

Abstract Submitted
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New regimes and challenges for laser plasma coupling in ignition-scale hohlraums¹ WILLIAM KRUER, University of California, Davis — In NIF experiments new regimes of laser plasma coupling have been accessed. Much larger plasmas have been irradiated with many large spot overlapping laser beams in a highly shaped pulse. The new features include cooler underdense plasmas, sizeable stimulated Raman scattering from densities less than 10% of the critical density and even on the rising part of the laser pulse, hot electron temperatures significantly less than 30keV, and important overlapped beam effects, such as cross beam energy transfer and cooperative scattering. A simple discussion of these new effects will be given. Finally, it is clearly prudent to strongly reduce stimulated Raman scattering and use cross beam energy transfer to simply “fine tune” the symmetry. Then the beam balance and time-dependent symmetry would not be so dependent on the detailed nonlinear competition between two laser plasma instabilities. Some potential ways to mitigate SRS are discussed, including the use of narrower laser beams.

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