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Error Field Measurements Using the Torque on a Magnetic Island[1] 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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