Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Validation of Petra-m full-wave simulation code via RF Wave propagation experiments on LAPD[1] GURLEEN BAL, KUNAL SANWALKA, University of California, Los Angeles, BART VAN COMPERNOLLE, General Atomics, TROY CARTER, University of California, Los Angeles, SYUN'ICHI SHIRAIWA, PPPL — A 3D full-wave code, Petra-m, was used to simulate wave propagation from a single strap RF antenna in the Large Plasma Device (LAPD). Petra-M simulations allow for importing 3D CAD models of the antenna used in the experiments as well as measured density profiles. The results of the simulations show good agreement with experiments done on the LAPD. The experiments were carried out in a magnetized helium plasma with plasma parameters $n_e \approx 10^{18}$ 10^{19} m^{-3}, T_e 1 10 eV and $B_0 \approx 0.1$ to 0.18 T. A standing wave can be observed directly in front of the antenna in both the simulations and experimental results. Simulation results show fast-wave propagation in the dense core which is characteristic of a counter-clockwise rotating m=1 like mode. This work will also present some preliminary results comparing the short wavelength, slow-wave propagation in the plasma edge, low-density region. With an improved solver and access to finer mesh elements, we should now be able to resolve the slow-wave edge dynamics. Validating the simulated edge interaction with experimental results plays an important role in helping us understand interactions between RF waves and the SOL region of fusion devices.
[1]S. Shiraiwa et al, EPJ Web Conf. 157, 03048 (2017)

[1]This work was performed using the Basic Plasma Science Facility which is supported by DOE and NSF

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Date submitted: 02 Jul 2020 Electronic form version 1.4