

【MRE Webinar Abstract】

**Current Status of ELI-NP with Emphasis on 10 PW Laser Operation**

Kazuo A Tanaka,  
Scientific Director  
Extreme Light Infrastructure: Nuclear Physics  
Reatorului Street No. 30, Magurele, ILFOV 077125 Romania

Abstract

ELI-NP is about to function as a user facility open to the world with laser systems operating at 100 TW, 1 PW, and 10 PW output powers. At the 100 TW output level, early experiments have started such as LWFA electron production, phase broadening for the pulse compression etc. These experiments have been actually performed with the collaboration of the expert users such as Prof J Wheeler and Prof G Mourou (IZEST, France). Electron acceleration was also conducted to show a good control on the mono energetic and broad band energy spectra. The early experiments will be switched to the commissioning experiments in early 2021. The commissioning experiments were defined as the first series of experiments selected by ISAB (International Science Advisory Board) with expert users. These will include the gamma ray conversion efficiency, electron acceleration, and proton acceleration etc. The laser system is already completed. In Aug. 2020 the 10 PW laser operation was proven to run very stably with one shot per minute repetition rate for 10 minutes with the full laser energy of 230 J (with 23 fsec) all the way to the experimental chambers. We wait for a few more final finishing touches for the upcoming experiments such as final focusing mirrors installation.



Reference

1. Current status and highlights of the ELI-NP research program, KA Tanaka, KM Spohr, DL Balabanski et al., Matter Radiation Extremes, 5, 0224402 (2020) doi:10.1063/1.5093535