

Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Additional Considerations for Laser Plasma Instability Mitigation in Ignition-scale Hohlräume.¹ WILLIAM KRUER, University of California, Davis — Control of laser plasma instabilities in ignition-scale hohlraums is an important physics challenge, Current hohlraums [1] are designed to minimize the linear instability gains of stimulated Raman and Brillouin backscatter. To complement this work, attention is here given to other possibilities for the excitation of laser plasma instabilities in large hohlraums. Topics addressed include excitation of the two plasmon decay instability, especially by the inner beams in the ablator plasma, as well as cooperative excitation [2] of stimulated scattering by overlapped beams near the laser entrance holes. Particular attention is given to estimating gains and identifying signatures for the cooperative scattering. It is also found that diffraction of the Raman-scattered light wave can reduce the stimulated Raman gain in a speckle but can improve the communication between different ranks of speckles.
[1] D. Callahan, N. Meezan, D. Hinkel, et. al., (private communication)
[2] D. DuBois, B. Bezzerides, and H. Rose, Phys. FluidsB4, 241(1992)

¹This work was performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory under Contract W-7405-ENG-48 and Agreement B56595.

William Krueer
University of California, Davis

Date submitted: 18 Jul 2007

Electronic form version 1.4