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Extreme Light Infrastructure - Nuclear Physics (ELI-NP)

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The new Research Center ELI-NP is under construction in Bucharest-Magurele, Romania. It is meant as a unique research facility to investigate the impact of very intense electromagnetic radiation (Extreme Light) on matter with specific focus on nuclear phenomena and their applications. The extreme light is realized at ELI-NP in two ways: by very high optical laser intensities up to 1023 W/cm2 and by the very short wavelength beams on γ-ray domain. The Gamma Beam System, based on Compton backscattering of a laser beam on electron beam accelerated by a warm LINAC, will produce variable energy gamma beam (Eγ = 0.2 –19.5 MeV) with a very good bandwidth (in the 10-3 domain) and with very high brilliance (peak brilliance higher than 1021 photons/mm2/mrad2/s/(0.1% BW). This combination allows for stand-alone experiments with a state-of-art high-intensity laser, standalone high resolution γ-beam experiments or combined experiments of both photon sources. The description of the future ELI-NP facility and of the planned experiments will be presented.

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