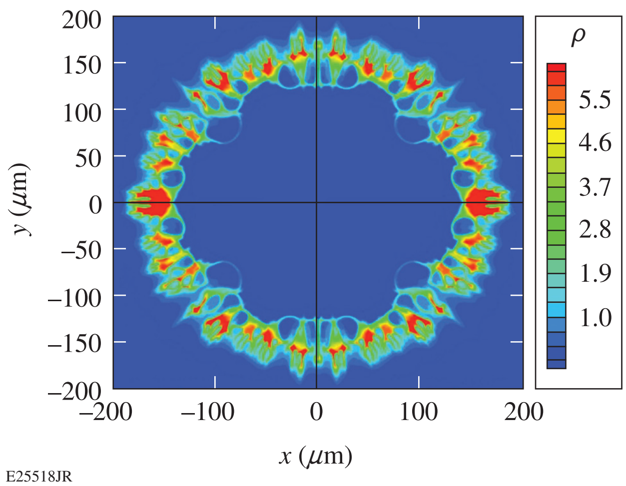
About the Cover:

The cover photo shows LLE Scientists Drs. D. T. Michel (left) and S. X. Hu (right) who report on the study of the effect of adiabat on shell decompression of direct-drive warm-CH implosions on OMEGA. The maximum in-flight shell thickness was obtained using a novel technique where the outer and inner surfaces of the shell were simultaneously measured using self-emission images of the imploding target. When the calculated adiabat of the shell was decreased from 6 to 4.5, the shell thickness was measured to decrease, but when the adiabat was decreased further (1.8), the shell thickness increased. Over this adiabat range, the measured minimum core size continued to decrease, demonstrating that the decompression of the shell measured for low adiabats was not a result of errors in the adiabat calculations, but was caused by the increase in the Rayleigh–Taylor growth associated with a reduction in ablation velocity at lower adiabats. The 2-D hydrodynamic simulations of these experiments were the first to simultaneously include laser imprint (modes 2 to 200) and state-of-the-art physics models for cross-beam energy transfer, nonlocal thermal transport, and first-principles equation of state. The simulations reproduce the measured outer shell trajectory, maximum in-flight shell thicknesses, inner shell deceleration, minimum core size, and neutron yields, and show that the increased shell thickness for adiabats <3 is caused by laser imprint. The image on the cover and reproduced here shows a density contour plot of a low-adiabat ($\alpha = 3$) implosion. The Rayleigh–Taylor growth seeded by laser imprints "shreds" the imploding shell.



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