

Abstract Submitted
for the DPP97 Meeting of
The American Physical Society

Sorting Category: 5.1.1.2 (experimental)

Database Analysis of Disruption Frequency in DIII-D¹

A.W. HYATT, P.L. TAYLOR, A.G. KELLMAN, General Atomics, A. REIMAN, Princeton Plasma Physics Laboratory — The disruptivity of a tokamak fusion reactor can be a major factor in its design and cost since the vessel components must be designed to withstand the enormous heat fluxes and stresses associated with a disruption. Historically, studies have measured disruption probabilities by binning many discharges characterized by parameters such as normalized beta, density and safety factor and calculating the fraction in each bin which disrupt. This approach has problems; operational practices are not necessarily taken into account, most discharges evolve until termination and some experiments require conditions leading to disruptions. Disruptivity measured in this way may not apply to a steady state system where the interesting quantity is the disruption probability per unit time. We address this question by analyzing a database of several hundred disruptive and non-disruptive discharges with safety factors between 3.0 and 4.0. Controls for operational practices, external hardware related disruptions and experimental probing of stability limits will be discussed and disruptivity probabilities per discharge and per unit time will be presented.

¹Work supported by U.S. DOE Contracts DE-AC03-89ER51114, and DE-AC02-76CH03073.

- Prefer Oral Session
 Prefer Poster Session

A.W. Hyatt
hyatt@gav.gat.com
General Atomics

Date submitted: July 7, 1997

Electronic form version 1.2