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Measurements of plasma isorotation on MCX CATALIN TEODORESCU, RYAN CLARY, ROBERT LUNSFORD, RICHARD ELLIS, ADIL HASSAM, University of Maryland — The Maryland Centrifugal Experiment (MCX) studies magnetically confined rotating plasma for fusion. Plasma is generated in a shaped mirror geometry magnetic field ($B_{end}/B_{mid} \sim 8$) by applying a static electric field perpendicular to the magnetic field. The dominant motion is the $\mathbf{E}\times\mathbf{B}$ drift in a hydrogen plasma. Other drifts are smaller, typically because of the smallness of the gyroradius – there are 50 –100 proton gyroradii across the field. MHD theory predicts that plasma angular velocity should be constant on a field line. Measurements on the isorotation of the plasma as obtained from spectroscopic measurements of the Doppler shift of impurity (C^+,C^{2+}, O^+) and neutral lines are presented. The species angular velocity is measured simultaneously at the midplane and at 80 cm off-midplane. The dependency of the species angular velocity on the magnetic field – for fixed mirror ratio – as well as on the mirror ratio, applied voltage and static fill pressure is documented experimentally

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