

Abstract Submitted
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Experimental Study of RF Sheath Formation on a Fast Wave Antenna and Limiter in the LAPD MICHAEL MARTIN, WALTER GEKELMAN, PATRICK PRIBYL, BART VAN COMPERNOLLE, TROY CARTER, UCLA, Dept. of Physics and Astronomy — Ion cyclotron resonance heating (ICRH) will be an essential component of heating power in ITER. During ICRH, radio frequency (RF) sheaths may form both at the exciting antenna and further away, e.g. in the divertor region, and may cause wall material sputtering and decreased RF power coupling to the plasma. It is important to do detailed laboratory experiments that fully diagnose the sheaths and wave fields. This is not possible in fusion devices. A new RF system has recently been constructed for performing such studies in the LAPD plasma column ($n_e \sim 10^{12} - 10^{13} \text{cm}^{-3}$, $T_e \sim 1 - 10 \text{eV}$, $B_0 \sim 400 - 2000 \text{G}$, diameter $\sim 60 \text{cm}$, length $\sim 18 \text{m}$). The RF system is capable of pulsing at the 1 Hz rep. rate of the LAPD plasma and operating between 2 – 6 MHz (1st – 9th harmonic of f_{ci} in H) with a power output of 200 kW. First results of this system driving a single-strap fast wave antenna will be presented. Emissive and Langmuir probe measurements in the vicinity of both the antenna and a remote limiter and wave coupling measured by magnetic pickup loops will be presented.

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