



Contribution ID: 145

Type: **Invited talk**

# Advanced Accelerator Experiments at SPARC\_LAB

*Thursday, 9 October 2014 14:30 (30 minutes)*

A test facility named SPARC\_LAB (Sources for Plasma Accelerators and Radiation Compton with Lasers and Beams) is in operation at the INFN National Labs in Frascati, merging the potentialities of an ultra-brilliant electron beam photoinjector and of a high power Ti:Sa laser. The test facility is hosting a 150 MeV high brightness electron beam injector which feeds a 12 meters long undulator. Observation of FEL radiation in various configurations has been performed, including the recently demonstration of the two colors FEL operation. In parallel the 200 TW laser has been commissioned and linked to the linac. It is devoted to explore laser - matter interaction, in particular with regard to laser-plasma acceleration of electrons (and protons) in the self injection and external injection modes. The facility will be also used for particle driven plasma acceleration experiments with possibility to drive an FEL experiment. A Thomson scattering experiment coupling the electron bunch to the high-power laser to generate coherent monochromatic X-ray radiation is also in the commissioning phase and the first >50 keV radiation has been recently observed.

We report in this talk the recent results and the future perspectives of the SPARC\_LAB facility in the context of advanced accelerators development.

**Primary author:** FERRARIO, Massimo (LNF)

**Presenter:** FERRARIO, Massimo (LNF)

**Session Classification:** S5: Novel Sources: FEL/Laser/Plasma Channels