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**Ionic diffusion in plasmas across coupling regimes** J. DALIGAULT, S.D. BAALRUD, Los Alamos National Laboratory — Molecular dynamics simulations are used to investigate the diffusion properties of ions in one-component plasmas and binary ionic mixtures from the weakly to the strongly coupled regimes. A physically motivated model for the diffusivities is proposed that reproduces the simulation data and gives insight into the nature of ionic motions and interactions in plasmas across the coupling regimes. The model extends the widely used Chapman-Spitzer theory from the weakly to the moderately coupled regime. In the strongly coupled regime, diffusion is modeled in terms of thermally activated jumps between equilibrium positions separated by an energy barrier.

J Daligault, Phys. Rev. Lett. 108, 225004 (2012).

S. Baalrud, Phys. Plasmas 19, 030701 (2012)

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