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Nonlocal Ion-Heat Transport and Viscosity in ICF Implosions S. SKUPSKY, V.N. GONCHAROV, D. LI, Laboratory for Laser Energetics, U. of Rochester — During shock propagation and coalescence in the vapor region of ICF targets, the ion mean free path can become large compared to relevant spatial scale lengths and to the size of computational cells in numerical simulations. During this time, a classical treatment of hydrodynamics may not be valid. To investigate the effect of these long mean-free-path ions on the simulation of ICF implosions, we have developed models to treat nonlocal ion transport, and we have applied them to the simulation of experiments on the OMEGA laser and ignition designs for the NIF. This presentation will focus on a time-dependent, quasi-Monte-Carlo approach in which ions are tracked through the plasma, and energy, momentum, and mass are deposited nonlocally. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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