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Theory Experiment

Plasma Response to Complex External Magnetic Perturbations,* M.S. Chu, A.M. Garofalo, R.J. La Haye, M.J. Schaffer, E.J. Strait, *General Atomics*; H. Reimerdes, *Columbia U.*; Y.Q. Liu, *UKAEA*; T.A. Casper, Y. Gribov, *ITER Organization* – The dependence of the plasma response to external magnetic perturbations consisting of a unknown intrinsic external error field and a known and controlled applied external field is studied theoretically by constructing various response models. For a rotating dissipative plasma, the plasma behaves nearly ideally in the linear regime. The response is relatively weak for a low beta plasma. In the quasi-linear regime, the response connects to the development of magnetic islands within the plasma. The relationship of the modeled response to that observed in DIII-D is studied. Possibility of application of this model in determination of intrinsic error field in ITER is explored.

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