Abstract Submitted
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Increasing Energy Gain in Laser Wakefield Accelerators using Direct Laser Acceleration[1] JESSICA SHAW, UCLA Department of Electrical Engineering, FRANK TSUNG, UCLA Department of Physics and Astronomy, NAVID VAFAEI-NAJAFABADI, KENNETH MARSH, NUNO LEMOS, UCLA Department of Electrical Engineering, WARREN MORI, UCLA Department of Electrical Engineering & Department of Physics and Astronomy, CHAN JOSHI, UCLA Department of Electrical Engineering — Laser wakefield acceleration (LWFA) in the blowout regime is a means to produce high-energy (greater than 1 GeV), monoenergetic electron bunches [1]. However, LWFA operating outside of the ideal nonlinear blowout regime parameters can have Direct Laser Acceleration (DLA) as an additional acceleration mechanism. This study examines electron spectra produced by a LWFA operating outside of the ideal blowout regime and therefore expected to have a DLA contribution to the total energy gain of the produced electron bunch. OSIRIS particle-in-cell simulations of the experiment confirm the presence of DLA leading to total electron energies greater than the energy gain due to the wake acceleration alone.

[1] W.Lu et al., PRSTAB 10, 061301 (2007)

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