

Abstract Submitted
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Recent Progress of High Harmonics Fast Wave (HHFW) Project on LAPD* XIAOKANG YANG, TIM DEHAASE, TAE Technologies, TROY CARTER, STEVE VINCENA, UCLA, RICHARD GOULDING, ORNL, BART VAN COMPERNOLLE, GA, IAN ALLFREY, JON SCHROEDER, ANDY SIBLEY, PING FENG, FRANCESCO CECCHERINI, LAURA GALEOTTI, TAE Technologies, CORNWALL LAU, ORNL, NICOLA BERTELLI, MASA ONO, SYUN'ICHI SHIRAIWA, PPPL, TAE TEAM — To conduct the proof-of-principle experiments of high harmonic fast wave (HHFW) coupling and propagation in high beta FRC plasma, a phased-array RF antenna has been designed, built, and installed on the LArge Plasma Device (LAPD). The first experimental campaign of fast wave propagation at low power operation has shown promising results that fast waves can couple and propagate into the plasma core at all antenna phases, even when the antenna is fully retracted close to the wall, and no slow wave excitation has been observed. The magnetic field components of HHFWs in both the near and far fields were measured by B-dot probes, and these measuremental results are used to benchmark the simulation results with the Petra-M full wave code. Meanwhile, a few sets of impedance matching network, decoupler, and antenna phase and impedance measurement diagnostics are currently under construction; this hardware will be deployed on LAPD soon for a new RF campaign, and its experimental results will be presented. *The experiments were performed at UCLA's Basic Plasma Science Facility, which is a collaborative research facility supported by the US DoE, and the NSF.

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