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Cumulative Jets Produced by Laser-Ablation Driven Implosion of Hollow Cones and Wedges[1] CHARLES MANKA, SERGEI NIKITIN, Research Support Instruments/NRL, JACOB GRUN, Naval Research Laboratory, YEFIM AGLITSKIY, SAIC/NRL, SASHA VELIKOVICH, Naval Research Laboratory — We observe and diagnose cumulative plasma jets formed by hollow cones and wedges imploded via laser ablation of their outer surfaces. The velocity, shape, and density of the jets are measured with monochromatic 0.65 keV x-ray imaging. Depending on cone geometry, cumulative jets of ion density $\sim$ 2 10^{20} cm^{-3} and propagation velocities $>$ 10 km/sec are formed. An initial dense plasma temperature of 7-8 eV and an average ion charge Z = 2 to 3 is inferred. We observe that a critical cone angle required for jet formation by our nickel cones is $2\alpha \sim 100^o$. Similar jets are formed by both cones and wedges. Such jets can be used for laboratory simulation of the hydrodynamics of astrophysical jets interacting with stellar or interstellar matter.

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