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## **Ion acceleration by laser-matter interaction: status and perspective with the upcoming I-LUCE facility at INFN-LNS**

*Thursday, 11 May 2023 16:30 (2 hours)*

The potential for developing compact, high-brightness particle and radiation sources has given a strong impetus to the development of the underpinning laser technology, including increasing the efficiency and repetition rate of the lasers. A result of this technological development can be seen in the new generation of ultrafast high-power laser systems working at a high repetition rate which have been built across Europe. A new high-power laser facility called I-LUCE (INFN Laser induced radiation acCEleration) will be realized at LNS-INFN in 2024. The facility realization is funded by both EuAPS (EuPRAXIA Advanced Photon Sources) and Samothrace (Sicilian MicronanOTech. Research And Innovation) projects financed by the PNRR Italian program. The Ti:Sapphire laser will have two outputs: the first one will be a 1 TW beam line (25fs,25-30mJ,10Hz) while the main beam line will be a 500 TW laser (25fs,10J,10Hz). I-LUCE will serve two experimental areas called E1 and E2. E2 will provide the unique worldwide combination of intense laser radiation with heavy ion beams generated with the Superconductive Cyclotron and Tandem (already installed at LNS) opening the door for interesting experiments in the field of plasma physics, nuclear physics and atomic physics. In addition, stand-alone experiments with intense laser beams will be carried out for several studies such as proton/ion acceleration laser generation. Instead, the E1 experimental room will be dedicated to electron acceleration.

### **Funding Agency**

### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

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