Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Investigation of ion toroidal rotation induced by Lower Hybrid waves in Alcator C-Mod using integrated numerical codes[1] JUNGPYO LEE, JOHN WRIGHT, PAUL BONOLI, RON PARKER, PETER CATTO, YURI PODPALY, JOHN RICE, MATT REINKE, MIT PSFC, FELIX PARRA, Rudolf Peierls Centre for Theoretical Physics, University of Oxford, Oxford OX1 3NP, UK
— Ion toroidal rotation in the counter current direction has been measured in C-Mod during lower hybrid (LH) RF power injection. Toroidal momentum input from the LH waves determines the initial increase of the counter current ion toroidal rotation. Due to the fast build up time of the plateau ($<$ 1msec), the electron distribution function is assumed to be in steady state. We calculate the toroidal momentum input of LH wave to electrons by iterating a full wave code (TORIC-LH) with a Fokker Plank code (CQL3D) to obtain a self consistent steady state electron distribution function. On the longer time scale, comparable to the transport time ($\sim$100msec), ion rotation is changing due to the constant momentum transfer from electrons to ions and the radial flux of ion toroidal momentum by Reynolds stress and collisional viscosity. We suggest a way to evaluate the viscosity terms for the low flow level rotation bya modifielectrostatic gyrokinetic code.

[1]Work supported by USDoE awards DE-FC02-99ER54512.

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Date submitted: 14 Jul 2010 Electronic form version 1.4