

Abstract Submitted
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Thin Foil Copper Liner Initiation Experiments¹ ISAAC BLESENER, BRUCE KUSSE, JOHN GREENLY, KATE BLESENER, DAVID HAMMER, Cornell University, BRENT BLUE, General Atomics — Solid liners are an increasingly attractive load design for pulsed power drivers, with applications in both Z pinches and alternative fusion concepts. Next generation pulsed power drivers will need increasingly massive loads to match the implosion time of the Z pinch with the current pulse. Solid liners present a relatively simple load design that could replace wire arrays for fast Z pinch studies. Additionally, fusion concepts such as MAGnetized Liner Inertial Fusion (MAGLIF) are designed to use solid liners to compress the fusion fuel. One problem that has hindered the performance of solid liners in the past is non-uniform initiation, or current filamentation. A series of experiments on the 1 MA, 100 ns COBRA generator show that at high enough current density rise times (dJ/dt), copper liners initiated nearly instantaneously and uniformly along the azimuth. The threshold for these experiments for uniform initiation was found to be $\frac{dJ}{dt} \geq 3.5 \times 10^{16} \frac{A}{cm^2 s}$.

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