

Linear dispersion analyses on EMIC waves in oblique propagation in multi-component plasmas

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It is known that high energy particles in the radiation belt of the terrestrial magnetosphere make bad influence on artificial satellites. For example, relativistic electrons intrude artificial satellites, resulting in breakdown by charging. The high energy particles temporarily decrease when a magnetic storm takes place. Nowadays, it is pointed that electromagnetic ion cyclotron waves (EMIC waves), which are also observed in the magnetic storm, are regarded as a potential cause of the decrease by causing pitch angle diffusion of relativistic electrons and dissipation in polar regions. This study makes linear dispersion analyses on EMIC waves in multi-component plasmas. Especially, we study the growth rate and polarization property in oblique propagation.

We have made progress on Kyoto University Plasma Dispersion Analysis Package(KUPDAP) that has been developed at Research Institute for Sustainable Humanosphere of Kyoto University. We explain basic functions and additional functions of KUPDAP such as display of polarization, and demonstrate it.

Keywords: multi-component plasma, EMIC, oblique propagation, linear dispersion analysis