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Short-wavelength turbulence in the solar wind: whistlers vs kinetic Alfven waves S. PETER GARY, Los Alamos National Laboratory — The long-wavelength plasma turbulence of the inertial range has been studied in detail via both solar wind observations and MHD model computations. At relatively short wavelengths, at and beyond the proton inertial length, solar wind magnetic spectra become steeper, implying different physics. This regime has been less studied and is less well understood than the inertial range; however, short-wavelength fluctuations are the key to learning how collisionless plasma turbulence is dissipated and its energy transfered to collisionless plasmas. At present there is a controversy about the primary constituent of short-wavelength turbulence in the solar wind; some advocate high-frequency whistler fluctuations while others maintain that lower-frequency kinetic Alfvén waves are the major contributors. This presentation will review observational and computational results that relate to this controversy, and will provide new theoretical results which may suggest future data analysis and simulations to address this challenging problem.

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