Study of kappa distribution function on EMIC waves in space plasma

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In this paper, we have presented some results of previous work on EMIC waves. Electromagnetic ion-cyclotron (EMIC) waves have been studied are discuss the effect of kappa distribution by using the method of kinetic approach are evaluated. The dispersion relation, growth rate and growth length on electromagnetic ion-cyclotron waves in low * case (* is the ratio of plasma pressure to magnetic pressure), homogeneous plasma have been obtained. The wave is assumed to propagate parallel to the static magnetic field. In this paper, the effect of kappa distribution on EMIC waves in space plasma is to enhance the growth rate with increases the growth length of EMIC waves in low case. It is found that the increasing value of kappa distribution function on electromagnetic ion-cyclotron wave is enhancing the growth/damping rate (*) with increase the growth length (*L) RE may be due to EMIC emissions. The presence of such distributions in different space plasma suggests a universal mechanism for the creation of such super thermal tails. The super thermal particles have impotent consequences concerning the acceleration and the temperature that are well evidenced by the kinetic approach. EMIC waves play an important role in the overall dynamics of space plasma. Electromagnetic ion cyclotron (EMIC) waves generated in the equatorial region of earths magnetospheric as well as waves are left-hand circularly (LHC) polarized. EMIC waves are usually measured with frequency are 0.1-5.0 Hz range. Distribution function of kappa type is power laws with the power-index * determining the slope of the high-energy tails in the velocity spectrum of plasma particles Lazer et al., (2013).

The results are interpreted for the space plasma parameters appropriate to the auroral acceleration region. The interpreted may be applicable to explain the ion heating and acceleration of plasma particle in the solar wind as well as auroral acceleration region. The results of the work is consistent for EMIC emissions observations by Polar, FAST satellite of the auroral acceleration region as reported by Mozer, et al., 2000.

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