

Abstract Submitted
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Magnetic Field Effects on Accelerator-Region Gas Puffing on CTIX¹ ROBERT HORTON, University of California, Davis, DAVID HWANG, STEPHEN HOWARD, SAMUEL BROCKINGTON, RUSSELL EVANS — By puffing axially-localized neutral gas into the accelerator region of CTIX prior to plasma formation and acceleration, high compact-toroid (CT) densities have been obtained. As gas puff density is increased, eventually spontaneous plasma breakdown occurs in the accelerator region, resulting in plasmas with high density, but with unsuitable internal field structure, timing, and location. Motivated by experiments which demonstrate the controlling effect of even weak magnetic fields on plasma breakdown in the formation region, azimuthally-symmetric magnetic fields will be applied in the vicinity of the accelerator valve in an attempt to increase the amount of gas which can be puffed without spontaneous breakdown. The effects of the localized magnetic fields of various configurations will be systematically examined, with the purpose of determining a regime of high density and high gas utilization efficiency during CT density buildup, thereby improving the usefulness of CT injection for fueling, target-compression, and other applications.

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