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Magnetic Reconnection Experiments on the MAGPIE Pulsed Power Generator[1] JACK HALLIDAY, LEE SUTTLE, Imperial College London, JACK HARE, Max-Planck Institute for Plasma Physics, SERGEY LEBEDEV, DANIEL RUSSELL, ELEANOR TUBMAN, VICENTE VALENZUELA VILLASECA, Imperial College London — Magnetic reconnection is a relaxation mechanism through which energy stored in magnetic flux is dissipated, leading to bulk plasma heating, plasma acceleration, and the generation of fast particles. In this presentation we will provide an overview of results obtained using a versatile, pulsed power driven platform for magnetic reconnection experiments [1, 2]. The platform uses the MAGPIE generator to produce plasma inflows ($u_{in} \approx 50$ kms^{-1}) that carry a strong azimuthal magnetic field (B_{in} ˜3 T) and persist for many hydrodynamic timescales ($T_{total} \approx 500$ ns $>> T_{hydro} \approx 10$ ns). Experiments are diagnosed with a suite of high spatial and temporal resolution diagnostics including laser interferometry, Thomson scattering, and Faraday rotation imaging.Notable results obtained using this platform include observation of the semi-collisional plasmoid instability, anomalous heating within the reconnection layer, and measurements of a power balance which demonstrates that magnetic energy is efficiently dissipated by the reconnection process. [1] L. G. Suttle et al. PRL 2016, [2] J. D. Hare et al. PRL 2017

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Jonathan Halliday
Imperial College London

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