

Abstract Submitted
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Studies of the dynamics of a 1-microsecond X-pinch¹ RICHARD APPARTAIM, richard.appartaim@famu.edu, DANIELLE GREEN, Department of Physics, Florida A&M University, Tallahassee, FL 32307 — The 1- μ s X-pinch (0.3 kA/ns) has been shown to produce intense soft x-rays with a spatially reproducible source location and fine size (*i.e.* $< 10 \mu m$). For certain applications these x-rays are comparable in their utility to those produced on pulsed-power devices but have the advantage of a much lower component of hard x-rays. Many of the critical plasma dynamics are also similar to those observed in the fast rise-time (1 kA/ns) experiments. However, the longer rise time of the microsecond discharge can lead to important differences in wire ablation rates and transition to coronal plasma, plasma current distribution and plasma dynamics. We present recent results of these plasma dynamics using optical techniques such as shadowgraphy, schlieren and framing photography, as well as x-ray observation techniques including filtered PCD and Si diode measurements, pinhole photography and x-ray spectroscopy. We demonstrate potential applications including the relevance of the observed plasma jets to astrophysical jets.

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