WIGNER DYNAMICS CALCULATIONS OF ELECTRICAL CONDUCTIVITY OF STRONGLY COUPLED QUANTUM PLASMA

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Combining both molecular dynamics and Monte Carlo methods for solving the integral Wigner-Liouville equation we have calculated the temporal momentum-momentum correlation functions and their frequency-domain Fourier transforms. In the canonical ensemble at finite temperature for weakly coupled plasmas the obtained numerical results agree well with the Drude approximation and the Silin's formula. The growth of coupling parameter results in strong deviation of the frequency dependent conductivity and permittivity from low density and high temperature approximations.