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Characterization of Ion-Acoustic Wave Reflection Off A Plasma Chamber Wall¹ JORGE BERUMEN, FENG CHU, RYAN HOOD, SEAN MATTINGLY, ANTHONY ROGERS, FRED SKIFF, The University of Iowa — We present an experimental characterization of the ion acoustic wave reflection coefficient off a plasma chamber wall. The experiment is performed in a cylindrical, magnetized, singly-ionized Argon inductively-coupled gas discharge plasma that is weakly collisional with typical conditions: $n \sim 10^{10} \text{cm}^{-3}$ $T_e \sim 3 \text{ eV}$ and $B \sim 1 \text{ kG}$. The main diagnostics are laser-induced fluorescence and Langmuir probe measurements. A survey of the ion velocity distribution function's zeroth and first order as well as density fluctuations at different wave excitation frequencies is obtained. Analysis of the reflection coefficient's dependence on the phase velocity and frequency of the wave is done through the characterization of waves utilizing Case-Van Kampen modes and the use of Morrison's G-transform [1].

[1] F. Skiff, H. Gunell, C.S. Ng A. Bhattacharjee, and W.A. Noonan. Electrostatic Degrees of Freedom in Non-Maxwellian Plasma. *Physics of Plasmas*, 9(5):1931, 2002.

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