

Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Self-Consistent Studies of Lower Hybrid Current Drive in ITER Relevant Regimes¹ P.T. BONOLI, J. LIPTAC, R. PARKER, A.E. SCHMIDT, J.C. WRIGHT, MIT - PSFC, Cambridge, MA, R.W. HARVEY, A.P. SMIRNOV, CompX, Del Mar, CA — Lower hybrid current drive (LHCD) is currently under consideration for off-axis current profile control in the ITER device. Upcoming LHCD experiments in the Alcator C-Mod tokamak will be performed in a wave physics regime close to that of ITER where $B \cong 5\text{T}$, $n_e \cong 1 \times 10^{20}\text{m}^{-3}$, and $(\omega_{pe}/\omega_{ce})^2 \cong 1$ and are therefore ideally suited to test physics issues related to off-axis current generation in a reactor regime. We have implemented the combined Fokker Planck – ray tracing code (CQL3D-GENRAY) [1] at MIT and have used this code to carry out detailed studies of LH current drive for candidate target discharges in both ITER and C-Mod. The role of 2D velocity space effects in determining the driven current and radial power deposition profiles will be discussed as well as the efficacy of using “compound” LH grill spectra for controlling the location of power deposition. [1] R.W. Harvey and M.G. McCoy, Proc. of IAEA TCM on Advances in Simulation and Modeling of Thermonuclear Plasmas, Montreal, IAEA, Vienna (1993) p. 492.

¹Work supported by the US Department of Energy.

Paul Bonoli
MIT - PSFC

Date submitted: 24 Jul 2005

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