

ESPRESSO SEMINARS - "LASER DAYS EDITION"

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 AULA AZZURRA - LNS



SPEAKER



PROF. DANILO GIULIETTI

University of Pisa

Diagnostic techniques for the determination of the electron density of a plasma

Prof. Giulietti, from the Physics Department at the University of Pisa, focuses on high-intensity laser-matter interactions and plasma-based particle acceleration. He served as the National Representative for the INFN PLASMONX Strategic Project, which worked on developing plasma-based acceleration techniques and tunable X-ray sources.

During this time, a high-power pulsed laser ($\lambda = 0.815 \mu\text{m}$, 6 J in 20 fs, 300 TW @10 Hz) was installed at the Frascati National Laboratories to support research in this area. He also contributed to the European ELI (Extreme Light Infrastructure) and HiPER (High Power Laser Energy Research) projects.

In his seminar, Prof. Giulietti describes techniques for measuring plasma electron density and uniformity by studying how a probe beam interacts with the plasma. Methods such as Schlieren imaging, Shadowgraphy, and Interferometry are employed, with Interferometry being particularly important. The choice of probe radiation and the analysis algorithm is tailored to the specific characteristics of the plasma.

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