

Abstract Submitted  
for the DPP05 Meeting of  
The American Physical Society

**Comparison of the Improved GTNEUT with Monte Carlo for DIII-D Neutrals Experiments** D. ZHANG, J. MANDREKAS, W.M. STACEY, Georgia Tech — The Transmission-Escape-Probability method [1] has been developed and implemented in the GTNEUT code [2] as an accurate and efficient calculation of 2D neutral particle transport in complex plasma edge geometry. Three extensions of TEP methodology-anisotropic angular fluxes to calculate transmission coefficients [3], intra-region diffusion theory directional refinement of escape probabilities [4], and calculation of the local neutral energy distribution [4]-have been developed which significantly improve the range of validity. Detail comparisons of the improved GTNEUT with Monte Carlo methods for neutral measurements in DIII-D L- and H-mode shots have been made. Agreement of GTNEUT with Monte Carlo and the data has improved significantly.

- [1] W.M. Stacey and J. Mandrekas, Nucl. Fusion **34**, 1385 (1994).
- [2] J. Mandrekas, Comput. Physics Comm, **161**, 36 (2004).
- [3] D. Zhang, J. Mandrekas and W.M. Stacey, Contributions to Plasma Phys. **44**, 45 (2004).
- [4] D. Zhang, “Neutral Particle Transport in Plasma Edge Using Transmission/Escape Probability (TEP) Method,” PhD Thesis, Georgia Institute of Technology (2005).

T.S. Taylor  
General Atomics

Date submitted: 26 Aug 2005

Electronic form version 1.4