Ionic Transport Coefficients of Dense Plasmas without Molecular Dynamics J. DALIGAULT, Los Alamos National Laboratory, S.D. BAALRUD, University of Iowa, C.E. STARRETT, D. SAUMON, T. SJOSTROM, Los Alamos National Laboratory — We present a theoretical model that allows a fast and accurate evaluation of ionic transport properties of realistic plasmas spanning from warm and dense to hot and dilute conditions, including mixtures [1]. This is achieved by combining a recent kinetic theory based on effective interaction potentials with a model for the equilibrium radial density distribution based on an average atom model and the integral equations theory of fluids. The model should find broad use in applications where nonideal plasma conditions are traversed, including inertial confinement fusion, compact astrophysical objects, solar and extrasolar planets, and numerous present-day high energy density laboratory experiments. [1] J. Daligault, S.D. Baalrud, C.E. Starrett, D. Saumon and T. Sjostrom, Phys. Rev. Lett. 116, 075002 (2016)

Scott Baalrud
Univ of Iowa

Electronic form version 1.4