Abstract Submitted
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Magnetic Reconnection in MHD and Kinetic Turbulence[1] NUNO LOUREIRO, Massachusetts Inst of Tech-MIT, STANISLAV BOLDYREV, University of Wisconsin-Madison — Recent works have revisited the current understanding of Alfvénic turbulence to account for the role of magnetic reconnection [Loureiro17a, Mallett17, Boldyrev17]. Theoretical arguments suggest that reconnection inevitably becomes important in the inertial range, at the scale where it becomes faster than the the eddy turnover time. This leads to a transition to a new sub-inertial interval, suggesting a route to energy dissipation that is fundamentally different from that envisioned in the usual Kolmogorov-like phenomenology. These concepts can be extended to collisionless plasmas, where reconnection is enabled by electron inertia rather than resistivity [Loureiro17b]. Although several different cases must then be considered, a common result is that the energy spectrum exhibits a scaling with the perpendicular wave number that scales between $k_\perp^{-8/3}$ and $k_\perp^{-3}$, in favourable agreement with many numerical results and observations. References: [Loureiro17a] N.F. Loureiro and S. Boldyrev, Phys. Rev. Lett. (2017) [Mallet17] A. Mallet, A. A. Schekochihin and B.D.G. Chandran, Mon. Not. R. Astron. Soc. (2017) [Boldyrev17] S. Boldyrev and N.F. Loureiro, Astrophys. J. *accepted* (2017) [Loureiro17b] N.F. Loureiro and S. Boldyrev, *in preparation* (2017)

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