

Abstract Submitted
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An experimental investigation of the collision of counter-streaming magnetized plasma flows with oppositely aligned embedded magnetic fields LEE SUTTLE, SERGEY LEBEDEV, GEORGE SWADLING, FRANCISCO SUZUKI-VIDAL, GUY BURDIAK, MATTHEW BENNETT, JACK HARE, Imperial College, DAVID BURGESS, ADAM CLEMENS, Queen Mary, NICHOLAS NIASSE, JERRY CHITTENDEN, ROLAND SMITH, SIMON BLAND, SIDDHARTH PATANKAR, NIC STUART, Imperial College — We present first results from a new experimental platform designed to study the quasi-1D collision of counter-streaming plasma flows produced by the ablation from a pair of inverse wire array z pinches at the MAGPIE pulsed power facility. The flows are magnetized ($B \sim 2\text{T}$, $\text{Re}_M \sim 100$) and enter the interaction region with supersonic velocity ($M_S > 5$, $M_{MS} > 3$). The advected magnetic fields are perpendicular to the flow and aligned in anti-parallel directions, allowing studies of magnetic reconnection in a strongly driven regime. The setup allows parameters of the plasma to be measured in the reconnection region with a set of diagnostics which includes Thomson scattering, Faraday rotation, interferometry and detectors of energetic particles. The collisionality of the interaction and the relative role of the radiative cooling can be varied by choice of material of the colliding flows (e.g. Al or W).

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