

Abstract Submitted  
for the DPP08 Meeting of  
The American Physical Society

**Application of 3D Equilibrium Code to Calculation of Neoclassical Tearing Modes<sup>1</sup>** DANIEL RABURN, ALLAN REIMAN, DONALD MONTICELLO, RAVI SAMTANEY, ERIC FREDRICKSON, Princeton Plasma Physics Laboratory — We have implemented a JFNK (Jacobian-free Newton-Krylov) method in PIES (the Princeton Iterative Equilibrium Solver), which solves for 3D MHD equilibria. The code uses numerous enhancements to traditional JFNK, including adaptive preconditioning and subspace restricted Levenberg-Marquardt backtracking. The code has also been modified to handle neoclassical effects and is being validated against neoclassical tearing mode data from the TFTR tokamak.

<sup>1</sup>This work was supported by DOE contract number DE-AC02-76-CHO3073.

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Date submitted: 17 Jul 2008

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