Abstract Submitted for the DPP07 Meeting of The American Physical Society

Simulations of gas-filled hohlraum targets on the OMEGA laser N.B. MEEZAN, D.J. STROZZI, R.E. TURNER, K. WIDMANN, E.A. WILLIAMS, L.J. SUTER, Lawrence Livermore National Laboratory, S.P. REGAN, Laboratory for Laser Energetics, University of Rochester — Recent experiments on the OMEGA laser facility examined x-ray drive and hot-electron generation in gold hohlraums filled with CH gas mixtures of varying densities. Some hohlraums also had CH-lined laser entrance holes. Radiation-hydrodynamics simulations using the code HYDRA show that early-time hot electrons likely originated in the blast-wave driven by the explosion of the hohlraum windows. Hot electrons also occurred during the main drive as the hohlraum bulk plasma approached $n_e = 0.25n_c$. The plasma waves that generate hot electrons can be driven by Stimulated Raman Scattering (SRS) or by the two-plasmon decay instability. Comparisons between simulations and SRS backscatter data can help determine the source of the hot electrons. These results can inform the design of the laser pulse for NIF ignition hohlraums.

¹This work was performed under the auspices of the U.S. Department of Energy by the University of California Lawrence Livermore National Laboratory under contract No. W-7405-ENG-48.

Nathan Meezan Lawrence Livermore National Laboratory

Date submitted: 21 Jul 2007 Electronic form version 1.4