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ePLAS Studies of Viscous, Kinetic and Transport Effects in Laser ICF Target Dynamics R.J. MASON, R.J. FAEHL, R.C. KIRKPATRICK, Research Applications Corp — Noting that the artificial and/or grid viscosity used for most Laser ICF fluid modeling assumes a cell size much larger than the ion-ion mean free path, while the opposite can be true in many evolving target regions, we explore the effects of a generalized ion viscous treatment, as well as electron-ion charge separation fronts with reflected ions, on target dynamics. Transport effects from an added external B-field are also under consideration. We do this in a fluid context with support from kinetic calculations. We demonstrate results from an enhanced version of the ePLAS [1-3] simulation code that uses either fluid or Krook collisional PIC modeling for multiple ion species, particle, or fluid electrons with thermal flux limitation, interspecies collisional coupling, *E & B*-fields computed by the Implicit Moment Method [1] and a new hybrid method for efficient runs on the ion Courant time scale.

[1] R. J. Mason and C. Cranfill, IEEE Trans. Plasma Sci. **PS-14,** 45 (1986).
[2] R. J. Mason, Phys. Rev. Lett. **96**, 035001 (2006).
[3] T. Ma, M. H. Key, R. J. Mason, et al., Phys. Plasmas **16**,112702 (2009).

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