

Abstract Submitted
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On the Crossover from Classical to Fermi Liquid Behavior in Dense Plasmas¹ JEROME DALIGAULT, Los Alamos National Laboratory — We explore the crossover from classical plasma to quantum Fermi liquid behavior of electrons in dense plasmas. To this end, we analyze the evolution with density and temperature of the momentum lifetime of a test electron introduced in a dense electron gas. This allows us 1) to determine the boundaries of the crossover region in the temperature-density plane and to shed light on the evolution of scattering properties across it, 2) to quantify the role of the fermionic nature of electrons on electronic collisions across the crossover region, and 3) to explain how the concept of Coulomb logarithm emerges at high enough temperature but disappears at low enough temperature.

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Jerome Daligault
Los Alamos National Laboratory

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