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Alfvenic turbulence in the solar wind and plasma experiments
ANDREY BERESNYAK, Los Alamos National Lab — If perturbations are perpendicular to the strong mean magnetic field and are anisotropic, they could be fairly well described by so-called reduced MHD – a fluid-like description of plasma which, nevertheless, works very well for collisionless plasmas. A physical interpretation of this is that Alfvenic perturbations rely on magnetic tension as a restoring force and it is sufficient that charged particles be tied to magnetic field lines to provide inertia. RMHD is applicable to the solar wind and laboratory experiments with strong mean field. In particular, experiments that show potential motions when amplitude is small and turbulent or reconnection-like behavior when amplitude is larger, could be very well described as weak and strong Alfvenic turbulence correspondingly. Recently, there has been a big progress in understanding Alfvenic turbulence, both weak and strong, balanced and imbalanced. I will point out some consequences of these theories for the solar wind and plasma experiments.

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