

ABSTRACT

In this research work the theoretical analysis of the coupling of electrostatic ion-cyclotron (EIC) and ion-acoustic waves (IAWs) in magnetized plasmas is carried out. The coupling can be experimentally studied in laboratory plasmas and is also observed near the Earth's magnetopause by Time History of Events and Macroscale Interactions during Substorms (THEMIS). Fluid approach is used to derive the coupled linear dispersion relation for obliquely propagating waves in an inhomogeneous plasma in the presence of velocity shear. Finite-Larmor-radius effect is taken into account by using the nondiagonal pressure tensor in the equation of motion for ions. The modified form of Braginskii's transport equations given by Mikhailovskii has been used. The effect of temperature, velocity shear and density gradient on the instability and coupling is investigated.