

Collective Effects on the Transition Bremsstrahlung Spectrum due to the Polarization Interaction in Nonideal Plasmas

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The collective effects on the transition bremsstrahlung spectrum due to the polarization interaction between the electron and Debye shielding cloud of an ion are investigated in nonideal plasmas. The impact parameter analysis with the effective pseudopotential model taking into account the nonideal collective and plasma screening effects is applied to obtain the bremsstrahlung radiation cross-section as a function of the nonideality plasma parameter, Debye length, photon energy, and projectile energy. It is shown that the collective effects enhance the bremsstrahlung radiation cross-section and decrease with increasing impact parameter. It is also shown that the collective effect is the most significant near the maximum position of the bremsstrahlung cross-section. In addition, it is shown that the collective effect decreases with an increase of the radiation photon energy.

Key words: Transition Bremsstrahlung; Nonideal Plasmas.