

Abstract Submitted
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Self-Consistent Scattering and Transport Calculations¹ S.B. HANSEN, Sandia National Laboratories, P.E. GRABOWSKI, University of California, Irvine — An average-atom model with ion correlations [1] provides a compact and complete description of atomic-scale physics in dense, finite-temperature plasmas. The self-consistent ionic and electronic distributions from the model enable calculation of x-ray scattering signals and conductivities for material across a wide range of temperatures and densities. We propose a definition for the bound electronic states that ensures smooth behavior of these measurable properties under pressure ionization and compare the predictions of this model with those of less consistent models for Be, C, Al, and Fe.

[1] C.E. Starrett and D. Saumon, High Energy Density Physics 10, 35 (2014).

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