

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Improved LHCD simulation model and implication for future experiments¹ S SHIRAIWA, G WALLACE, S BAEK, P BONOLI, I FAUST, R PARKER, B LABOMBARD, A WHITE, S WUKITCH, PSFC, MIT — The simulation model for LHCD using the raytracing/FokkerPlanck (GENRAY/CQL3D) code has been improved. Including realistic 2D SOL profiles resolves the discrepancy previously observed at high density ($n_e > 1 \times 10^{20} \text{ m}^{-3}$). Impact of nonlinear interaction in front of the launcher is investigated. It is shown that the distortion of launch n_{\parallel} spectrum is rather small (up to 10% of injected power). These simulation results suggest that improvement of current drive observed on Alcator C-Mod is indeed caused by realizing preferable SOL plasma profiles. Implication of these results to future experiments will be discussed. In order to minimize edge parasitic losses, realizing high single pass absorption and reducing prompt losses in front of launcher are both crucial. The advantage of LH launch from low field side (LFS) and high field side (HFS) is compared in this regards. A compact LH launcher suitable to test LH wave launch from HFS on a small scale device is designed and its plasma coupling characteristic will be presented.

¹This work was performed on the Alcator C-Mod tokamak, a DoE Office of Science user facility, and is supported by USDoE awards DE-FC02-99ER54512 and DE-AC02-09CH11466

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Date submitted: 24 Jul 2015

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