

Electromagnetic linear dispersion relation for plasma with a drift across magnetic field revisited

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A current across the magnetic field is formed in various situation in plasma. The relative drift between ions and electrons due to the cross-field current becomes a source of various microscopic instabilities. Fully electromagnetic and kinetic linear dispersion relation for plasma with a drift across magnetic field is derived by assuming an uniform background plasma. The dielectric permittivity tensor for shifted Maxwellian velocity distributions is also presented.