



Contribution ID: 177

Type: talk

A tunable plasma-based energy dechirper

Tuesday, 17 September 2019 17:00 (20 minutes)

A tunable plasma-based energy dechirper has been developed at FLASHForward to remove the correlated energy spread of a 681 MeV electron bunch. Through the interaction of the bunch with wakefields excited in plasma the projected energy spread was reduced from a FWHM of 1.31% to 0.33% without reducing the stability of the incoming beam. The experimental results for variable plasma density are in good agreement with analytic predictions and three-dimensional simulations. The proof-of-principle dechirping strength of 1.8 GeV/mm/m significantly exceeds those demonstrated for competing state-of-the-art techniques and may be key to future plasma wakefield-based free-electron lasers and high energy physics facilities, where large intrinsic chirps need to be removed. This exciting first result of its type, as well as the methods employed to achieve it, will be outlined in this contribution.

Primary authors: D'ARCY, Richard (DESY); ASCHIKHIN, Alexander; BOHLEN, Simon; BEHRENS, Christopher; GARLAND, James; GOLDBERG, Lars; GONZALEZ, Pau; KNETSCH, Alexander; LIBOV, Vladyslav; MARTINEZ DE LA OSSA, Alberto; MEISEL, Martin; MEHRLING, Timon; NIKNEJADI, Pardis; PODER, Kristjan; ROECKEMANN, Jan-Hendrik; SCHAPER, Lucas; SCHMIDT, Bernhard; SCHROEDER, Sarah; PALMER, Charlotte; SCHWINKENDORF, Jan-Patrick; SHEERAN, Bridget; STREETER, Matthew; TAUSCHER, Gabriele; WACKER, Violetta; OSTERHOFF, Jens

Presenter: D'ARCY, Richard (DESY)

Session Classification: WG5 - Beam Transport

Track Classification: WG5 - Plasma devices, plasma and beam diagnostics