FLUCTUATION THEORY OF BREMSSTRAHLUNG
IN PLASMAS WITH FLUID-LIKE RANDOM MOTIONS

T.Chmyr, A.Zagorodny

Bogolubov Institute for Theoretical Physics,252143,Kiev,Ukraine

The theory of electromagnetic fluctuations in a plasma with random motions of large-scale volume element is applied to work out a theory of bremsstrahlung in turbulent plasmas. Correlation functions of bremsstrahlung sources generated in course of fluctuation field scattering by electron density fluctuations are calculated and spectral distribution of bremsstrahlung intensity is found. The limiting cases of random convective and diffusive motions of large-scale volume elements are studied in detail. The convective turbulent motions are shown to cause an increase of electron and ion effective temperatures which in turn results in the enhancement of the "resonance" bremsstrahlung. In the case of diffusive large-scale motions the "resonance" bremsstrahlung is strongly damped while the non-resonance part can be enhanced by the turbulent diffusion.