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Theoretical and computational study of instability in streaming negative ion plasma under static magnetic field

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Abstract

The instability and electrostatic wave modes generation in a cold negative ion plasma which streams across a static magnetic field has been analysed by fluid dynamical model and computer simulation technique. In the theoretical approach, we observed different kinds of acoustic modes and cyclotron modes at an oblique angle to the static magnetic field. At some critical wave number, the positive and negative ion acoustic modes split up into two, fast and slow waves. The value of critical wave numbers and wave growth rates depends on the plasma streaming velocity, electron concentration in the system, and magnetic