

Abstract Submitted
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ICRF Mode Conversion Flow Drive on Alcator C-Mod¹ YIJUN LIN, J.E. RICE, S.J. WUKITCH, M.L. REINKE, M. GREENWALD, A.E. HUBBARD, E.S. MARMAR, Y. PODPALY, M. PORKOLAB, N. TSUJII, MIT, PSFC, AND THE ALCATOR C-MOD TEAM — ICRF mode conversion flow drive (MCFD) may be a candidate for the external control of plasma rotation in large tokamaks like ITER. Recently, we have carried out a detailed study of MCFD on C-Mod, including its dependence on plasma and RF parameters [1]. The observed change in the toroidal rotation (ΔV) is always in the co- I_p direction. The flow drive efficiency depends on the ^3He concentration in D(^3He) plasmas. It is strongly affected by density ($\sim 1/n_e$), generally increases with I_p and decreases with RF frequency. At $+90^\circ$ and dipole antenna phases, we find that ΔV is proportional to P_{RF} up to the maximum available RF power. The rotation at -90° antenna phase is more complicated. In low density L-mode plasmas, $\Delta V \sim 110$ km/s has been achieved. Results in H-mode plasmas appear to follow a similar parametric scaling, but the observed ΔV in H-mode has been small because of the high density and unfavorable $1/n_e$ scaling. These results may help extrapolate MCFD to other fusion devices.

[1] Y. Lin et al, 23rd IAEA Fusion Energy Conference, 2010, EX-W/4-1.

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