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Formation of Shocks in Pulsed-Power Driven Magnetized Plasma Jets ELEANOR TUBMAN, SEGEY LEBEDEV, LEE SUTTLE, DANIEL RUSSELL, JACK HARE, SIMON BLAND, SAM EARDLEY, JACK HALLIDAY, GEORGE ROWLAND, ROLAND SMITH, NICK STUART, VICENTE VALENZUELA VILLASECA, FRANCISCO SUZUKI-VIDAL, Imperial College London — Plasma jets, turbulence and shocks are of great interest to many research areas in physics due to their abundant presence throughout the universe. Supersonic, magnetized plasma jets formed using pulsed power facilities [1] provide interesting opportunities for studies of the interaction of magnetized flows with various obstacles. In our experiments the jets are created using the MAGPIE pulsed power generator at Imperial College, London by ablation of an Al foil driven by a 1 MA, 250 ns current pulse [2,3]. The *JxB* force from the current flow across the foil re-directs the ablated plasma onto the central axis, forming a collimated jet with electron density of 10^{18}-10^{19} cm^{-3} and propagating with velocity of 100km/s. Modification of the geometry and material of the obstacles positioned in the jet path allows observation of reverse shocks and magnetic field pile-up at planar obstacles, as well as bow shocks formed at compact obstacles. The set-up allows investigations of temporal variability (oscillations) of the radiatively cooled shocks and the development of shear-flow instabilities. Plasma interactions were characterized using Thomson scattering, laser interferometry, Faraday imaging and schlieren imaging diagnostics. [1] S.V. Lebedev, *et al.*, RMP, **91**, 025002 (2019) [2] F. Suzuki-Vidal *et al.,* Astrophys. Space Sci. **322**, 19 (2009) [3] F. Suzuki-Vidal *et al.,* PoP, **19**, 022708 (2012).

Eleanor Tubman
Imperial College London

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