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Magnetic Fluctuation Measurements in MCX¹ SEUNG CHOI, PARVEZ GUZDAR, RICHARD ELLIS, ADIL HASSAM, IREAP, University of Maryland, College Park, MD, USA — Initial results from magnetic probes on the Maryland Centrifugal eXperiment(MCX) provide details of the rotation and poloidal mode structure of magnetic fluctuations in the edge region. Eight magnetic coils placed azimuthally around the edge measure magnetic field changes in the axial direction during the plasma discharge. The auto and cross-correlation of the magnetic fields between the coils show that the magnetic fluctuations are dominantly convected by the $E \times B$ plasma rotation for several rotation periods before significant decorrelation. The rotation so inferred is in the $E \times B$ direction and its magnitude is consistent with earlier spectroscopic measurements on MCX. These findings help identify the dominant modes at the edge and indicate that there are a few low mode numbers that are dominant during the discharge. Also, the speed of rotation and fluctuation spectrum is found to change dramatically from the High Rotation (HR) state to a low rotation ordinary (O) state. In the near future, we plan to use probes which measure the magnetic field in all three directions near the edge of MCX. This will help us understand the magnetic structure and the basic instability in MCX.

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