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Instability of the Sweet Parker reconnection layer and onset of fast turbulent reconnection MARINA SKENDER, GIOVANNI LAPENTA, KU Leuven — Within purely resistive MHD without any anomolous effects reconnection sets into a steady state knox to center around an elongated current sheet, the Sweet-Parker (SP) layer, where dissipations allow reconnection. However, such layer is known to be possibly unstable to tearing-like modes. A recent discovery [1,2] is that following the destabilisation of the SP layer reconnection can develop into a fast trubulent regime. This new regime requires no anomlous processes and it is purely resistive MHD, progressing as fast as the fastests kinetic or MHD processes. We investigate such transition.

[1] Self-Feeding Turbulent Magnetic Reconnection on Macroscopic Scales Giovanni Lapenta, Phys. Rev. Lett. 100, 235001 (2008), DOI:10.1103/PhysRevLett.100.235001
[2] Turbulent Magnetic Reconnection in Two Dimensions: Loureiro, N. F.; Uzdensky, D. A.; Schekochihin, A. A.; Cowley, S. C.; Yousef, T. A.: eprint arXiv:0904.0823

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