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Last news from GRAPhEME @ GELINA and future measurements @ GANIL/SPIRAL2/NFS facility

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GRAPhEME is a g-spectrometer developed by CNRS/IPHC Strasbourg (France), in collaboration with EC-JRC/Geel (Belgium) and IFIN-HH Bucharest (Romania). With its 6 High Purity Planar Germanium detectors, GRAPhEME, installed at the EC-JRC GELINA facility, was optimized for measurements of accurate (n,xn g) cross sections on actinides. The experimental methodology is based on prompt gamma-ray spectroscopy coupled to time of flight measurements. In a first configuration, involving 4 HPGe, several measurement campaigns have produced numerous sets of data for 235U , 238U , 232Th and 183,182,184,186,natW isotopes. An update of the setup in 2016, with a segmented (6x6 pixels) HPGe has opened the way for measurements with very active targets. A first campaign on 233U has been performed and a second one, on 239Pu is ongoing. Beyond the experimental work, a strong collaboration with theoreticians from CEA, LANL and IAEA has emerged allowing the use of the data produced with GRAPhEME to test and constraint nuclear reaction codes like TALYS, CoH and EMPIRE.

In this contribution, an overview of the last results (on 232Th, 233U, 238U) obtained with GRAPhEME since the last WINS workshop in 2018 will be presented.

The next challenge tackled by our collaboration is the completion of (n,2ng) and (n,3ng) cross sections measurements at the new GANIL/SPIRAL2/NFS facility in Caen, France. The results of first tests performed in 2022 at NFS during which we have verified that the experimental conditions are suitable for prompt g-ray spectroscopy method, will be presented. The first measurement case will concern 238U and is planned in fall 2024. The status of the preparation of this measurement will be discussed.

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Track Classification: Recent Experimental Results of Elastic and Inelastic Neutron Scattering