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Spectral Results of the Magnetic Fluctuations Observed in MCX
ILKER UZUN-KAYMAK, S. CHOI, R. CLARY, R. ELLIS, A. HASSAM, C. TEODORESCU, University of Maryland, College Park, MCX TEAM — The Maryland Centrifugal Experiment (MCX) is set up to study centrifugal confinement and supersonic rotation. MCX is a magnetic mirror machine with end fields up to 2T independent of the mid-plane magnetic field. A radial electric field created by biasing the inner electrode with respect to outer wall is used to drive azimuthal rotation, i.e., E x B rotation. Previously, a small number of Bdot coils have been employed at the edge of the plasma to investigate the modes of operation. Preliminary results show that there are dominant modes associated with the E x B rotation. In order to assess magnetic fluctuations and the E x B rotation fully, 25 Bdot coils mounted on various locations inside MCX are utilized. Here we present the analysis of the observed spectral modes by means of the power spectrum and the bispectrum to focus on the nonlinear coupling among various m-modes. We will also address low frequency magnetic field perturbations via proper filtering process.

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