

Joint seminar of the NPI of the CAS

10. 10. 2024

Ing. Gabriele Maria Grittani, Ph.D. (ELI Beamlines): *GeV radiation sources based on laser wakefield acceleration at ELI Beamlines user facility*

Abstract:

Laser wakefield electron acceleration is the most compact technique to produce GeV electron beams [1]. Electron beams with energy up to 10 GeV have been independently demonstrated in multiple university-scale laboratory in 20-30 cm plasma accelerators [2,3,4]. These accelerators are being actively investigated as a source for free electron lasers [5], narrow-band x-ray from inverse Compton scattering [6], and secondary particle beam production (positrons, muons, pions) [7,8,9].

At the Extreme Light Infrastructure (ELI), unprecedented high-power high repetition rate lasers are used to drive laser wakefield acceleration and X-ray sources for users [10,11]. In this talk, the state of the art will be reviewed, followed by a presentation of the unique capabilities for users available at ELI.

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