

Quantum Effect on Collisions in Electron-positron Plasmas

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Quantum effects on the electron-positron scattering are investigated in electron-positron plasmas. The corrected Kelbg potential, taking into account the quantum effects, is applied to describe the electron-positron interaction potential in electron-positron plasmas. The Born approximation is considered to obtain high-energy electron-positron scattering cross sections. The results show that the differential electron-positron scattering cross sections increase with increasing thermal de Broglie wavelength, i. e., decreasing plasma temperature. The differential electron-positron scattering cross sections decreases with increasing collision energy. It is also found that the quantum effects on the differential scattering cross section are small for forward and backward scattering angles.

Key words: Electron-positron Plasmas; Electron-positron Collisions.