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Progress of the L3IA ion beamline at ILIL-PW

Wednesday, 18 September 2019 19:00 (1 hour)

In the poster we will describe the most recent experimental results obtained at the Laser Light Ion beam-Line using both flat and nanostructured thin foil targets, where accelerated ions were characterized using a wide range of detection techniques, optimized for the severe conditions typical of a laser-plasma acceleration environment.

Advanced targets are also being explored to enhance beamline performance, with special attention to nanostructured targets, including nano-pillars and porous materials that are used for their role in modifying the electron distribution function of fast electrons. This is mainly investigated via characterization the properties of the fast electron and the ions escaping from the target. Preliminary results and detailed numerical simulations show that a key role is played in these measurements by the level of interstitial plasma filling gaps and cavities in the target, before the ultrashort laser pulse hits the target.

In view of the applications, we also focus on the shot by shot fluctuations of the ion source, investigating the possible role of target imperfections, laser-beam energy, focal spot intensity, pulse duration and pointing stability.

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