

Abstract Submitted
for the DPP01 Meeting of
The American Physical Society

Sorting Category: 5.6.2 (Experimental/Observational)

Comparison of DIII-D Experimental Ion Temperature Gradients with the Critical Gradient as Calculated by the GKS Code¹

D.R. BAKER, G.M. STAEBLER, General Atomics — The ion thermal diffusivities (χ_i) in DIII-D discharges exhibit a strong nonlinear dependence on the measured temperature gradients. This non linear dependence has the appearance of a critical gradient in the sense that when the temperature gradient is less than a certain value χ_i is small and when it reaches or surpasses this value then χ_i increases rapidly. Here we present a comparison between the measured ion temperature gradients and the “critical” gradient as calculated by the GKS code. The existence of a “critical” gradient can depend on whether the electrons are treated adiabatically or kinetically. It also depends on the relative size of the density gradient. For large density gradients the transport due to trapped electron modes can produce transport even when the ion temperature gradient mode is stable. This could eliminate the effect of a critical gradient. We will compare the incremental ion thermal diffusivity deduced from the experimental data with the predictions of gyrofluid and gyrokinetic ITG turbulence simulations

¹Work supported by US DOE under Contract No. DE-AC03-99ER54463.

Prefer Oral Session
 Prefer Poster Session

D.R. Baker
baker@fusion.gat.com
General Atomics

Special instructions: Poster 4, Transport, Boundary Plasma

Date submitted: July 20, 2001

Electronic form version 1.4