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Onset of 2D magnetic reconnection in the solar photosphere, chromosphere and corona

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2D reconnection is studied numerically in the context of various atmospheric layers in the Sun: the fully ionized coronal plasma; the partially ionized chromospheric plasma; the almost-neutral photospheric plasma. Numerical simulations solve the compressible, resistive magnetohydrodynamic equations, with reconnection triggered by driving external flows perpendicularly towards an equilibrium Harris current sheet. The inflow velocity controls the rate of flux entering the reconnection region. In the corona the electric field rises sharply (indicative of reconnection) for a range of velocity drivers. In the photosphere reconnection occurs only when the inflow approaches the local Alfvén velocity. Ambipolar diffusion alters the structure of the current density in the chromosphere.

Apply to be considered for a student award (Yes / No)?

No

Level for award (Hons, MSc, PhD, N/A)?

N/A

Primary authors: Dr SNOW, B. (University of Exeter, UK); Dr BOTHA, G. J. J. (Northumbria University, UK)

Co-authors: Dr HILLIER, A. (University of Exeter, UK); Prof. MCLAUGHLIN, J. A. (Northumbria University, UK)

Presenter: Dr BOTHA, G. J. J. (Northumbria University, UK)

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