

Abstract Submitted
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Observation of turbulent MHD flow around mechanical obstacles in the target chamber of CTIX¹ STEPHEN HOWARD, DAVID HWANG, ROBERT HORTON, RUSSELL EVANS, SAMUEL BROCKINGTON, UC Davis — The Compact Toroid Injection eXperiment injects high velocity (200 km/s) magnetized plasma ($B \sim 0.5$ to 1 Tesla) into a target chamber with large windows (0.5 m by 0.2 m) that allow transverse imaging of the plasma with fast digital cameras at sub-microsecond exposures. Helium is added to the hydrogen plasma in the acceleration region to enhance plasma brightness. It has been observed that after passing through a wire array the plasma develops turbulent flow patterns that are most clearly detected at the plasma edge. Fourier analysis of the images gives information about the k-spectrum of the turbulent fluctuations, while a consideration of the ratio of exposure time to plasma time of flight provides further constraints on a model of the plasma velocity field in this system. Studies of the MHD interaction between the high velocity plasma and targets such as in this system are intended to address fundamental issues in the physics of applications such as Magnetized Inertial Fusion (MIF) and CT fueling of tokamaks.

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