Abstract Submitted
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Kinetic studies of ICF target dynamics with ePLAS R.J. MASON, Research Applications Corp — The ePLAS code was recently used[1] to show that a modeling change from artificial to real viscosity can result in a decrease of the predicted performance of ICF targets. This code typically follows either fluid or PIC electrons with fluid ions in self-consistent $E-$ and $B-$fields computed by the Implicit Moment Method[2]. For the present study the ions have instead been run as PIC particles undergoing Krook-like self-collisions. The ePLAS collision model continually redistributes the ion particle properties toward a local Maxwellian, while conserving the mean density, momentum and energy. Whereas the use of real viscosity captures large Knudsen Number effects as the active target dimensions shrink below the ion mean-free-path, the new kinetic modeling can manifest additional effects such as collisional shock precursors[3] from the escape and streaming of the fastest particle ions. In 2D cylindrical geometry we will explore how such kinetic shock extensions might affect shell and core compression dynamics in ICF target implosions. 1. R. J. Mason, R. C. Kirkpatrick and R. J. Faehl, Phys. Plasmas **21**, 022705 and 039902 (2014). 2. R. J. Mason, J. Comp. Phys. **41**, 233 (1981). 3. R. J. Mason, Phys. Fluids **13,** 1467 (1970).

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