

Abstract Submitted
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Recent Experimental Results at General Fusion STEPHEN HOWARD, General Fusion Inc. — Experiments relevant to MTF are underway at General Fusion in which self-confined Compact Toroid (CT) plasmas in a spheromak configuration are rapidly compressed. Plasma Injector 1 (PI-1) is a two stage Marshall gun with a conical accelerator, 5 meters long and 1.9 m diameter in formation where a high aspect ratio (4.4) spheromak is formed with $\lambda = 9 \text{ m}^{-1}$. CTs formed with $B_p = 0.2 \text{ T}$, $T_e = 40 \text{ eV}$, and $n_e = 0.5 \times 10^{20} \text{ m}^{-3}$ when compressed (2x radial) reached $B_p = 0.8 \text{ T}$, $T_e = 160 \text{ eV}$, $n_e = 4 \times 10^{20} \text{ m}^{-3}$ which is consistent with adiabatic compressional heating. A smaller device, the Magnetized Ring Test (MRT) can form a unity-aspect ratio CT of $\lambda = 35 \text{ m}^{-1}$ directly within an implodable cylindrical liner of aluminum. The MRT electrodes form a bow-tie cavity known for its high- β stability. MRT has begun a set of implosive compression tests to observe the behavior of a high density CT as it experiences increasing beta, possible interactions with the liner wall, and changing profiles as the compression proceeds. Progress is being made to understand losses during compression via analysis of magnetic fluctuations, spectroscopy, and comparison to 3D MHD simulation.

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