Abstract Submitted
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Magnetized plasma flow interactions in pulsed-power driven experiments[1] L.G. SUTTLE, J.W.D. HALLIDAY, J.D. HARE, S. MERLINI, D.R. RUSSELL, E.R. TUBMAN, V. VALENZUELA-VILLASECA, S.V. LEBEDEV, Imperial College London, M. KOEPKE, West Virginia University — The interactions of fast-streaming, magnetized plasmas can result in a wide range of fundamental plasma physics processes such as the formation of MHD shocks, magnetic turbulence, reconnection and wave-particle interactions. We present experiments from a versatile platform, where supersonic plasma flows generated by the ablation of pulsed-power driven wire arrays are used to study a wide range of magnetized plasma interactions [1,2]. The setup allows a control over the global system parameters, including the drive strength, magnetization, magnetic field topology and interaction geometry. The plasma composition (wire material) can also be chosen to vary the collisionality of the plasma and introduce dynamically significant radiative cooling. The detailed structure of the interactions is measured using optical collective Thomson scattering, laser interferometry and Faraday rotation diagnostics, providing measurements of the flow velocities, plasma temperature, electron density and magnetic field distributions of the plasma. [1] Suttle et al., PRL (2016) [2] Burdiak et al., PoP (2017)

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