

Abstract

In this thesis, We have derived the Linear ion acoustic waves in an anisotropic partially degenerate plasma .We derived the dispersion relation for ion-acoustic wave for isotropic case in a un-magnetized partially degenerate plasmas where ions follows the Maxwellian distribution function and electrons follows the Fermi-Dirac distribution function. The dispersion relation is formulated in terms of temperature ratio between the temperature of electrons and ions. We observed that the frequency of ion-acoustic wave increases as we increase the electrons temperature. And then we derived the dispersion relation for ion-acoustic wave for anisotropic case in a un-magnetized partially degenerate plasmas. The solution of ion acoustic wave in an anisotropic is written in term of $\sqrt{1 + \xi}$ function. So finally we observed that the dispersion behaviour of ion-acoustic wave goes on increasing when we increase parallel temperature and vice versa.