

Abstract Submitted
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Time-domain simulation and benchmark of LHCD experiment at ITER relevant parameters¹ S. SHIRAIWA, P. BONOLI, PSFC, MIT, F. POLI, PPPL, R.W. HARVEY, CompX, C. KESSEL, PPPL, R. PARKER, G. WALLACE, PSFC, MIT — LHCD experiments on Alcator C-Mod at ITER relevant parameters have stimulated recent improvements and new development in advanced LHCD codes including GENRAY/CQL3D with SOL and LHEAF and TORLH (full wave) codes. These codes have more comprehensive physics models, resulting in better agreement with experiments in particular at high density. In contrast, the physics model of LHCD used in previous time-domain discharge simulation was rather simple, and therefore, it is important to incorporate the result of these developments in order to better predict tokamak discharge scenarios. Among these new codes, GENRAY/CQL3D with SOL provides fast computation time while keeping parasitic absorption in SOL plasmas though it lacks diffraction. We have used the integrated plasma simulator (IPS) as a simulation framework and have integrated GENRAY/CQL3D with SOL in it. IPS simulations were performed for an LHCD discharge on C-Mod, showing good agreement with experiment. A prediction of LHCD discharge performance with proposed LHCD upgrade on C-Mod will also be discussed.

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