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Increased shell entropy as an explanation for observed decreased shell areal densities in OMEGA implosions[1] NELSON HOFFMAN, HANS HERRMANN, YONGHO KIM, Los Alamos National Laboratory — A reduced ion-kinetic (RIK) model used in hydrodynamic simulations has had some success in explaining time- and space-averaged observables characterizing the fusion fuel in hot low-density ICF capsule implosions driven by 1-ns 60-beam laser pulses at OMEGA [Rosenberg *et al.*, Phys. Rev. Lett. **112**, 185001 (2014); Rinderknecht *et al.*, Phys. Plasmas **21**, 056311 (2014); Hoffman *et al.*, in preparation]. But observables characterizing the capsule shell, e.g., the areal density of ^{12}C in a plastic shell, have proved harder to explain. Recently we have found that assuming the shell has higher entropy than expected in a 1D laser-driven RIK simulation allows an explanation of the observed values of ^{12}C areal density, and its dependence on initial shell thickness in a set of DT-filled plastic capsules. If, for example, a 15-μm CH shell implodes on an adiabat two to three times higher than predicted in a typical unmodified RIK simulation, the calculated burn-averaged shell areal density decreases from ~ 80 mg/cm^2 in the unmodified simulation to the observed value of ~ 25 mg/cm^2. We discuss possible mechanisms that could lead to increased entropy in such implosions.

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