Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Co- and Counter-current Rotation Induced by Lower Hybrid Current Drive in Tokamak Plasmas[1] YURI PODPALY, JOHN RICE, RON PARKER, MATTHEW REINKE, MIT PSFC, LUIS DELGADO-APARICIO, PPPL, DARIN ERNST, SYUN'ICHI SHIRAIWA, ORSO MENEGHINI, GREG WALLACE, JOHN WALK, CHI GAO, MIT PSFC — Lower Hybrid Current Drive (LHCD) induced rotation has been observed in Alcator C-Mod plasmas as well as in other devices. Recent experiments at Alcator C-Mod have for the first time identified the plasma conditions that determine the LHCD driven rotation direction, co- or counter-current, of the main ion species. This effect is found to depend strongly on the plasma current: low current plasmas have co-current rotation and higher current plasmas exhibit counter-current rotation. Experiments were performed to explore this dependence and changes in rotation were observed to approach 40 km/s at $< n_e >$=0.66e20 m^{-3}; the LHCD rotation reversal point, Δv=0, was also identified. There appears to be a magnetic field configuration effect with the favorable (unfavorable) ∇B configuration having a rotation reversal point around $\sim$400 kA ($\sim$550 kA). In both co- and counter- current cases, rotation profiles show that the momentum originates near the core of the plasma. Analyses of plasma behavior and gyrokinetic simulations were performed and results are shown.

[1]Supported by USDoE award DE-FC02-99ER54512.

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Date submitted: 19 Jul 2011 Electronic form version 1.4