Abstract Submitted
for the DPP00 Meeting of
The American Physical Society

Sorting Category: 6.2.2 (Experimental)

Parameter Scaling of H-Mode Edge Region Stability[1]

J.R. FERRON, L.L. LAO, T.H. OSBORNE, E.J. STRAIT, P.B. SNYDER, A.D. TURNBULL, General Atomics — The observed dependence on discharge shape of the edge-localized-mode (ELM) amplitude and frequency in DIII-D tokamak H-mode plasmas has been shown to be consistent with a model for the pressure gradient (P'_{edge}) stability threshold as a function of toroidal mode number (n).[2] In this model, based on ideal MHD stability theory, the instability responsible for triggering a Type I ELM is a coupled kink/ballooning mode with n near the largest value without access to a second stability regime. Here we add to the understanding of this model through additional parameter scaling studies. The calculated sensitivity to the edge current density (J_{edge}) of the P'_{edge} stability threshold versus n is used to determine the importance of the uncertainty in the measurement of J_{edge}. The dependence of the P'_{edge} threshold on the pressure pedestal width and the total plasma current are compared to experiment. Equilibria characteristic of those at the end of the VH-mode ELM-free phase, when the observed P'_{edge} can be especially large, are tested for second stability regime access at low values of n.

[1]Work supported by US DOE Contract DE-AC03-99ER54463.
[2]J.R. Ferron et al., Phys. Plasmas **7**, 1976 (2000).

J.R. Ferron
ferron@fusion.gat.com
General Atomics

☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: 6th poster in MHD Session (before Snyder, after Scoville)

Date submitted: July 12, 2000 Electronic form version 1.4