

# **Increasing the tokamak pressure limit: tearing mode experiments in DIII-D**

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**Abstract.** Since its reconfiguration in 1986, DIII-D has performed a number of experiments involving resistive magnetohydrodynamic stability. These were and are directed to understand the conditions in which confinement and beta reducing tearing mode islands form, how to avoid them, and if unavoidable, how to stabilize them. Coils for correction of toroidal non-axisymmetry have been developed to avoid error field locked mode islands. Basic classical tearing mode stability physics has been confirmed with a state-of-the-art ensemble of profile diagnostics, MHD equilibrium reconstruction and stability code analysis. Neoclassical tearing mode thresholds and seeding are now much better understood with future large higher field devices expected to be “metastable”. DIII-D is the leader in sophisticated real-time alignment of stabilizing electron cyclotron current drive on otherwise unstable rational surfaces. In all, DIII-D experiments are showing how higher stable beta with good confinement can be maintained without tearing mode islands limiting the plasma pressure.

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