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Kinetic dissipation and anisotropic heating in a turbulent collisionless plasma MICHAEL SHAY, TULASI PARASHAR, PAUL CASSAK, SERGIO SERVIDIO, University of Delaware — The nature of the collisionless dissipation at small scales in solar wind turbulence is a problem of critical importance. To gain some insight into the nature of the dissipation, we simulate the Orszag-Tang vortex using collisionless hybrid simulations. In magnetohydrodynamics this configuration leads rapidly to broadband turbulence. At small scales, differences from magnetohydrodynamics arise, as energy dissipates into heat almost exclusively through the magnetic field. A key result is that protons are heated preferentially in the plane perpendicular to the mean magnetic field, creating a proton temperature anisotropy as is observed in the corona and solar wind. Preliminary results about the dissipation scale and the distribution of energies at different length scales are discussed.

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