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Parametric Studies of Lower Hybrid Wave Propagation in Tokamak Plasmas Using an Electromagnetic Field Solver[1] P.T. BONOLI, J.C. WRIGHT, A.S. RICHARDSON, A.E. SCHMIDT, MIT - PSFC, Cambridge, MA 02139, C.K. PHILLIPS, E. VALEO, PPPL - Princeton, NJ 08543, RF SCIDAC TEAM — A parallel electromagnetic field solver TORIC-LH [1] valid in the lower hybrid range of frequencies (LHRF) has been developed and applied to fusion plasmas characteristic of the Alcator C-Mod tokamak [$B_0 = 5.3$ T, $n_e(0) \approx$ (1-7) $\times 10^{19}$ m^{-3}, $T_e(0) \approx$ (2-4) keV, and $f_0 = 4.6$ GHz]. In this poster we present parametric scans of density, electron temperature, and parallel wave number aimed at elucidating the importance of full-wave effects at internal reflection layers (caustics) and cut-offs near the plasma edge. In particular, we study full-wave predictions in the weak and strong damping regimes, where it is found they are in qualitative agreement with traditional ray tracing calculations in the single pass damping limit, but then deviate in the weak absorption regime due to differences in the reconstructed wave fronts at edge cut-offs. [1] J. C. Wright, E. J. Valeo, C. K. Phillips *et al*, Communications in Computer Physics **4**, 545 (2008). [2] J. C. Wright *et al*, submitted to Physics of Plasmas (2009).

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