Contribution ID: **32** Type: **Poster (student)**

6-D Phase Space Optimization of DLA, Preserving MeV Energy Gain

Tuesday, 20 September 2022 19:20 (1 hour)

Dielectric laser accelerator (DLA) has emerged as a miniaturised and cost-effective tool for particle acceleration. DLAs have proved to be a promising candidate for GeV/m acceleration gradient within the damage threshold of the materials used. However, the emittance growth and energy spread increase at higher particle energies and limit the realistic applications. Here we present the numerical simulations of a mm scale DLA, operated by a THz laser, with various injection schemes for an electron bunch created externally. We show that at a particular focusing scheme for electron bunch inside the structures, the emittance growth and energy spread are mitigated while the energy gain remains above MeV.

Primary author: YADAV, Gyanendra (University of Liverpool)

Co-authors: Prof. WELSCH, Carsten (University of Liverpool, The Cockcroft Institute); XIA, Guoxing (Cockcroft Institute and the University of Manchester); APSIMON, Oznur (The University of Liverpool and Cockcroft Institute)

Presenter: YADAV, Gyanendra (University of Liverpool)

Session Classification: Poster Session