Abstract Submitted
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Experimental and LSP modeling study of pre-pulse effects on the laser-plasma interaction by using a 527 nm laser pulse[1] G.E. KEMP, OSU/LLNL, D.W. SCHUMACHER, OSU, A. LINK, LLNL, R.R. FREEMAN, OSU, H. FRIESEN, H.F. TIEDJE, Y.Y. TSUI, R. FEDOSEJEVS, U of A, D.P. HIGGINSON, UCSD/LLNL, F.N. BEG, UCSD, M.H. KEY, H.S. MCLEAN, P. PATEL, LLNL, R.B. STEPHENS, General Atomics — We describe a study motivated by the Fast Ignition approach to inertial confinement fusion of the generation in metal of hot electrons using intense laser pulses. Hot electrons are excited in an underdense plasma interface. This interaction involves relativistic effects and instabilities that can drastically alter the pulse and modify the ensuing laser-plasma interaction (LPI). In order to study the effect of this pre-plasma on the LPI and electron transport, slab and "buried-cone" targets were shot on Titan at the Jupiter Laser Facility using relatively clean 527 nm wavelength pulses with varying levels of injected pre-pulse energy. We compare the experimental results to simulations using the PIC code LSP. The simulations, in 2D3V Cartesian, are performed using full-scale targets and laser pulse.

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