

MHD simulation of multiple x-line magnetic reconnection in the dayside magnetopause

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The spontaneous fast reconnection evolution is studied in asymmetric magnetic field configuration. In particular, the multiple x-line reconnections are investigated in association with the presence of sheath flow using two dimensional MHD simulations. According to the fast reconnection development, the diffusion region extends in the direction of reconnection outflow. Then, secondary reconnection occurs to divide the diffusion region, and the magnetic reconnections in the secondary x-lines drastically evolve again. The sheath flow makes extending of diffusion region easy and cause the differences of reconnection rate at each x-line.