

RAP Special Seminar

The Special Seminar on RIKEN Center for Advanced Photonics

Language: Japanese

Date: Aug. 14 (Mon) 15:00 - 17:00, 2017

Location: Okochi Hall, Wako, RIKEN

Speaker: Prof. Kazuo A. Tanaka

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Title: Laser and Gamma beam systems
at the ELI-Nuclear Physics Project

Since chirped pulse amplification scheme[1] has changed the game in high energy density physics, the available laser intensity has kept increasing, can reach 10^{23} W/cm² or even higher, and can deliver radiation higher than the previously used in nuclear facilities. In order to make use of this capability in full depth, a laser-centered, distributed pan-European research infrastructure, involving ultra-intense laser technologies with ultra-short pulses was triggered through the European Light Infrastructure (ELI) project at the state of the art and beyond.

The European Forum of Infrastructure (ESFRI) has selected in 2006 a proposal of constructing a 200J laser system with intensities up to 10^{22} - 10^{23} W/cm², called ELI at the site of Bucharest-Magurele, Romania. The rest of two large scale high intensity ELI laser facilities are built in The Czech Republic, and Hungary [2]. The scientific research at ELI-NP includes two areas where only little experimental results were reported until now. The first one is laser-driven experiments related to nuclear physics, strong-field quantum electrodynamics and associated vacuum effects. The second area is that of experiments based on a Compton-backscattering high-brilliance and intense low-energy (< 20 MeV) gamma beam, a combination of laser and accelerator technology at the frontier of knowledge.

Typical experiments planned in the early stage[3] will be introduced after the system over-view.

