



Three-dimensional oscillatory magnetic reconnection

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Magnetic reconnection is an energy release mechanism fundamental to both astrophysical and laboratory plasmas, lying at the heart of phenomena including solar and stellar flares. Current frontiers include the nature of its initialisation, the evolution of reconnection regions in time, their interaction with external regions, and the impact of considering fully three-dimensional plasmas. Here we examine all of these problems in a self-consistent manner using numerical simulation. We demonstrate for the first time that magnetic reconnection in a three-dimensional plasma generically involves a self-generated oscillation. An important and unexpected consequence is the natural generation of a plethora of plasma waves, that may help to explain the latest observations coming from the Sun.