Abstract Submitted
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Experimental Observation of Direct Laser Acceleration in a Low Density Self-Modulated Laser Wakefield Acceleration Regime[1] PAUL KING, University of Texas at Austin, KYLE MILLER, Dept. of Physics University of Californial Los Angeles, NUNO LEMOS, Lawrence Livermore National Laboratory, JESSICA SHAW, Laboratory of Laser Energetics, BRIAN KRAUS, Princeton Plasma Physics Lab, MATT THIBODEAU, Lawrence Livermore National Laboratory, BJORN HEGELICH, University of Texas at Austin, JESUS HINOJOSA, Center for Ultrafast Optical Science, CHAN JOSHI, KEN MARSH, Dept. of Electrical Engineering University of Californial Los Angeles, WARREN MORI, Dept. of Physics University of Californial Los Angeles, ART PAK, Lawrence Livermore National Laboratory, ALEC THOMAS, Center for Ultrafast Optical Science, FELICIE ALBERT, Lawrence Livermore National Laboratory — Direct Laser Acceleration (DLA) is observed in an experiment on the Titan laser system at the Jupiter Laser Facility in a low density ($3x10^{17}$ cm^{-3}) regime of a self-modulated laser wakefield accelerator. A forking structure is show in the highest energies (>50 MeV) of an accelerated electron beam (<50 mrad) previously shown to indicate the effects of DLA during the acceleration process. The experimental results are confirmed in a quasi-3D simulation using OSIRIS under similar conditions to the experiment, i.e. 1 ps laser pulse, and moderate $a_0 = 2.7$. The simulation results show a stable SM-LWFA for the length of a 10 mm accelerator and confirm DLA being the dominant acceleration mechanism for the highest energy electrons.

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