Abstract Submitted
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Results from directly driven implosions of deuterated plastic shells filled with tritium gas[1] GARY GRIM, Los Alamos National Laboratory, DANIEL CASEY, Lawrence Livermore National Laboratory, JIM FINCKE, Los Alamos National Laboratory, JESSE PINO, VLADIMIR SMALYUK, Lawrence Livermore National Laboratory, MIKE STEINKAMP, Los Alamos National Laboratory, ROBERT TIPTON, Lawrence Livermore National Laboratory — Results from implosions of tritium filled plastic shells containing thin deuterated sub-layers, as well as comparisons with 1-D capsule only simulations will be reported. The implosions were directly driven using a square, 1 ns wide, 27 kJ laser pulse, provided by the Laboratory for Laser Energetics, University of Rochester, Rochester, NY. The 15 um thick, by 865 μm OD, CH capsules were fabricated with 1 μm thick, deuterated plastic layers, located either in direct contact with the tritium gas, or offset by a layer of CH. Neutrons produced by deuterium-tritium fusions signify atomic mixing between the deuterated shell and the gas payload, allowing for a detailed study of the dynamics of mix in 3-D implosions. Data has been collected on implosions from capsules with a depth of burial of 0, 1, and 2 um of CH, as well as non-deuterated control shots. Capsules were shot with two gas fill pressures, 4 and 10 atm., to provide information on mix as a function of convergence. We report nuclear and X-ray data collected from these experiments. Further, we present comparisons with, 1-D and 2-D, capsule only simulations.

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