Validation OF Energetic-Particle Turbulent Transport In DIII-D Experiment*

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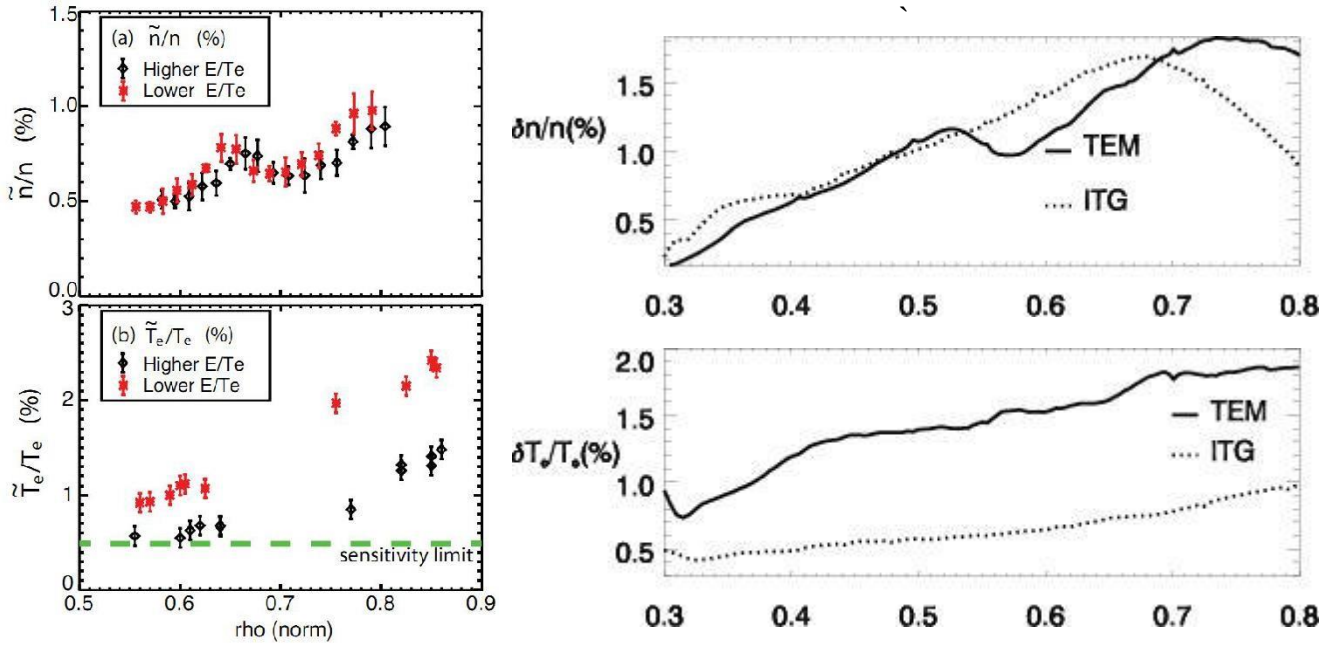
The confinement of energetic particles is a critical issue in ITER, since ignition relies on the self-heating by energetic α-particles. In this work, the global gyrokinetic toroidal code (GTC) has been applied to study the microturbulence-driven transport of energetic particle with on-axis neutral beam injection in DIII-D experiments, where no measured change is observed in turbulent-transport of energetic particle when the predominant long wavelength turbulence changes from ion temperature gradient mode (ITG) to trapped electron mode (TEM). The simulation is set up with the realist experimental equilibrium and profiles and does not show significant change in the transport of energetic particles for these two cases. The density and temperature perturbation profiles also agree well with experimental observations.



Experiment Measurements Simulation Results

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