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Ionic Transport in High Energy-Density Matter[1] LIAM STANTON, Lawrence Livermore National Laboratory, MICHAEL MURILLO, Los Alamos National Laboratory — Ionic transport coefficients for dense plasmas have been numerically computed using an effective Boltzmann approach. We have developed a simplified effective potential approach that yields simple fits for all of the relevant cross sections and collision integrals. We have validated our new results with molecular dynamics simulations. Molecular dynamics has also been used to examine the underlying assumptions of the Boltzmann approach through a categorization of behaviors of the velocity autocorrelation function. Implications of these results on Coulomb-logarithm approaches are also discussed. The impact of our new results on material mixing in high energy-density environments, including interdiffusion near an interface and viscous corrections to Rayleigh-Taylor instability growth, is examined.

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