Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

3-D Particle Simulations of Nonlinear Lower Hybrid Drift Instability ZHENYU WANG, Princeton University, YU LIN, XUEYI WANG, Auburn University, LIU CHEN, University of California, Irvine — Previously, we investigated 3-D linear instabilities of Harris current sheet under a realistic ion-to-electron mass ratio and a finite guide field. The excitation and 3-D properties of lower hybrid drift instability (LHDI), kink, sausage and a streaming instabilities were demonstrated. In the present poster, we study the nonlinear properties of current sheet instabilities by employing Gyrokinetic electron and Fully kinetic ion (GeFi) particle simulation code. It is found that part of the energy of the LHDI modes penetrates to the current sheet center in the nonlinear stage. The saturation level of magnetic field at the current sheet center is an order of magnitude smaller than that at the current sheet edge. The nonlinear GeFi simulation results are compared with nonlinear fully kinetic PIC simulations.

Zhenyu Wang
Princeton University

Date submitted: 03 Jul 2019   Electronic form version 1.4