

Abstract Submitted
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Lower Hybrid Wave Induced Rotation on Alcator C-Mod¹ RON PARKER, YURI PODPALY, JOHN RICE, ANDREA SCHMIDT, MIT PSFC — Injection of RF power in the vicinity of the lower hybrid frequency has been observed to cause strong counter current rotation in Alcator C-Mod plasmas [1,2]. The spin-up rate is consistent with the rate at which momentum is injected by the LH waves, and also the rate at which fast electron momentum is transferred to the ions. A momentum diffusivity of $\sim 0.1 \text{ m}^2/\text{s}$ is sufficient to account for the observed steady-state rotation. This value is also comparable with that derived from an analysis of rotation induced by RF mode conversion [3]. Radial force balance requires a radial electric field, suggesting a buildup of negative charge in the plasma core. This may be the result of an inward pinch of the LH produced fast electrons, as would be expected for resonant trapped particles. Analysis of the fast-electron-produced bremsstrahlung during LH power modulation experiments yields an inward pinch velocity of $\sim 1 \text{ m/s}$, consistent with the estimated trapped particle pinch velocity.

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

[2] J. E. Rice, et. al., Nucl. Fusion **49**, 025004 (2009)

[3] Y. Lin, et.al., this meeting

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