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Comparison of simulations and experimental results from ICF implosions using capsules of varying surface roughness. R.E. TURNER, P.A. AMENDT, O.L. LANDEN, R.J. WALLACE, Lawrence Livermore National Laboratory, V. GLEBOV, K. THORP, G. PIEN, LLE, University of Rochester — We have conducted a series of indirect-drive ICF implosion experiments at Omega, using capsules with deliberately roughened surfaces. The 10 atm DD fill capsules had a convergence ratio of 18, higher than previous Nova experiments [M. Marinak et al, Phys. Plasmas 3, 2070 (1996)]; the pre-heat shielded, Ge-doped CH ablators had moderately high (∼200) Raleigh-Taylor growth factors. Each capsule's surface quality was measured using atomic force microscopy. Gated x-ray imaging of the imploded core was used to assure that basic symmetry was maintained, while 'best-surface' capsules were used as controls with every experimental run. Neutron yields were observed to decrease as surface roughness increased. Integrated simulations, including mix modeling, have been performed, and are compared to the experimental results. This 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.

Robert Turner
Lawrence Livermore National Lab

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