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Multi-species effects in inertially confined plasmas GRIGORY KAGAN, XIAN-ZHU TANG, Los Alamos National Lab — Inertial confinement fusion (ICF) implosions are routinely modeled with single-fluid codes. Individual dynamics of the fuel constituents is not resolved; only the overall pressure, density and fluid velocity are evolved, though electron and ion temperatures are often distinguished. An obvious weakness of such an approach is impossibility to predict relative concentrations of multiple ion species that are to undergo fusion reactions. Multi-fluid plasma formalism, consistently capturing the physics behind and consequences of the relative motion of ion species, is presented. Implications for the ICF implosions are discussed.

Grigory Kagan
Los Alamos National Lab

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