

# Effects of Grain Size on the Bremsstrahlung Spectrum of Electron-Dust Grain Collisions in Dusty Plasmas

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The grain size effects on the bremsstrahlung emission spectrum due to nonrelativistic electron-dust grain collisions are investigated in dusty plasmas. Using the Born approximation for the initial and final states of the projectile electron, the bremsstrahlung radiation cross section is obtained as a function of the grain size, dust charge, Debye radius, collision energy, and radiation photon energy. It is found that the effects of the grain size enhance the bremsstrahlung radiation cross section, especially for soft-photon radiations. The effect of the Debye radius on the bremsstrahlung cross section is found to be increased with an increase of the magnitude of the charge number of the dust grain. In addition, the grain size effect on the bremsstrahlung spectrum is found to be more significant for highly charged dusty grains.

*Key words:* Dust Bremsstrahlung; Dusty Plasmas.