

Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Gyrokinetic Particle Simulation of Internal Kink Mode in Toroidal Geometry¹ JOSEPH MCCLENAGHAN, ZHIHONG LIN, University of California, Irvine — Magnetohydrodynamic (MHD) instabilities excited by equilibrium current in toroidal fusion devices play important roles in plasma stability and confinement. Kinetic effects are important in the excitation and saturation of the MHD modes, as well as resulting transport. In this work, we have applied Gyrokinetic Toroidal Code (GTC) to study kinetic effects in current-driven MHD modes. As the first step, we have performed GTC simulation of the $n=m=1$ internal kink mode, which has been studied extensively in tokamak experiments, theory and MHD simulations. We will compare the dispersion relation and mode structure from the simulation to the ideal MHD theory in a low beta, large aspect ratio limit to verify the gyrokinetic simulation of current-driven MHD modes.

¹This work was supported by the U. S. Department of Energy (DOE) SciDAC GSEP center.

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Date submitted: 15 Jul 2011

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