

Abstract Submitted  
for the DPP12 Meeting of  
The American Physical Society

**Observation of current density profile changes during Lower Hybrid Current Drive by the Alcator C-Mod Polarimeter System<sup>1</sup>** P. XU, J.H. IRBY, MIT PSFC, W.F. BERGERSON, UCLA, S. SHIRAIWA, G.M. WALLACE, J.W. HUGHES, R. MUMGAARD, S. SCOTT, MIT PSFC, W.X. DING, D.L. BROWER, UCLA, R.R. PARKER, S.M. WOLFE, E.S. MARMAR, MIT PSFC — A three-chord, poloidally-viewing, polarimetry diagnostic measuring the Faraday effect is now operational on Alcator C-Mod. Faraday effect phase shifts observed during Ohmic discharges for all three chords agree well with calculations using EFIT and Thomson scattering density profiles. During lower hybrid current drive experiments, the Faraday rotation measurements, which are sensitive to the current change, indicate that the current density profile flattens and then relaxes back to an Ohmic current profile within  $\sim 150$  ms following the RF pulse. A 30% discrepancy between polarimetry measurements and EFIT calculation (without internal constraints) during current drive has been found. Using polarimetry data in addition to MSE as constraints on EFIT reconstructions will be discussed. Sources of error, and progress made toward improving the signal-to-noise level of the diagnostic for the lower hybrid current drive experiments will also be described

<sup>1</sup>Supported by USDoE award DE-FCO2-99ER54512.

Peng Xu  
MIT PSFC

Date submitted: 12 Jul 2012

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