Global-COE Frontier Seminar

MHD instabilities in the magnetosphere-ionosphere coupling system

Speaker : Dr. Yasutaka Hiraki
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Date & Time : 15:00 - 16:30 Dec 22, 2009 on Tuesday
Place : RIGAKU SOHGOH TOH Bldg. 2F #203 Lecture Room
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Abstract:

The plasma dynamics in the magnetosphere would be largely changed by the existence of ionosphere and large variations in plasma parameter scale-lengths through a field line. The system will be modeled as a Hermitian system, and the kinetic effects are necessary to reproduce certain fine structures. We hope to develop a simple dynamical model for this system. Now, we perform numerical simulations (2.5D & 3D) with a reduced MHD model.

In this seminar, I present the purpose of a series of this study and the numerical results of the ionospheric feedback instability. Next, I present a study on the interchange instability, including microscopic effects, to reproduce an auroral fine structure with < 20 km; patch auroras. I try to apply this model to the plasma transport process near Io torus in Jupiter. I hope valuable discussions.