Experimental results from a pulsed-power platform to study accretion-driven astrophysical outflows

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We present results from a pulsed-power experiment designed to create radially converging flows that transition into bipolar outflows. In order to justify similarity to accretion-driven jets in young stars, we make a series of scaling arguments based on the fluid Reynolds number, magnetic Reynolds number, Mach number, and plasma beta as simulated in the PERSEUS MHD code. In this poster, we share data from three recent campaigns executed on Cornell's COBRA driver. These runs used the simplest version of our novel load, which generates outflows without rotation or axial magnetic field in the "disk." The temperature, velocity and density of the disk and outflows are characterized using interferometry, gated optical and ultraviolet imaging, and Thomson scattering diagnostics. We discuss plans for the next campaign in which we intend to add an axial magnetic field component to induce rotation in the disk.