Contribution ID: **174** Type: **poster**

Optimization study of a transport line for electron beams generated by laser-plasma interaction

Monday, 14 September 2015 20:00 (30 minutes)

Many facilities worldwide are currently studying electron beams generated by laser-plasma interaction and looking in its usability for developing laser-driven electron beamlines. Many efforts are focused on the plasma source, the capture and transport of the laser-generated particles in order to obtain electron beams with characteristics comparable to those obtained in traditional accelerator facilities based on RF technology. Laser-plasma sources have a strong advantage in terms of size and cost of the global accelerating infrastructure, compared to conventional accelerators. Although the laser-driven electron acceleration has been extensively studied since a decade, many improvements are still necessary since the laser-accelerated beams are not sufficiently controllable to make them suitable as a replacement for conventional accelerators.
We report on the optimization study for capturing and transporting laser-accelerated electrons using conventional beam transport elements. We focus on laser-generated electrons as obtained on commercially available multi-hundred TW systems, but also on electrons as estimated to be obtained on future planned facilities, e.g. on ELI. We analyze different configurations and different beam energies, and indentify the main problems that arise when trying to control laser-plasma electron beams with conventional magnetic elements.

Primary authors: SCISCIO', Massimiliano (ROMA1); MIGLIORATI, Mauro (ROMA1); LANCIA, livia (Dept. SBAI, Sapienza, Universityof Rome)

Co-authors: MOSTACCI, Andrea (ROMA1); PALUMBO, Luigi (ROMA1); ANTICI, Patrizio (LNF); Dr PAPAPHILIPPOU, Yannis (CERN)

Presenter: SCISCIO', Massimiliano (ROMA1)

Session Classification: Poster Session 1 (WG1-WG2-WG3-WG4) and Wine

Track Classification: WG4 - Application of compact and high-gradient accelerators/Advanced beam manipulation and control