

Abstract Submitted  
for the DPP20 Meeting of  
The American Physical Society

**Nature of Fluctuations and Turbulence in 3D Reconnection** HUI

LI, Los Alamos Natl Lab, LIPING YANG, Space Weather Laboratory, China, SENBEI DU, Los Alamos Natl Lab, XIAOCAN LI, Dartmouth College, FAN GUO, Los Alamos Natl Lab — Recent 3D magnetic reconnection simulations have revealed the critical role of fluctuations and turbulence in regulating the reconnection process as well as their influence on particle transport. The origin of these fluctuations can be both externally driven and self-generated. The self-generated fluctuations can be from instabilities such as tearing and Kelvin-Helmholtz, and collisions of outflows from 3D reconnection. Such processes tend to drive fluctuations on small or intermediate scales, from which both forward and inverse cascade can produce a broad turbulence like spectrum. We will describe these processes using both 3D MHD and PIC simulations and quantify the nature of such fluctuations. Implications for particle transport will be discussed as well.

Hui Li  
Los Alamos Natl Lab

Date submitted: 29 Jun 2020

Electronic form version 1.4