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A Full Eulerian Vlasov-Maxwell Study of Turbulent Dynamics and Dissipation[1] JASON TENBARGE, JAMES JUNO, University of Maryland, AMMAR HAKIM, Princeton Plasma Physics Lab — The development of a detailed understanding of turbulence in magnetized plasmas has been a long standing goal of the broader scientific community, both as a fundamental physics process and because of its applicability to a wide variety of phenomena. Turbulence in a magnetized plasma is the 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 and wind. 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 the first fully kinetic Eulerian Vlasov-Maxwell study of turbulence using the Gkeyll simulation code. We focus on the pristine distribution function dynamics that are possible with the Eulerian approach. We also present the signatures and form of dissipation as diagnosed via field-particle correlation functions.

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