

Abstract Submitted
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Comparison of Raman Scattering Measurements and Modeling in NIF Ignition Experiments¹ D.J. STROZZI, D.E. HINKEL, E.A. WILLIAMS, R.P.J. TOWN, P.A. MICHEL, L. DIVOL, R.L. BERGER, J.D. MOODY, LLNL — Recent NIF indirect-drive experiments have shown significant Raman scattering from the inner beams. NIF data has motivated improvements to rad-hydro modeling, leading to the “high flux model” [M. D. Rosen et al., HEDP 7, 180 (2011)]. Cross-beam energy transfer [P. A. Michel et al., Phys. Plasmas 17, 056305 (2010)] in the laser entrance hole is an important tool for achieving round implosions, and is uniformly distributed across the laser spot in rad-hydro simulations (but not necessarily in experiments). We find the Raman linear gain spectra computed with these plasma conditions agree well in time-dependent peak wavelength with the measured data, especially when overlapping laser-beam intensities are used. More detailed, spatially non-uniform modeling of the cross-beam transfer has been performed [E. A. Williams, this conference]. The resulting gains better follow the time history of the measured backscatter. We shall present the impact of spatially non-uniform energy transfer on SRS gain. This metric is valid when amplification is in a linear regime, and so we shall also present an assessment of whether electron trapping in Langmuir waves can play a role in these shots.

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