Abstract Submitted
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**pF3D modeling of NIF Ignition experiments**[1] E.A. WILLIAMS, D.E. HINKEL, A.B. LANGDON, S.H. LANGER, R.L. BERGER, C.H. STILL, Lawrence Livermore National Laboratory — We use our laser plasma interaction code pF3d to gain insight into SRS and SBS scattering in NIF ignition hohlraums. pF3d had success in modeling Omega experiments in which a single probe beam was propagated along a hohlraum axis. Satisfactory reflectivities were obtained, saturating via local pump depletion, without invoking reduced models for the nonlinear evolution of the plasma and ion acoustic waves (1). On Omega we had Thomson scattering data to validate the plasma conditions; in NIF we use the SRS and SBS spectra but direct measurements are lacking. Early inconsistency in the observed and anticipated spectra pointed to improved modeling (2). The scale of the Omega experiments allowed for modeling the entire probe beam path. Modeling the entire volume traversed by neighboring NIF beams is not feasible on current machines, necessitating restricting the simulation to the anticipated interaction volume. The larger scale and the beam geometry of NIF make multi-beam effects of greater importance. Wavelength tuning gives rise to large, non-uniform energy transfer between the outer and inner beam cones. Multiple beams overlap in the region of SRS inner beam generation. We use a variety of tools, including SLIP, to prepare suitable inputs and post-process the outputs of pF3d.

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