Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Mass Ratio Dependence of Collisionless Reconnection Under Strong Guide Field ZHIFANG GUO, XUEYI WANG, YU LIN, Physics Department, Auburn University, LIU CHEN, Department of Physics and Astronomy, University of California Irvine — Magnetic reconnection under a strong guide field BG/B0>>1, as in laboratory plasmas, is investigated using the gyrokinetic electron and fully-kinetic ion (GeFi) particle simulation model, where BG and B0 are the guide and the anti-parallel component of magnetic field, respectively. The simulation is carried out for a two-dimensional (2D) force free current sheet. Cases with various ion-to-electron mass ratio mi/me and guide field BG are presented in order to understand the effects of the mass ratio and guide field on the rate and structures of reconnection. Results are shown for mi/me =100-1836. The simulation results are compared with the linear eigenmode analysis. 3-D magnetic reconnection with a strong guide field BG is also discussed using our GeFi simulation model.

Zhifang Guo
Physics Department, Auburn University

Date submitted: 02 Jul 2019 Electronic form version 1.4