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Mitigating the impact of hohlraum asymmetries in National Ignition Facility implosions using capsule shims[1] DANIEL CLARK, CHRISTOPHER WEBER, VLADIMIR SMALYUK, HARRY ROBEY, ANDREA KRITCHER, JOSE MILOVICH, JAY SALMONSON, Lawrence Livermore National Laboratory — Current indirect drive implosion experiments on the National Ignition Facility (NIF) [E. I. Moses, R. N. Boyd, B. A. Remington, C. J. Keane, and R. Al-Ayat, Phys. Plasmas **16**, 041006 (2009)] are believed to be strongly impacted by long wavelength perturbations driven by asymmetries in the hohlraum x-ray flux. To address this perturbation source, active efforts are underway to develop modified hohlraum designs with reduced asymmetry imprint. An alternative strategy, however, is to modify the capsule design to be more resilient to a given amount of hohlraum asymmetry. In particular, the capsule may be deliberately misshaped, or "shimmed," so as to counteract the expected asymmetries from the hohlraum. Here, the efficacy of capsule shimming to correct the asymmetries in two recent NIF implosion experiments is assessed using two-dimensional radiation hydrodynamics simulations. Despite the highly time-dependent character of the asymmetries and the high convergence ratios of these implosions, simulations suggest that shims could be highly effective at counteracting current asymmetries and result in factors of a few enhancements in neutron yields. For higher compression designs, the yield improvement could be even greater.

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