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Plasma Injection Experiment at MCX ILKER UZUN-KAYMAK, University of Maryland, College Park, S. MESSER, HyperV Tech. Corp., MCX TEAM, HYPERV TECH. CORP. COLLABORATION — MCX uses an axial magnetic field and a radial voltage to drive supersonic azimuthal flows. It has been observed that the high flow velocity and large radial velocity shear suppresses the higher order interchange modes. However, the MCX discharges are currently limited by the charge and current available from the capacitor bank supplying the radial voltage. The High Density Plasma Injection Experiment combines the MCX experiment with a modified coaxial plasma gun to drive rotation in the target vessel. A 32-injector prototype coaxial gun has been designed, constructed and installed at MCX midplane, top tangential port, as alternate means of momentum input. Unlike traditional coaxial plasma jets, the transport of the jet has been optimized via a combination of electrode shaping and tailored armature at HyperV Technologies Corp. in order to prevent the blow-by instability. Data will be presented for a wide range of MCX parameters and the prospects for future injection experiments will be evaluated.

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