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Theory Experiment

Error Field Measurements Using the Torque on a Magnetic Island,* E.J. Strait, R.J. Buttery, A.M. Garofalo, R.J. La Haye, M.J. Schaffer, P.E. Sieck, *General Atomics*; F.A.G. Volpe, *U Wisconsin-Madison*; J.M. Hanson, *Columbia U* – The toroidal position of a static $n=1$ magnetic island is determined by a balance between torques acting on the island. These include electromagnetic torques due to non-axisymmetric magnetic fields from external sources, as well as a possible viscous torque associated with plasma rotation. The amplitude and toroidal phase of an unknown $n=1$ error field can be inferred from analysis of the island position as an applied $n=1$ field is varied. In principle, the measurement can be accomplished in a single discharge. The results of error field measurements based on island torque balance in DIII-D will be compared to the standard method using mode-onset thresholds.

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