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Energy budget of the reconnection process

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Magnetic reconnection leads to well-known features which can be observed in the Earth's magnetosphere, as flux transfer events (FTEs), bursty bulk flows (BBFs) or travelling compression regions (TCRs). In the process of reconnection, magnetic field energy gets converted into kinetic energy of the plasma. This accelerated plasma can be detected in the form of BBFs. The compression of the magnetic fields due to the appearance of these plasma bubbles can be observed in the form of a compression region, travelling together with the plasma flow regions. Also these regions carry energy. In this work we investigate the kinetic energy output of the reconnection process as well as the energy appearing inside TCRs. For this purpose, we use a time-dependent analytical Petschek model of magnetic reconnection and investigate the spatial and temporal distribution of the energy and the potential due to the reconnection process.