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Shock wave, fluid instability and implosion studies with a kinetic particle approach[1] IRINA SAGERT, WESLEY P. EVEN, TERRANCE T. STROTHER, Los Alamos National Laboratory — Many problems in laboratory plasma physics are subject to flows that move between the continuum and the kinetic regime. The correct description of these flows is crucial in order to capture their impact on the system's dynamical evolution. Examples are capsule implosions in inertial confinement fusion (ICF). Although their dynamics is predominantly shaped by shock waves and fluid instabilities, non-equilibrium flows in form of deuterium/tritium ions have been shown to play a significant role. We present recent studies with our Monte Carlo kinetic particle code that is designed to capture continuum and kinetic flows in large physical systems with possible applications in ICF studies. Discussed results will include standard shock wave and fluid instability tests and simulations that are adapted towards future ICF studies with comparisons to hydrodynamic simulations.

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