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Theory Experiment

Rotation-compatible Resistive Wall Mode Modeling in Tokamaks Using Self-consistent Stability Code MARS,* V.A. Svidzinski, Y. In, J.S. Kim, *FAR-TECH*; M.S. Chu, *GA*; Y.Q. Liu, *UKAEA*; and the DIII-D RWM Group — Rotational stabilization of resistive wall modes (RWM) has been observed in experiments. To study a rotation profile influence on RWM stabilization, a self-consistent ideal MHD calculation, including plasma rotation, is in progress using code MARS-F. Specifically, the sensitivity of stability (s) and torque (α) parameters defined by Boozer in [1] is studied near the RWM onsets. In a single mode approximation, the plasma response on a perturbed RWM magnetic field can be represented as a simple function of these parameters such that the dependence of the growth rate of the mode on s and α can be found analytically. The calculated RWM growth rate dependence on s and α will be compared with the results of this simple model. This modeling is expected to help us diagnose the proximity to RWM stability boundary based on a rotation profile data.

[1] A.H. Boozer, *Phys. Rev. Lett.* **86**, 5059 (2001).

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