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Optimization towards the demonstration of high-quality electron-beam generation from density downramp injection in a beam driven PWFA at FLASHForward

Wednesday, September 18, 2019 7:00 PM (1 hour)

Beam-driven plasma wakefield accelerators allow for the generation and subsequent acceleration of electron beams inside the plasma

with substantially lower emittance than the driving electron beam, eventually providing technology for final-focus brightness converters for versatile applications. Among a variety of internal injection techniques, density downramp injection has the potential to reliably produce sub-micrometer emittance electron beams. The FLASHForward TW laser system allows for the ionization of wide plasma columns in a gas capillary and controlled density spikes, by selectively ionizing gas constituents. This allows for shaping the plasma density profiles in order to control beam parameters.

We report on the recent progress in preparation and commissioning efforts for the optimization and realization of the generated electron beams.

Primary authors: KNETSCH, Alexander (Deutsches Elektronen-Synchrotron DESY); SHEERAN, Bridget (DESY)

Co-authors: ZENG, Ming (Deutsches Elektronen-Synchrotron DESY); WINKLER, Paul (DESY); WESCH, Stephan (Deutsches Elektronen-Synchrotron DESY); Mrs THIELE, Sandra (DESY); TAUSCHER, Gabriele (DESY); STAUFER, Theresa; SCHWINKENDORF, Jan-Patrick (Deutsches Elektronen-Synchrotron); SCHROEDER, Sarah (DESY); SCHMIDT, Bernhard (DESY); Mr SCHLEIERMACHER, Andrej (DESY); SCHAPER, Lucas (University Hamburg / DESY); Mr RÖCKEMANN, Jan-Hendrick; Mr RAHALI, Amir (DESY); MARTINEZ DE LA OSSA, Alberto (DESY); Mr LUDWIG, Kai (DESY); LINDSTRØM, Carl A. (DESY); LIBOV, Vladyslav (DESY); Mr KUANG, Peng (DESY); Mr KARSTENSEN, Sven (DESY); GONZALEZ CAMINAL, Pau (DESY, Universität Hamburg); GOLDBERG, Lars (Deutsches Elektronen-Synchrotron DESY); GARLAND, Jimmy (DESY, Hamburg); GARLAND, Jimmy (Manchester University); FOSTER, Brian (University of Hamburg/DESY/Oxford); DIEDERICHS, Severin (University of Hamburg/DESY/LBNL); D'ARCY, Richard (DESY); ASCHIKHIN, Alexander (Deutsches Elektronen-Synchrotron DESY); BOYLE, Gregory (DESY); BOHLEN, Simon (DESY - FLA); Mr DINTER, Maik (DESY); CHAPPELL, James (University College London); Mr MEISEL, Martin (Deutsches Elektronen-Synchrotron); NIKNEJADI, Pardis (DESY); Mr POURMOUSSAVI, Paul (DESY); BOULTON, Lewis (University Of Strathclyde / DESY); Ms BRÜMMER, Theresa (Deutsches Elektronen-Synchrotron); Mr MARUTZKY, Frank (DESY); MEHRLING, Timon (Deutsches Elektronen-Synchrotron DESY); PODER, Kristjan (DESY); Dr OSTERHOFF, Jens (Desy); ULLMANN, Daniel (University of Strathclyde); HEINEMANN, T. (Deutsches Elektronen-Synchrotron DESY; Scottish Universities Physics Alliance, Department of Physics, University of Strathclyde); HIDDING, B. (Scottish Universities Physics Alliance, Department of Physics, University of Strathclyde; Cockcroft Institute, Sci-Tech Daresbury); SCHAFFRAN, Joern (Deutsches Elektronen-Synchrotron)

Presenter: KNETSCH, Alexander (Deutsches Elektronen-Synchrotron DESY)

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