



Press Release

FOR IMMEDIATE RELEASE: Oct 12, 2020

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The ELI-NP 10 PW endurance test

Extreme Light Infrastructure – Nuclear Physics (ELI-NP) in Magurele, Romania announces that they have reached a major milestone. On the 19th of August 2020, the first 10 PW laser pulse was shot through the entire ELI-NP laser system, namely all the amplifiers, the final compressor, the 30 m of the beam transport system and finally into a beam dump.

During this test the High Power Laser System (HPLS) fired 10 shots at 3 PW, 10 shots at 7 PW, 3 shots at 8 PW, and 10 shots at 10 PW; so one shot/minute over a period of about 40 minutes, thus demonstrating the robustness of the laser system. The energy fluctuation between shots was less than 2% and there was good pointing stability, namely an average fluctuation of the beam direction corresponding to less than 3 mm after one kilometer of propagation.

Preliminary experiments have begun in September 2020 for the 100 TW arm of the laser system and for the 1 PW energy pulses, plans to test proton acceleration are scheduled to take place before the end of 2020. The more challenging 10 PW beams commissioning experiments are planned to take place in 2021, where the laser beams are focused down to several microns, thus putting more than 10^{22} W/cm² on target.

To learn more about the laser system and the scientific goals of the ELI-NP facility, find us at www.eli-np.ro.

The 10 PW HPLS was contracted from Thales company in 2013 and the energy performance of the system was demonstrated in 2019.