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First steps towards independent 2-stage laser plasma accelerator

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Laser-plasma acceleration has demonstrated its huge potential for the generation of relativistic electron bunches. Considering the limitations of single stage acceleration as well as the emergence of PW lasers all over the world, multi-stage accelerator schemes have been proposed to scale the electron energy up to the 10's GeV level and even more. In the context of the French CILEX project, one of the pillar of the electron acceleration program planned with APOLLON 10 PW laser is the demonstration of a laser plasma accelerator based on 2 independent stages. Future experiments are designed by a collaboration of several group from the Plateau de Saclay. As a first step to test the feasibility, a laser plasma electron source, and a dedicated magnetic line to transport and focus the electron bunches, were designed, build and set-up at the UHI100 facility of CEA-Saclay. Preliminary experimental results using the 100TW, 25fs UHI100 laser beam will be presented.

Primary author: Dr DOBOSZ DUFRÉNOY, sandrine (CEA-Saclay)

Co-authors: Dr CHANCE, Antoine (CEA IRFU); Dr SPECKA, Arnd (LLR - Ecole Polytechnique - CNRS/IN2P3); Dr CROS, Brigitte (LPGP-CNRS-UP11); Mr DELERUE, Nicolas (LAL, CNRS and Université Paris-Sud 11); Mr AUDET, Thomas (Laboratoire de Physique des Gaz et des Plasmas, CNRS-Université Paris-Sud, 91405 Orsay); Mr MAITRAL-LAIN, antoine (CEA-Saclay); Dr SCHWINDLING, jerome (CEA-Saclay)

Presenter: Dr DOBOSZ DUFRÉNOY, sandrine (CEA-Saclay)

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