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Plasma kinetic effects on atomistic mix in one dimension and at structured interfaces (II)[1] BRIAN ALBRIGHT, LIN YIN, JAMES COOLEY, JEFFREY HAACK, MELISSA DOUGLAS, Los Alamos Natl Lab — The Marble campaign seeks to develop a platform for studying mix evolution in turbulent, inhomogeneous, high-energy-density plasmas at the NIF. Marble capsules contain engineered CD foams, the pores of which are filled with hydrogen and tritium. During implosion, hydrodynamic stirring and plasma diffusivity mix tritium fuel into the surrounding CD plasma, leading to both DD and DT fusion neutron production. In this presentation, building upon prior work [Yin et al., Phys. Plasmas 23, 112392 (2016)], kinetic particle-in-cell simulations using the VPIC code are used to examine kinetic effects on thermonuclear burn in Marble-like settings. Departures from Maxwellian distributions are observed near the interface and TN burn rates and inferred temperatures from synthetic neutron time of flight diagnostics are compared with those from treating the background species as Maxwellian.

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