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Design and Analysis of Laser Plasma Interaction Experiments Relevant to the National Ignition Facility[1] RICHARD LONDON, LAURENT DIVOL, DUSTIN FROULA, NATHAN MEEZAN, SHON PRISBREY, Lawrence Livermore National Laboratory — Achieving appropriate energetics and symmetry for ignition in indirect drive inertial confinement fusion requires control of stimulated Brillouin and Raman backscatter of the laser beams that heat the hohlraum. This talk describes the computational design and analysis of experiments at the Omega laser facility at LLE to study LPI in NIF-like plasmas. The focus of this study is the interaction of a smoothed beam as it propagates from low-Z gas inside a hohlraum into high-Z material than has been ablated from the hohlraum's wall. We describe the plasma environment of the laser-heated hohlraum as modeled by the HYDRA code and the corresponding linear LPI gains expected for the wall interaction beam, as well as for an on-axis beam that interacts only with the low-Z gas that initially fills the hohlraum. Simulated data of the plasma conditions (temperature and density) and the beam backscatter will be compared to experimental data.

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