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Kinetic Dissipation of Solar Wind Turbulence[1] GREGORY HOWES, University of Iowa, STEVE COWLEY, Culham Laboratory, WILLIAM DORLAND, University of Maryland, GREGORY HAMMETT, Princeton Plasma Physics Laboratory, ELIOT QUATAERT, UC Berkeley, ALEXANDER SCHEKOCHIHIN, Imperial College, TOMOYA TATSUNO, University of Maryland — The identification of the key physical mechanisms by which the turbulence in the solar wind is dissipated remains a fundamental unsolved problem in heliospheric physics. I will present a theoretical model of the turbulent cascade from the large scales of energy injection, through the transition to kinetic turbulence at the scale of the ion Larmor radius, down to the electron scales at which the turbulent energy must ultimately be dissipated. Kinetic simulations of the magnetized turbulent cascade in the solar wind at the scale of the ion Larmor radius support the hypothesis that the frequencies of turbulent fluctuations in the solar wind remain well below the ion cyclotron frequency both above and below the ion gyroscale. I will present the first nonlinear kinetic simulations of kinetic Alfvén wave turbulence in the dissipation range from the ion to electron Larmor radius scales.

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