Abstract Submitted
for the DPP98 Meeting of
The American Physical Society

Sorting Category: 5.1.1.2 (theoretical)

Analytic Halo Current Models Applied to Disruptions in Present and Next-Generation Tokamaks[1] D.A. HUMPHREYS, A.G. KELLMAN, General Atomics, R.S. GRANETZ, MIT Plasma Science and Fusion Center, R.R KHAYRUTDINOV, V.E. LUKASH, TRINITI Laboratory, Y. NEYATANI, R. YOSHINO, JAERI Naka Fusion Research Establishment — The largest source of local stress on in-vessel components during disruptions is the poloidal current which typically flows through the plasma scrapeoff layer or "halo" region and into plasma-facing surfaces. An understanding of the sources of disruption driven currents is therefore necessary to the design of new tokamaks. The present work applies a simple analytic model describing evolution of the axisymmetric component of disruption halo current to experimental results from the Alcator C-MOD, DIII–D, and JT-60U tokamaks, as well as to ITER disruption simulations. This analytic halo current model describes halo current evolution as being determined by the histories of the core plasma current decay and the plasma minor radius during the current quench phase of a disruption, as well as the resistivities of the core and halo plasmas.

[1]Work supported by U.S. DOE Contract DE-AC03-89ER51114.

D.A. Humphreys
humphreys@gav.gat.com
General Atomics

☐ Prefer Oral Session
☒ Prefer Poster Session

Special instructions: DIII–D Poster Session II (divertor physics, disruptions, RF, & diagnostics), immediately following Baylor

Date submitted: July 21, 1998 Electronic form version 1.3