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The Conversion of Large-Scale Turbulent Energy to Plasma Heat In Astrophysical Plasmas GREGORY HOWES, University of Iowa — Turbulence in space and astrophysical plasmas plays a key role in the conversion of the energy of violent events and instabilities at large scales into plasma heat. The turbulent cascade transfers this energy from the large scales at which the motions are driven down to small scales, and this essentially fluid process can be understood in terms of nonlinear wave-wave interactions. At sufficiently small scales, for which the dynamics is often weakly collisional, collisionless mechanisms damp the turbulent electromagnetic fluctuations, and this essentially kinetic process can be understood in terms of linear wave-particle interactions. In this talk, I will summarize the possible channels of the turbulent dissipation in a weakly collisional plasma, and present recent results from kinetic numerical simulations of plasma turbulence. Finally, I will discuss strategies for the definitive identification of the dominant dissipation channels using spacecraft measurements of turbulence in the solar wind.

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