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Monte Carlo simulation of electrons in dense gases[1] WADE TATTERSALL, Australian National University, GREG BOYLE, DANIEL COCKS, James Cook University, STEPHEN BUCKMAN, Australian National University, RON WHITE, James Cook University — We implement a Monte-Carlo simulation modelling the transport of electrons and positrons in dense gases and liquids, by using a dynamic structure factor that allows us to construct structure-modified effective cross sections. These account for the coherent effects caused by interactions with the relatively dense medium. The dynamic structure factor also allows us to model thermal gases in the same manner, without needing to directly sample the velocities of the neutral particles. We present the results of a series of Monte Carlo simulations that verify and apply this new technique, and make comparisons with macroscopic predictions and Boltzmann equation solutions.

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