

Observation of Co- and Counter Rotation Produced by Lower Hybrid Waves in Alcator C-Mod*

R. R. Parker¹, Y. Podpaly¹, J.-P. Lee¹, M. L. Reinke¹, J. E. Rice¹,
P.T. Bonoli¹, O. Meneghini¹, S. Shiraiwa¹, G. M. Wallace¹,
J.R. Wilson²

¹*MIT Plasma Science and Fusion Center, Cambridge USA*

²*Princeton Plasma Physics Laboratory, Princeton USA*

Lower hybrid waves launched uni-directionally into tokamak plasmas impart momentum to the electrons. This momentum can be transferred to the ions, leading to substantial counter current rotation. Observations of LH-induced counter rotation have been previously reported [1], and the initial rate of increase has been found to be consistent with the calculated rate of wave momentum injection [2]. However, in recent experiments it has been found that application of LH waves to relatively low current ($I_p \sim 0.4-0.6$ MA) plasmas can result in *co-rotation* in Alcator C-Mod, which implies a different mechanism than that described above. This is possibly linked to the so-called intrinsic rotation commonly observed in Alcator C-Mod and other tokamaks [3]. In addition to the change in direction at low current, some dependence on the magnetic configuration (USL vs. LSN) has been observed.

[1] A. Ince-Cushman, et.al., Phys. Rev. Lett., 102, 035002(2009)

[2] J. Lee, this conference

[3] J. E. Rice, et. al., Nucl. Fusion, 47, 1618(2010)

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