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Measurements of Dispersion and Damping for Kinetic and Inertial Shear Alfvén Waves D.J. THUECKS, C.A. KLETZING, S.R. BOUNDS, F. SKIFF, Dept. of Physics and Astronomy, University of Iowa, S. VINCENA, W. GEKELMAN, Dept. of Physics, University of California Los Angeles — Experiments to test the dispersion relation of shear Alfvén waves as a function of $k_\perp$ were performed using the Large Plasma Device at UCLA. The waves were launched using a 48 element antenna which allows good control over the perpendicular wave numbers of the wave. Amplified magnetic search coil probes placed along the length of the chamber are used to measure the wave across the center of the wave pattern. The measured signals are processed using an FFT transform and the signal for each individual perpendicular wave number is then reconstructed. Components at two different locations for the same wave number are cross correlated and the propagation time with the probe separation leads to a value of the parallel phase velocity for each wave number. Additionally, relative amplitudes of each wave number between two probes allow the damping to be calculated. The parallel phase velocity and the damping rate are then compared to the theoretical dispersion relation and damping for both the kinetic ($V_{Te} > V_A$) and inertial ($V_{Te} < V_A$) cases.

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