Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Energy Dissipation and Phase-Space Dynamics in Eulerian Vlasov-Maxwell Turbulence[1] JASON TENBARGE, Princeton University, JAMES JUNO, University of Maryland, AMMAR HAKIM, Princeton Plasma Physics Laboratory — Turbulence in a magnetized plasma is a primary mechanism responsible for transforming energy at large injection scales into small-scale motions, which are ultimately dissipated as heat in systems such as the solar corona, wind, and other astrophysical objects. At large scales, the turbulence is well described by fluid models of the plasma; however, understanding the processes responsible for heating a weakly collisional plasma such as the solar wind requires a kinetic description. We present a fully kinetic Eulerian Vlasov-Maxwell study of turbulence using the Gkeyll simulation framework, including studies of the cascade of energy in phase space and formation and dissipation of coherent structures. We also leverage the recently developed field-particle correlations to diagnose the dominant sources of dissipation and compare the results of the field-particle correlation to other dissipation measures.

[1]NSF SHINE AGS-1622306 and DOE DE-AC02-09CH11466

Jason TenBarge
Princeton University

Date submitted: 14 Jul 2017 Electronic form version 1.4