

Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Lower Hybrid Wave Neutral Excitation, Ionization and SOL Power Loss of the Alcator C-Mod Tokamak¹ I.C. FAUST, J.L. TERRY, G.M. WALLACE, S.G. BAEK, C. LAU, M.L. REINKE, R.R. PARKER, S. SHIRAIWA, R.M. CHURCHILL, B. LABOMBARD, J.W. HUGHES, D.G. WHYTE, MIT PSFC, ALCATOR C-MOD TEAM — High Density ($n_e > 10^{20}$), diverted, Lower Hybrid Current Drive (LHCD) discharges on Alcator C- Mod exhibit little to no current drive, as well as a lack of indicative hard X-ray (HXR) emission. VUV, Visible and infrared light, as well as measurements of n_e, T_e of in the SOL show significant change in the high density regime. Results are presented using experimental, analytical and numerical comparisons to elucidate the overall power loss of LH waves in the SOL. Variations in LH launcher limiter configurations during the FY2012 campaign showed sawtooth-dependent photon emission in near density-limit Lower Hybrid plasmas. Poloidal dependency of LHCD-induced Lyman-alpha emission in in high density plasmas was investigated using a newly-installed camera during the same period. The measurements indicate that Lyman-alpha power is enhanced globally, indicating that LHCD enhanced emission may be widespread. Data from Lyman-alpha is compared to a new HXR analysis code, finding little dependence on the photon temperature of high energy bremsstrahlung.

¹Work supported by USDOE awards DE-FC02-99ER54512 and DE-AC02-76CH03073.

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Date submitted: 19 Jul 2012

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