

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Far-Field RF Sheaths due to Shear Alfvén Waves in the LAPD MICHAEL MARTIN, BART VAN COMPERNOLLE, WALTER GEKELMAN, PAT PRIBYL, TROY CARTER, UCLA, Dept. of Physics, DANIEL A. D'IPPOLITO, JAMES R. MYRA, Lodestar Research Corp. — Ion cyclotron resonance heating (ICRH) is an important tool in current fusion experiments and will be an essential heating component in ITER. ICRH could be limited by deleterious effects due to the formation of radio frequency (RF) sheaths in the near-field (at the antenna) and in the far-field (e.g. in the divertor region). Far-field sheaths are thought to be caused by the direct launch of or mode conversion to a shear Alfvén wave with an electric field component parallel to the background magnetic field at the wall.¹ In this experiment a limiter plate was inserted into a cylindrical plasma in the LAPD ($n_e \sim 10^{10-11} \text{ cm}^{-3}$, $T_e \sim 5 \text{ eV}$, $B_0 = 1.2 \text{ kG}$) and RF sheaths were created by directly launching the shear Alfvén wave. Plasma potential measurements were made with an emissive probe. DC plasma potential rectification was observed along field lines connected to the plate, serving as an indirect measure of RF sheath formation. 2-D maps of plasma properties and rectified plasma potential will be presented. This research is part of an ongoing campaign to study the formation and structure of RF sheaths.

¹D. A. D'Ippolito and J. R. Myra, *Phys. Plasmas* **19**, 034504 (2012).

Michael Martin
UCLA, Dept. of Physics

Date submitted: 03 Jul 2013

Electronic form version 1.4