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New insights into kinetic plasma turbulence via model comparisons FRANK JENKO, Univ of California - Los Angeles, DANIEL GROSELJ, Max Planck Institute for Plasma Physics, SILVIO CERRI, University of Pisa, ALEJANDRO BANON NAVARRO, Max Planck Institute for Plasma Physics, CHRISTOPHER WILLMOTT, MIT, DANIEL TOLD, Max Planck Institute for Plasma Physics, NUNO LOUREIRO, MIT, FRANCESCO CALIFANO, University of Pisa — The nature of plasma turbulence at kinetic scales has received a lot of attention recently, also driven by the availability of new observational data and unprecedented computational capabilities. Here, we carry out the first such investigation via a systematic comparison between different kinetic models of a turbulent collisionless plasma. The models considered include a fully-kinetic description, two widely used reduced models (gyrokinetic and hybrid-kinetic with fluid electrons), and a novel reduced gyrokinetic approach. This is a significant step towards addressing the "turbulent dissipation challenge" which has been called for in recent years. Based on our results, we can clarify several open questions regarding the character of turbulence in the solar wind.

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