Abstract Submitted
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**Turbulent mix or ion diffusion? Hypothesis testing in ICF capsule implosions**[1] N M HOFFMAN, LANL, G B ZIMMERMAN, LLNL, S A VANDER WIEL, H W HERRMANN, Y H KIM, LANL — Turbulent mixing at a contact surface combines materials that are initially separated across the contact. While the mixing layer may contain the initially separate materials (each assumed to be composed of a number of distinct ion species) in a range of concentrations, from zero to 100%, the concentration of individual ion species within each material, relative to one another, is not altered by turbulent mixing alone. Ion diffusion likewise causes mixing at a contact, but does alter the relative concentration of ion species within each material, since the relative diffusivity of ions, in a fixed background plasma, varies as $\tilde{}A^{1/2}/Z^2$. Recent hydrodynamically equivalent capsule implosions allow a test of the influence of these processes on observed capsule behavior. We use numerical simulations and hypothesis-testing methods to show quantitatively that turbulent mixing with ion diffusion is a better explanation of observed behavior than turbulent mixing alone (subject to the assumptions inherent in the computational models of these processes.)

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