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Studies of Particle Wake Potentials in Plasmas[1] IAN ELLIS, UCLA and LLNL, FRANK GRAZIANI, JAMES GLOSLI, DAVID STROZZI, MICHAEL SURH, DAVID RICHARDS, LLNL, VIKTOR DECYK, WARREN MORI, UCLA
— 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 (PPPM) code ddcMD and the particle-in-cell (PIC) code BEPS to perform these simulations. As a starting point in our study, we examine the wake of a particle passing through a plasma in 3D electrostatic simulations performed with ddcMD and with BEPS using various cell sizes. In this poster, we compare the wakes we observe in these simulations with each other and predictions from Vlasov theory.

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Ian Ellis
UCLA and LLNL

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