

Abstract Submitted
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Dynamic Modeling of Multi-Component Strongly Coupled Plasmas Using Particle-in-Cell Simulations¹ DAVID ROSE, DALE WELCH, ROBERT CLARK, TOM GENONI, CARSTEN THOMA, Voss Scientific — A three-dimensional dynamic simulation model of strongly coupled electron-ion and multi-component plasmas is being developed. Based on the particle-in-cell method, the simulations resolve sub-Debye-length inter-particle spacing to accurately model these systems [D. V. Rose, *et al.*, Phys. Plasmas **16**, 102105 (2009)]. The simulation results are in very good agreement with classical hypernetted chain calculations for dense electron-ion and ion-ion plasmas. Our results demonstrate the feasibility and utility of large-scale particle-in-cell simulations for the modeling and analysis of multi-component moderately and strongly coupled plasmas. Models for electron-impact ionization and recombination are being developed to follow the time dependent evolution of multi-component coupled plasmas. Sample results will be presented.

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