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Measurement of velocity shear in the MCX SEUNG CHOI, PARVEZ GUZDAR, RICHARD ELLIS, University of Maryland — Data 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 de-correlation. 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. More recently probes which measure the magnetic field at various radial locations of MCX have been installed. They can provide information about the velocity shear which is believed to suppress the flute interchange instability in MCX. Results and analysis from these new probes as well as their correlation with the edge probes will be presented.

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