Abstract Submitted
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Measurement of ICRF mode conversion and minority ion tail influence on wave absorption[1] N. TSUJII, M. PORKOLAB, P.T. BONOLI, Y. LIN, J.C. WRIGHT, S.J. WUKITCH, MIT PSFC, E.F. JAEGER, ORNL, R.W. HARVEY, CompX — Waves at ion cyclotron range of frequencies (ICRF) are measured with phase contrast imaging (PCI) and compared to RF simulation codes. Self-consistent wave electric fields and ion distribution functions are simulated by the full-wave code AORSA [1] and the Fokker-Planck code CQL3D [2]. Simulation agrees well with measurements for D(H) minority heating scenarios ($n_H/n_e = 0.1$) when the minority ion distribution function is allowed to evolve as it absorbs the wave, which indicates the impact of the ion tail back on wave absorption. However, the fluctuation intensity of the waves measured by PCI in mode conversion heating scenarios of D-H ($n_H/n_e = 0.2$) and D-^{3}He ($n_{^3He}/n_e = 0.14$) is smaller than simulation by a factor of 2-5. RF coupling efficiency as well as the accuracy of the simulated toroidal wave field structure is being investigated as possible causes for this discrepancy.

[1] E. F. Jaeger et. al., Phys. Plasmas, 8, 1573
[2] Proc. IAEA TCM on Advances in Sim. and Modeling of Thermonuclear Plasmas, Montreal, 1992, p. 527

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