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The ELI-NP Facility for Nuclear Physics

Sunday, 5 October 2014 15:00 (45 minutes)

Extreme Light Infrastructure –Nuclear Physics (ELI-NP) is one of the three pillars of the pan-European ELI initiative, aiming to use extreme electromagnetic fields for nuclear physics research. The pillar, currently under construction at Magurele –Bucharest, will comprise a high power laser system and a very brilliant gamma beam system. Both systems are at the edge of the present-day's technology. The high power laser system will consist of two 10 PW lasers and it will produce intensities of up to 10^{23} – 10^{24} W/cm². The gamma beam, produced via Compton backscattering of a laser beam on a relativistic electron beam, will be characterized by a narrow bandwidth (< 0.5%) and tunable energy of up to 20 MeV. The research program of the facility is the result of the common effort of two scientific communities, high-power lasers and nuclear physics, acting together to uncover a broad range of key topics in frontier fundamental physics and new nuclear physics. A particular attention is also given to the development of innovative applications. The status of the project and the overall performance characteristics will be reported. The main fundamental physics and applied research topics proposed to be studied at ELI-NP will be discussed together with the instruments for their investigation.

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