Abstract Submitted
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Modeling Laser-Plasma Interaction over a Suite of NIF Experiments[1] D. J. STROZZI, R. L. BERGER, O. S. JONES, T. CHAPMAN, D. T. WOODS, S. A. MACLAREN, P. MICHEL, L. DIVOL, LLNL — We systematically study laser-plasma interaction (LPI) on NIF indirect-drive experiments, namely backscatter and cross-beam energy transfer. LLNLs best practice radiation-hydrodynamic simulation methodology[1] in the Lasnex simulation code[2] is employed without ad-hoc tuning to match experimental data. This entails converged numerical resolution, an improved DCA model for coronal ($n_e < n_{crit}$, $T_e > 1$ keV) gold opacity, electron heat flux strongly limited to $0.03 n_e T_e^{3/2} m_e^{-1/2}$, and the inline CBET model[3]. The rad-hydro plasma conditions are used for LPI analysis, namely linear instability gains, and the paraxial-envelope code pF3D[4]. Simulated scattered-light spectra are also compared to measurements. We initially focus on shots with low backscatter, so its self-consistent treatment should not be important. These shots have low hohlraum fill density and short laser pulses, and the only significant backscatter is outer-beams Brillouin. Our long-term goals are to understand reflectivity trends to guide target design and develop LPI mitigation strategies. 1 O Jones, L Suter et al., PoP 24, 056312 (2017) 2 G Zimmerman, W Kruer, Comments PPCF 2, 85 (1975) 3 D Strozzi, D Bailey et al., PRL 118, 025002 (2017) 4 R Berger, C Still et al., PoP 5, 4337 (1998)

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David Strozzi
LLNL

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