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Shock-Enhanced Plasma Diffusion at a Gas-Metal Interface BRETT KEENAN, WILLIAM TAITANO, ANDREI SIMAKOV, LUIS CHACON, BRIAN ALBRIGHT, Los Alamos National Laboratory — Revolver and Double Shell designs are predicted to ignite at lower temperatures/convergences than conventional single shell capsules. However, any significant mix of the pusher material into the fuel (gas) may have a sizable impact on burn performance. The hydrodynamic stability of the gas-metal interface is an obvious concern, but 1D effects may also be detrimental. Such effects include plasma diffusion at material interfaces; which has been the subject of numerous investigations. However, other 1D mix mechanisms may exist, which have yet to be thoroughly explored. In particular, plasma kinetic effects may drive mix when a shock breaks out of a gas-metal interface. Using the state-of-the-art, hybrid (kinetic-ion/fluid electron), multi-ion Vlasov-Fokker-Planck code, iFP, we show that shock-driven kinetic effects reconfigure the interface, and the inter-facial width subsequently grows proportionally to $M^{5/2}$ with time (where M is the initial shock Mach number in the metal). Finally, we consider any implications for high-Z pusher designs.

> Brett Keenan Los Alamos National Laboratory

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