

Abstract Submitted  
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**Measurement of the lower hybrid driven current profile density dependence on Alcator C-Mod** R.T. MUMGAARD, MIT PSFC, S.D. SCOTT, PPPL, S. SHIRAIWA, G.M. WALLACE, R.R. PARKER, R.S. GRANETZ, MIT PSFC — The plasma current profile has been reconstructed in plasmas with significant lower hybrid current drive (LHCD) using constraints from an improved motional Stark effect (MSE) diagnostic on Alcator C-Mod. The reconstructions demonstrate the application of LHCD significantly broadens the current profile, increasing  $q_0$  above 1 resulting in the suppression of sawteeth. Time resolved measurements of the current dynamics agree with the expected timescales. The current profile has a significant on-axis component in moderate density plasmas where LHCD drives 100% of the current non-inductively for several current penetration times. The MSE-constrained reconstructions show a loss in current drive efficiency as the plasma density is increased consistent with previous 0-D observations. Additionally, the driven current profile moves radially outward as the density is increased. The current profile dependence on launched  $n_{||}$  is also discussed. These observations will constrain proposed theoretical models and simulations of LHCD and its observed degradation. This work is supported by USDoE awards DE-FC02-99ER54512 and DE-AC02-09CH11466.

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