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Simulated and experimental compression of a compact toroid[1]
JEFFREY JOHNSON, UC Davis — We present simulation results and experimental data for the compression of a compact toroid by a conducting nozzle without a center electrode. In both simulation and experiment, the plasma flow is obstructed by even modest magnetic fields. A simple mechanism for this obstruction is suggested by our simulations. The configuration of the plasmoid's magnetic field plays a significant role in its compression. We analyze two types of plasma configurations under compression and demonstrate that the results from the simulations match those from the experiments, and that the mechanism predicts the different behaviors observed in the two cases.

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