

Abstract Submitted  
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**SOL reflectometer for Alcator C-mod**<sup>1</sup> CORNWALL LAU, YIJUN LIN, GREG WALLACE, STEVE WUKITCH, MIT Plasma Science and Fusion Center, GREG HANSON, JOHN WILGEN, Oak Ridge National Laboratory — The study of antenna-plasma interactions during RF heating and current drive is greatly influenced by the SOL density profile. A swept-frequency X-mode reflectometer is being built for Alcator C-mod to measure the SOL density profiles in front of the new Lower Hybrid Launcher and the new ICRF antenna. Six pairs of launchers will give measurements at the top, middle, and bottom of both the ICRF and LHRF antennas. The system is planned to operate between 100 and 145 GHz at sweep rates from 10  $\mu$ s to 1 ms and will cover a density range of approximately  $10^{16}$  to  $10^{20}$  cm<sup>-3</sup> at 5-5.4 T. Due to the strong density fluctuations in the SOL, the system will use both differential phase and full phase techniques to get the best possible measurement. Design and preliminary test data from the electronics and waveguide runs will be presented. A 3D ray tracing code to study the expected reflectometry measurement of the density profile will also be shown.

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