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**Hybrid Envelope Model / Boosted-Frame Simulations of Laser Wakefield Accelerators** ADAM HIGUERA, CU-Boulder, KATHLEEN WEICHMAN, UT-Austin, DAN ABELL, BEN COWAN, Tech-X Corp., Boulder, CO, MICHAEL DOWNER, UT-Austin, JOHN CARY, CU-Boulder — Laser wakefield accelerators use a high-intensity laser pulse to drive a wave in a plasma that traps, transports, and accelerates electrons. The Texas Petawatt Laser experiment measures different electron energies (2 GeV) than predicted (7 GeV) by computer simulations. We present and analyze a method for efficiently performing higher-fidelity 3-D, particle-in-cell simulations of laser wakefield acceleration. This method combines previous work on a Laser Envelope Model, which resolves electron self-injection, and boosted-frame simulation, which efficiently models beam propagation in the regime where the Envelope Model is no longer valid.

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