Abstract Submitted
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Resistive Wall Tearing Mode Locking[1] H. STRAUSS, HRS Fusion — The most common type of disruption is caused a rotating tearing mode with poloidal and toroidal mode number $(2, 1)$. When mode rotation slows down, in a process called mode locking, a disruption almost invariably ensues. The mechanisms involved in this process are not well understood. Simulations with M3D are presented in which an ITER equilibrium was modified by peaking the current so that q was somewhat greater than 2 at the edge of the current channel. The equilibrium is then unstable to a resistive wall tearing mode (RWTM). If the ratio of the resistive wall penetration time to Alfven time S_{wall} is large, the instability saturates at a low amplitude, and the asymmetric wall force F_x remains small. If S_{wall} is low, the instability grows to a larger amplitude, and the force F_x is an order of magnitude larger. Shear free and sheared toroidal rotation are modeled If the rotation is sufficiently fast, the wall acts as if S_{wall} were high, while if it is slow, S_{wall} is not affected. Implications for mode locking disruptions will be be discussed.

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