# Role of magnetic reconnection in plasma turbulence

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Magnetic plasma turbulence is a ubiquitous phenomenon in a variety of astrophysical and space systems, including the interstellar medium, the solar corona and solar wind, and magnetospheres of planets. Observations, numerical simulations, and phenomenological models indicate that given a large enough Reynolds number, Alfvenic plasma turbulence generates strongly sheared magnetic structures (current sheets) at small scales. Such structures may become subject to the tearing instability and magnetic reconnection that rates compete with the turbulent eddy turnover rates [1,2,3,4].

The unstable modes may, therefore, affect turbulent energy cascade at the corresponding scales. This leads to the new regime of plasma turbulence governed by tearing instability [1-7]. This regime can exist in both collisional (magnetohydrodynamic) and collisionless cases [e.g., 8,9,10], as well as some exotic plasmas (pair plasmas [11]). Magnetic turbulence and magnetic reconnection are thus inherently related phenomena. In this presentation, we overview the resulting picture of tearing-mediated magnetic plasma turbulence.

This work is partly supported by NSF under Grants PHY-1707272 and PHY-2010098, by NASA under Grant NASA 80NSSC18K0646, and by the Wisconsin Plasma Physics Laboratory (US Department of Energy Grant DE-SC0018266)

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