

Abstract Submitted  
for the DPP06 Meeting of  
The American Physical Society

**Microscopic non-ideal effects in collisionless reconnection in the current sheet.** TOSEO MORITAKA, Nagoya University, RITOKU HORIUCHI, HIROAKI OHTANI, National Institute for Fusion Science — The microscopic violation mechanism of frozen-in condition of magnetic field is investigated by means of 2+1/2 dimensional explicit electromagnetic particle simulation. Microscopic non-ideal terms in two-fluid equation are examined based on particle simulation results. Two instabilities, Lower Hybrid Drift Instability (LHDI) and Drift Kink Instability (DKI) are observed to grow in the current sheet. The wavy coupling components, which appear in electric force term at the periphery and in magnetic force term at neutral sheet, become significant in accordance with the excitation of these instabilities. In the DKI growing phase, DC electric field is generated at the neutral sheet through the wave-particle interaction and it contributes to reduce magnetic flux. Thus, an anomalous resistivity leading to collisionless reconnection is generated by the DKI. The deformation process of current sheet due to the LHDI and the mass ratio dependence of the growth of the DKI will be discussed in the meeting.

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Date submitted: 25 Aug 2006

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