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WEIBEL INSTABILITY DUE TO NONLINEAR INVERSE BREMSSTRAHLUNG ABSRPTION IN MAGNETIZED FUSION PLASMA

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Weibel instability due to nonlinear inverse bremsstrahlung absorption (WINLIBA) in magnetized plasma has been investigated in the frame of the relativistic kinetic theory (RKT). In this study the magnetized plasma is described by relativistic Fokker-Planck equation with an ameliorated Krook collision term which takes into account the relativistic effect and the Landau microscopic collision theory. The dispersion relation of the Weibel modes is obtained from the perturbed Fokker Planck equation and the growth rate is explicitly calculated as a function of the physical parameters of the plasma, the magnetic field and the electromagnetic wave. The Langdon effect due to the distortion of the isotropic component of distribution function is taken into account in this study. Applications are given for magnetic confinement fusion (MCF) plasma heated by micro-waves and for magneto-inertial fusion (MIF) scheme. The numerical analysis of model equations shows a moderate unstable modes for MCF and highly unstable Weibel modes (~〖10〗^11 s^(-1)) for MIF plasma.
Key words: Weibel instability, Nonlinear inverse bremsstrahlung absorption, magnetized plasma

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