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Stimulated Brillouin Scattering from OMEGA gas-filled hohlraums and NIF hohlraums with gold-boron layers RICHARD BERGER, L. DIVOL, D. FROULA, S. GLENZER, J. KLINE, P. MICHEL, D. CALLAHAN, D. HINKEL, R. LONDON, N. MEEZAN, L. SUTER, E. WILLIAMS, Lawrence Livermore National Laboratory — The long laser pulse length required to achieve ignition on the National Ignition Facility (NIF) creates long scalelength, hot, high-Z plasma inside the hohlraum from which stimulated Brillouin scatter (SBS) is predicted to be greater than 10%. We predicted that adding ∼40% Boron to a thin layer of the high-Z wall reduces the predicted SBS to less than 1%. In the past few years, a number of experiments at the OMEGA laser facility have tested elements of the physics of SBS in gold-boron and the modeling tools. The damping rates for plasmas with various gold-boron mixtures were duplicated with mixtures of CO_2 and hydrocarbon gasses. Use of the rad-hydro code HYDRA for bulk plasma parameters and the paraxial-wave-solver pF3d allowed the measured levels of stimulated Brillouin backscatter in the OMEGA experiments to be predicted in advance of the experiments. Although the SBS increases with the average gain as expected, closer examination shows that, for the same gain, plasmas with very weakly damped ion acoustic waves Brillouin scatter light more strongly than plasmas with more strongly damped ion acoustic waves. The pF3d simulations also show that behavior. SBS from NIF hohlraums with gold-boron layers will be presented.

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