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Reconnection and ion heating in low-β hybrid-kinetic plasma turbulence[1] SILVIO SERGIO CERRI, LEV ARZAMASSKIY, MATTHEW W. KUNZ, Princeton University — Turbulence and kinetic processes in collisionless, magnetized plasmas have been investigated extensively over the past decades via theoretical models, *in situ* spacecraft measurements in the heliosphere, and numerical simulations. Alongside the debate about the nature of ion- and electron-scale fluctuations in solar-wind turbulence, one of the fundamental open questions concerns how turbulent energy is partitioned between ions and electrons. In space and astrophysical plasmas, this "turbulent heating" may involve a wide variety of collisionless plasma processes, with their relative importance depending on several plasma parameters. In this talk, we present results from 3D hybrid particle-in-cell (PIC) simulations of continuously driven, critically balanced plasma turbulence at low β. The interplay between the spectral anisotropy of the fluctuations and different ion-heating mechanisms – and how to possibly diagnose and/or disentangle them – will be discussed. Our results have implications for the differential heating of ion and electrons in turbulent low-β plasmas such as the solar wind.

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