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**Particle-In-Cell modeling of the Knudsen layer reduction of fusion reactivity at high and low Z plasma interface** CHENGKUN HUANG, BRIAN J. ALBRIGHT, Los Alamos National Laboratory, KEVIN J. BOWERS, Guest scientist, Los Alamos National Laboratory, KIM MOLVIG, ERIC M. NELSON, EVAN S. DODD, NELSON M. HOFFMAN, Los Alamos National Laboratory
— The high Z and low Z ion interfaces produced in ICF capsule during implosion can reduce the amount of tail ions responsible for the majority of the fusion reactivity due to the higher collision rate in the high Z plasma. This effect can be significant at the Knudsen layer of the interface where the layer width corresponds to the mean free path of the tail ions [1]. We employ 1D3V Particle-In-Cell simulations with binary collision and a lossy wall boundary for the tail ions to model their diffusion across the Knudsen layer. Tail ion population and dynamics are evolved self-consistently including effects such as slow-down and spreading, pitch-angle scattering and ambipolar diffusion. Fusion reactivity of the low Z ion is calculated using Bosch-Hale parameterization of the cross section data. Simulations are compared with result from simplified kinetic models and detailed benchmark will be presented and discussed.

[1] Molvig et al., submitted to Physical Review Letters.

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