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Strong MHD Turbulence ANDREY BERESNYAK, Los Alamos National Laboratory, A. LAZARIAN, University of Wisconsin — Imbalanced turbulence, a general case of MHD turbulence, is common in nature, it is found in solar wind, which contains perturbations mostly propagating away from the Sun, or in jets where perturbations propagate away from the central object. I will argue that numerics is an efficient tool to constrain theories and present high-resolution direct numerical simulations of MHD turbulence. The shape of the bottleneck effect indicates that MHD energy cascade is less local than hydro cascade. Based on dissipation rates observed in numerics I will argue that there is a smooth transition to the Goldreich-Sridhar model in the limit of small imbalances. It seems that so-called "dynamic alignment" saturates and, based on this and the observation of diffuse locality I will argue that numerics support -5/3 spectral slope of strong MHD turbulence, rather than a shallower -3/2 slope. The anisotropy of MHD turbulence is a key to cascading. The subdominant component have stronger anisotropy than the dominant component, which is opposite to what GS critical balance would have predicted. I will explain how to deal with cascading in the imbalanced case.

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