

Abstract Submitted
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Plasma Liner Compression
of Merged FRCs¹ GEORGE VOTROUBEK, CHRIS PIHL, JOHN SLOUGH,
MSNW, LLC — Creation of high energy density (HED) plasmas in the laboratory
is a topic of ongoing interest in the area of magneto-inertial fusion. One innova-
tive approach to HED plasma creation, and the one being explored in the Plasma
Liner Compression (PLC) experiment, is through the compression of a field reversed
configuration (FRC) plasma by an imploding plasma liner. Unlike other forms of
liner compression, the plasma liner is driven inductively by theta-pinch solenoid coils
rather than by an axial z-pinch current. This removes many of the design limitations
that a direct electrical connection imposes. Liner masses of 3 mg have been formed
in Xenon and have been accelerated to a velocity of 50 km/s. The experiment has
been modified to include two theta-pinch FRC formation chambers at opposite ends
of the plasma liner chamber. The two remotely formed FRCs are injected into the
plasma liner chamber where they merge. Past experiments have shown this to be
a reliable method of forming a hot, stable, and stationary FRC target suitable for
plasma liner compression. Details of the liner dynamics and initial results of FRC
merging in the plasma liner chamber will be discussed.

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