

Thomson scattering process in turbulent plasmas

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The effects of turbulence on the Thomson scattering process are investigated in turbulent plasmas by the scattering of electromagnetic waves. The Thomson scattering cross section in turbulent plasmas is obtained by the fluctuation-dissipation theorem and plasma dielectric function as a function of the diffusion coefficient, wave number, and Debye length. It is demonstrated that the turbulence effect suppresses the Thomson scattering cross section. It is also shown that the turbulence effect on the Thomson scattering process decreases with increasing thermal energy. The dependence of the wave number on the total Thomson scattering cross section including the turbulent structure factor is also discussed.