Abstract Submitted
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Magnetic flux pile-up and ion heating in a current sheet formed by colliding magnetized plasma flows[1] L. SUTTLE, J. HARE, S. LEBEDEV, Imperial College London, A. CIARDI, Sorbonne Universits, N. LOUREIRO, Massachusetts Institute of Technology, N. NIASSE, First Light Fusion, G. BURDIAK, T. CLAYSON, Imperial College London, T. LANE, West Virginia University, T ROBINSON, R SMITH, N. STUART, F. SUZUKI-VIDAL, Imperial College London — We present data from experiments carried out at the Magpie pulsed power facility, which show the detailed structure of the interaction of counter-streaming magnetized plasma flows. In our quasi-2D setup[1,2], continuous supersonic flows are produced with strong embedded magnetic fields of opposing directions. Their interaction leads to the formation of a dense and long-lasting current sheet, where we observe the pile-up of the magnetic flux at the sheet boundary, as well as the annihilation of field inside, accompanied by an increase in plasma temperature. Spatially resolved measurements with Faraday rotation polarimetry, B-dot probes, XUV imaging, Thomson scattering and laser interferometry diagnostics show the detailed distribution of the magnetic field and other plasma parameters throughout the system. [1] Suttle et. al, PRL (2016), [2] Hare et. al, PRL (2017)

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