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Aula Magna del Dipartimento di
Fisica ed Astronomia
ore 15:00

From SPARC Lab to EuPRAXIA

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Abstract: On the wake of the results obtained so far at the SPARC_LAB test-facility at LNF, we are currently investigating the possibility to design and build a new multi-disciplinary user-facility, equipped with a soft X-ray Free Electron Laser (FEL) driven by a ~ 1 GeV high brightness linac based on plasma accelerator modules. It is in fact widely accepted by the international accelerator scientific community that a fundamental milestone towards the realization of a plasma driven future Linear Collider (LC) will be the integration of the new high gradient accelerating plasma modules in a FEL user facility, as proposed in the approved H2020 Design Study EuPRAXIA. This fundamental goal will be integrated in the LNF facility by using a high gradient X-band RF linac and the high power laser FLAME to drive Plasma Oscillations in the accelerator module. This activity is performed in synergy with the EuPRAXIA and CompactLight design studies. In this talk, after an introduction to the FEL and plasma accelerators physics, we report about the recent progresses in the on going European and National design studies and about opportunities and perspectives for the FEL community.