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Small Scale Magnetic Reconnection in Kinetic Plasma Turbulence VADIM ROYTERSHTEYN, Space Science Institute, STANISLAV BOLDYREV, University of Wisconsin-Madison, GIAN LUCA DELZANNO, Los Alamos National Laboratory — Magnetic reconnection in turbulent plasmas has been steadily getting recognition as an important process that contributes to energy dissipation and may play a significant role in terminating nonlinear cascade of turbulent fluctuations. Furthermore, significant interest has arisen, in light of recent MMS observations, in magnetic reconnection at the smallest electron kinetic scales in turbulence. At such scales, ions are decoupled from magnetic field and do not appear to participate in the reconnection process. We present results of 3D fully kinetic simulations of decaying turbulence aimed at uncovering properties of such reconnection events, in particular under conditions corresponding to the Earths magnetosheath. The simulations are conducted using highly accurate spectral simulation tool SPS to allow careful characterization of small scale reconnection events, with particular attention paid to characterizing 3D structure of the reconnection regions. The simulations results are put in to context of theoretical developments targeting so-called inertial kinetic Alfven regime, characterized by small values of electron beta and ion beta of order one.

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