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**Radial and Azimuthal Velocity Profiles in Gas-Puff Z-Pinches**[1]
SOPHIA ROCCO, JOSEPH ENGELBRECHT, JACOB BANASEK, Cornell University, PHILIP DE GROUCHY, Imperial College, NIANSHENG QI, DAVID HAMMER, Cornell University — The dynamics of neon, argon, and krypton (either singly or in combination) gas puff z-pinch plasmas are studied on Cornell's 1MA, 100-200ns rise-time COBRA pulsed power generator. The triple-nozzle gas puff valve, consisting of two annular gas puffs and a central jet, allows radial tailoring of the gas puff mass-density profile and the use of 1, 2 or 3 different gases at different pressures. Interferometry supplies information on sheath thickness and electron density, variously filtered PCDs and silicon diodes measure hard and soft x-ray production, and multi frame visible and extreme UV imaging systems allow tracking of the morphology of the plasma. A 527nm, 10J Thomson scattering diagnostic system is used to determine radial and azimuthal velocities. Implosion velocities of ˜170km/s (Kr) and ˜300km/s (Ne/Ar) are observed. We are investigating the correlations between instability growth, plasma density profile, velocity partitioning as a function of radius, and radiation production.

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Sophia Rocco
Cornell University

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