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Error Field Measurement Techniques for ITER Using Plasma Response,* E.J. Strait, M.S. Chu, A.M. Garofalo, R.J. La Haye, M.J. Schaffer, *General Atomics*; H. Reimerdes, *Columbia U.*; T.A. Casper, Y. Gribov, *ITER Organization* — The plasma response to external magnetic field asymmetries is a potential tool for detection and correction of the intrinsic error field, but MARS-F modeling and DIII-D data show that the ideal MHD response to error fields is very small in low beta, ohmic plasmas. This indicates that simple proportional feedback control based on a linear plasma response may not be appropriate for error field correction during ITER's initial operational phase. However, modeling and experimental data suggest that the nonlinear response of a tearing mode may be useful for error field measurement and correction at low beta. We discuss several possible approaches, including the onset threshold of an induced tearing mode, open-loop manipulation of a saturated island, and feedback control of the tearing mode. We also assess the possible use of plasma rotation as an error field diagnostic in plasmas with some neutral beam injection.

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