



In situ observations of reconnection and associated particle energization in turbulent plasmas

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Magnetic reconnection occurs in turbulent plasma within a large number of volume-filling thin current sheets. Such reconnection efficiently dissipates the magnetic energy of turbulent plasma, resulting in substantial particle heating. Turbulent reconnection is also considered to play an important role for the acceleration of supra-thermal particles. Yet the details of energy dissipation and particle energization during turbulent reconnection, as well their dependence on turbulence properties, are not completely understood from an experimental point of view due to the scarcity of in situ observations. Here we present recent Cluster spacecraft observations of reconnection in different near-Earth turbulent regions (solar wind, magnetosheath, magnetotail) and we discuss the properties of particle energization therein.