

Abstract Submitted
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Laser-plasma interactions in NIF ignition targets¹ D.E. HINKEL, E.A. WILLIAMS, P.A. AMENDT, D.A. CALLAHAN, O.S. JONES, S.M. POLLAINE, Lawrence Livermore National Laboratory — Recent ignition point designs for achieving ignition in 2010 at the National Ignition Facility (NIF) have been developed at Lawrence Livermore National Laboratory. These four designs use approximately 1 MJ of input laser energy, have “cocktail” walls, and contain some combination of gas fill, liner, foam fill or shine shields in the interior of the target. An analysis of the laser-plasma interactions in these targets is presented. Levels of laser scatter and beam spray are estimated from post-processing radiation-hydrodynamics simulations of the various point designs. NIF beams propagating through the generated plasma blow-off of these designs will be simulated, using pF3D, to further quantify the degree of laser scatter and spray. The role of nonlinear saturation of laser scatter via wave-wave and wave-particle interactions will be addressed.

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