

On the path to gamma-beam experiments: Activities with the ELIGANT setups from ELI-NP

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The ELIGANT instruments are the dedicated tools being developed for studying high-energy collective nuclear excitations using the gamma beam at ELI-NP. The topics of interest in these studies range from fundamental nuclear structure properties of the Giant Dipole Resonance and the low-energy strength enhancement in the Pygmy Dipole Resonance region, as well as applications in p-process nucleosynthesis and propagation of Ultra-High Energy Cosmic Rays. The tools at our disposal consist of large-volume LaBr₃:Ce and CeBr₃ detectors for high-energy γ -rays, liquid scintillators and lithium glass scintillators for high- and low-energy neutron time-of-flight. In preparation for the gamma-ray beam, these instruments have been installed and commissioned with sources. They have also been used for preparatory experiments at the IFIN-HH Tandem accelerators, aiming to provide the ELI-NP physics program with a running start with complementary measurements. Most notably, several in-beam campaigns performed was in collaboration with the Department of Nuclear Physics, where the ELIGANT detectors were mounted in the ROSPHERE spectroscopic array at one of the 9MV beamlines, and a series of experiments were performed aiming for GDR and PDR properties via γ -ray studies. Here, we will give an overview of the ELIGANT group's present and future activities.

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