

Abstract

In this thesis, we studied obliquely propagating electromagnetic ion cyclotron waves (EMIC) using kappa-Maxwellian distribution in space plasmas. We have solved the full hot plasma dielectric tensor for oblique propagation and derived the full dispersion relation of obliquely propagating EMIC waves. We then solve the full dispersion relation numerically for both Maxwellian and kappa-Maxwellian distributions and plot the real frequency and growth rate for both the distributions. For Maxwellian case, we found that growth rates increase as the angle of propagation decreases for fixed value of temperature anisotropy. For kappa-Maxwellian case, again we found that growth rates increase as the angle of propagation decreases for fixed value of temperature anisotropy. Also, we found that growth rates increase as the value of kappa decreases that is the distribution contains more high energy particles. Thus in kappa-Maxwellian plasma, growth rate is larger than the Maxwellian plasma.