

Abstract Submitted
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Prospects of multiple-ion-species shock studies in plasma-jet driven experiments¹ COLIN ADAMS, AMEER MOHAMMED, MAXIMILIAN SCHNEIDER, Virginia Tech — An experimental campaign aims to generate multi-ion-species shocks during collisions of high-Mach-number plasma jets with stagnant plasma. In these experiments, the mean-free-path is small enough for the jet interaction to be collisional yet large enough to attempt diagnosis of the shock structure over a few hundred mean-free-paths. Shocks have been identified in these interactions and the parameter space is presently being investigated to confirm whether the observed shocks are present locally in multi-ion-species plasmas. Direct measurements and inferred plasma parameters are obtained using a suite of diagnostics which includes high spatial resolution spectroscopy and multi-chord interferometry. Preliminary results suggest a path toward experimentally resolving the structure of ion shock layers, with implications to the basic physics of Type II supernova explosions and shocks present in inertial-confinement fusion implosions.

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