Simulations of the Magnetotail Reconnection on Parallel Computer:via 2D hybrid code and 2D MHD code

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MHD simulations has been successfully reproduced the magnetic reconnection. However, the electric currents are neglected in the MHD codes. We attempt to compare 2D MHD simulation results with the simulation results via 2D hybrid code. We have parallelized our 2D hybrid code for the study of the magnetotail reconnection. Here, MPI(Message-Passing Interface) are used in the implementation. Next, we performed reconnection simulations via two simulation codes. The initial parameters are almost same in both simulations.

We obtained remarkably different pictures between MHD and hybrid simulations through the reconnection processes. In the presentation, physical mechanisms to bring this difference are discussed.