DPP15-2015-000167

Abstract for an Invited Paper
for the DPP15 Meeting of
the American Physical Society

Effects of the q Profile on Toroidal Rotation in Alcator C-Mod LHCD Plasmas

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Changes in the core toroidal rotation velocity profiles following injection of lower hybrid (LH) waves have been documented in Alcator C-Mod plasmas. Shot by shot scans of LH input power have been performed at fixed magnetic field and electron density for several plasma currents. If the input power is low enough that there are still sawtooth oscillations, the change in the core rotation is in the counter-current direction, consistent in sign and magnitude with direct momentum input from the LH waves. If the power level is high enough that there are significant changes to the q profile, the change in the toroidal rotation is in the co-current direction, consistent with changes in the residual stress through its dependence on the current density profile. The direction of the rotation changes depends on the whether q_0 is below or above unity, and seemingly not on the magnetic shear.