
Resonant absorption of MHD wave near the ion cyclotron frequency: A simulation study

Eun-Hwa Kim and Dong-Hun Lee

Dept. of Astronomy & Space Science, Kyung Hee University

To study plasma waves as well as MHD waves in a consistent manner, we have newly developed a three-dimensional multi-fluid model, which can fully include the effects of multi-ions and electrons. This time-dependent model enables us to study a wide range of fluid waves from Langmuir oscillations to MHD waves when the system is arbitrarily inhomogeneous. In this study, we examine how resonant absorption process varies as the frequency increases up to the ion cyclotron frequency. To investigate the coupling between ion cyclotron waves and compressional waves, we closely examined the wave polarization. The left-handed circularly polarized mode is found to maintain only continuous spectrum, which is similar to shear modes in MHD limit, while the right-handed circularly polarized mode shows a mixture of global compressional modes and the continuous spectrum. This feature is discussed and compared to the previous MHD wave properties.