

Abstract Submitted
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Mode conversion in ICRF experiments on Alcator C-Mod¹ Y. LIN, S.J. WUKITCH, E. EDLUND, P. ENNEVER, A.E. HUBBARD, M. PORKOLAB, J. RICE, J. WRIGHT, MIT, PSFC — In recent three-ion species (majority D and H plus a trace level of ³He) ICRF heating experiment on Alcator C-Mod [1], double mode conversion on both sides of the ³He cyclotron resonance has been observed using the phase contrast imaging (PCI) system. The MC locations are used to estimate the species concentrations in the plasma. Simulation using TORIC shows that with the ³He level <1%, most RF power is absorbed by the ³He ions and the process can generate energetic ³He ions. In recent mode conversion flow drive experiment in D(³He) plasma at 8 T, MC waves were also monitored by PCI. The MC ion cyclotron wave (ICW) amplitude and wavenumber k_R have been found to correlate with the flow drive force. The MC efficiency, wave-number k of the MC ICW and their dependence on plasma parameters like T_{e0} are shown to play important roles. Based on the experimental observation and numerical study of the dispersion solutions, a hypothesis of the flow drive mechanism has been proposed. [1] Y.O. Kazakov et al, Nature Phys. (19 June 2017) doi: 10.1039/nphys4167.

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