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Kinetic Simulations of the Dissipation Range of Solar Wind Turbulence from Ion to Electron Scales GREGORY HOWES, JASON TENBARGE, University of Iowa, STEVEN COWLEY, EURATOM/CCFE Association, Culham, WILLIAM DORLAND, University of Maryland, ELIOT QUATAERT, UC Berkeley, ALEXANDER SCHEKOCHIHIN, University of Oxford, RYUSUKE NUMATA, TOMO TATSUNO, University of Maryland — The first nonlinear kinetic simulation of the dissipation range of plasma turbulence resolving both the characteristic ion and electron scales with a realistic mass ratio is presented. The resulting energy spectra are qualitatively consistent with nearly power-law spectra observed in recent satellite measurements of the solar wind dissipation range. This result demonstrates that a kinetic Alfven wave cascade can reach the electron scales and disproves a recent claim to the contrary. A weakened cascade model for the kinetic turbulent cascade is presented that explains the spectra by accounting for nonlocal contributions to the energy cascade rate.

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