

Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Ion-Acoustic Wave-Particle Energy Flow Rates¹ JORGE BERUMEN, FENG CHU, RYAN HOOD, SEAN MATTINGLY, FRED SKIFF, The University of Iowa — We present an experimental characterization of the energy flow rates for ion acoustic waves. The experiment is performed in a cylindrical, magnetized, singly-ionized Argon, inductively-coupled gas discharge plasma that is weakly collisional with typical conditions: $n \sim 10^9 \text{cm}^{-3}$ $T_e \sim 9 \text{ eV}$ and $B \sim 660 \text{ kG}$. A 4 ring antenna with diameter similar to the plasma diameter is used for launching the waves. A survey of the zeroth and first order ion velocity distribution functions (IVDF) is done using Laser-Induced Fluorescence (LIF) as the main diagnostics method. Using these IVDFs along with Vlasov's equation the different energy rates are measured for different values of ion velocity and separation from the antenna.

¹We would like to acknowledge DOE DE-FG02-99ER54543 for their financial support throughout this research.

Jorge Berumen Cantu
The University of Iowa

Date submitted: 12 Jul 2017

Electronic form version 1.4