# An Experimental Platform for Pulsed-Power Driven Magnetic Reconnection

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We describe a versatile pulsed-power driven platform for magnetic reconnection experiments, based on exploding wire arrays driven in parallel [1-4]. This platform produces inherently magnetised plasma flows for the duration of the MAGPIE generator current pulse (1.4 MA, 500 ns), resulting in the formation of a long-lasting reconnection layer. The layer exists for long enough to allow for the evolution of complex processes, such as plasmoid formation and movement, to be diagnosed by a suite of high spatial and temporal resolution laser-based diagnostics. These diagnostics include interferometry, Thomson scattering and Faraday rotation imaging.

We can access a wide range of magnetic reconnection regimes by changing the wire material or moving the electrodes inside the wire arrays. We present results with aluminium [1] and carbon wires [2,3], in which the parameters of the inflows, and of the layer which forms, are significantly different. For aluminium plasmas, the ram pressure dominates over the magnetic and thermal pressures in the flows, and for carbon the magnetic, thermal and ram pressures are approximately equal. By moving the electrodes inside the wire arrays, we change how strongly the inflows are driven [4], which enables us to study both symmetric reconnection in a range of different regimes, and asymmetric reconnection.

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