of the instrument (phase 2) will be carried out using anti-Compton shield and the Gas-Filled-Magnet (GFM). The newly proposed GFM and physics opportunities will be discussed.

[1] P. Armbruster et al., Nucl. Instr. and Meth. 139 (1976) 213–222

[2] G. Fioni et al., Nucl. Instr. and Meth. A 332 (1993) 175–180

[3] A. Blanc et al., EPJ Web of Conferences 93 (2015) 01015

[4] C. Michelagnoli et al., EPJ Web Conf. 193 (2018) 04009.

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