

Abstract Submitted
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High Density Scrape-Off-Layer Absorption of Lower Hybrid Waves on the Alcator C-Mod Tokamak¹ I. FAUST, G.M. WALLACE, M. REINKE, R.R. PARKER, O. MENEGHINI, A.E. SCHMIDT, S. SHIRAIWA, MIT Plasma Science and Fusion Center, J.R. WILSON, Princeton Plasma Physics Laboratory, AND THE ALCATOR C-MOD TEAM — The goal of the LHCD system on Alcator C-Mod is to investigate current profile control under plasma conditions relevant to burning plasma experiments. Bremsstrahlung from fast electrons in the core plasma drops suddenly at a density below the density limit previously observed on other tokamaks ($\omega/\omega_{LH} \sim 2$). Electric currents in the SOL between the inner and outer divertors increase across the same density range that the core bremsstrahlung emission drops while SOL Lyman- α emissivity profiles shift outward, indicating absorption of LH waves in the SOL. The experimental x-ray data are compared to a ray tracing/Fokker-Planck model including collisional absorption in the SOL, which shows good agreement with the experiment across a wide range of densities. The model identifies possible strategies to circumvent the density limit such as increasing the temperature and decreasing the density in the SOL.

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