Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Extension of DIII-D Hybrid Plasmas Towards Operation with $T_e \sim T_i$ and Low Rotation[1] E.J. DOYLE, University of California-Los Angeles, THE HYBRID SCENARIO THRUST TEAM — DIII-D hybrid plasmas typically operate in a hot ion mode ($T_i > T_e$) with high plasma rotation, which tend to reduce turbulent transport. Recent DIII-D experiments extend hybrid operation to more reactor relevant conditions, with low plasma rotation and $T_e \approx T_i$. Using electron cyclotron (EC) heating to replace part of the neutral beam heating, T_e/T_i has been increased to ∼0.8 in hybrid plasmas with β_N=2.6, with minimal effect on confinement time and a modest reduction in plasma rotation. The plasma turbulence level increased significantly in the EC heated hybrid plasmas, at both low and intermediate wavenumbers, as measured by BES and FIR scattering systems. Central Mach number in DIII-D hybrid plasmas has been scanned across a wide range, from 0.07 to 0.6. At low rotation, the confinement factor H_{89} degrades, typically by 10%-30%. Transport modeling using the GLF23 code indicates that the change in transport with rotation can be accounted for by changes in the ExB shearing rate.

[1]Work supported by US DOE under DE-FG03-01ER54615 and DE-FC02-04ER54698.

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Date submitted: 21 Jul 2007 Electronic form version 1.4