

Abstract Submitted
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Magnetic field compression of an accelerated compact toroid in a conical drift section¹ R.D. HORTON, University of California, Davis, D.Q. HWANG, R.W. EVANS, F. LIU, R. KLAUSER, GLENN UMONT — There are numerous applications for spheromak-like compact toroids (SCTs) with high plasma density and internal magnetic field. Previous experiments have demonstrated density and field compression of SCTs using coaxial conical electrodes [1,2]. For some applications, however, use of a central electrode may not be practical, and compression must be performed by tapering the outer electrode alone. A tapered conical electrode has been added to the CTIX device to measure magnetic field compression in this geometry. The absence of a center electrode allows magnetic field to be measured via magnetic probes at an adjustable range of axial positions, or by conventional recessed probes on the outer electrode at fixed positions. The field data serves as a benchmark for a smoothed-particle hydrodynamics (SPH) code currently under development. Results will be used to optimize compression cone geometry for the best conversion of SCT kinetic energy into thermal and magnetic energy. [1] J. H. Hammer, et al., PRL 61, 2843 (1988) [2] A.W. Molvik et al., PRL 66, 165 (1991)

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