

Abstract

In this thesis, we studied parallel propagating electromagnetic ion cyclotron waves (EMIC) using kappa-Maxwellian distribution in space plasma. In our study, we considered the ions anisotropic and neglected the influence of electrons on growth rate by considering them isotropic. We have solved the full hot plasma dielectric tensor and derived the dispersion relations of EMIC waves for Maxwellian as well as kappa-Maxwellian distributions. We also solved the full dispersion relation numerically and plotted the real frequency and growth rate for both distributions. For the Maxwellian case, we found that the growth rate increases when we increase the temperature anisotropy. For the kappa-Maxwellian case, we found that the growth rate increases when kappa decreases, i.e. growth rate increases when the concentration of high energy particles increases.