Abstract Submitted
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Molecular Dynamic Studies of Particle Wake Potentials in Plasmas[1] IAN ELLIS, Lawrence Livermore National Laboratory and University of California, Los Angeles, FRANK GRAZIANI, JAMES GLOSLI, DAVID STROZZI, MICHAEL SURH, DAVID RICHARDS, Lawrence Livermore National Laboratory, VIKTOR DECYK, WARREN MORI, University of California, Los Angeles — Fast Ignition studies require a detailed understanding of electron scattering, stopping, and energy deposition in plasmas with variable values for the number of particles within a Debye sphere. Presently there is disagreement in the literature concerning the proper description of these processes. Developing and validating proper descriptions requires studying the processes using first-principle electrostatic simulations and possibly including magnetic fields. We are using the particle-particle particle-mesh (P^3M) code ddcMD to perform these simulations. As a starting point in our study, we examined the wake of a particle passing through a plasma. In this poster, we compare the wake observed in 3D ddcMD simulations with that predicted by Vlasov theory and those observed in the electrostatic PIC code BEPS where the cell size was reduced to $.03\lambda_D$.

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