

Abstract Submitted  
for the DPP11 Meeting of  
The American Physical Society

**Nonlinear Scattering of Lower Hybrid Waves into Whistlers<sup>1</sup>**

DAVID BLACKWELL, WILLIAM AMATUCCI, GURUDAS GANGULI, Naval Research Lab, ERIK TEJERO, CHRISTOPHER COTHRAN, DAVID WALKER, Global Strategies Group North America Inc — Results are presented from ongoing experimental investigations of mode conversion between lower hybrid and whistler waves. Recent theoretical results suggest that under certain conditions the direction of the wave vector can be greatly changed with only a small change in the frequency spectrum due to wave scattering from density perturbations created by the ponderomotive force of the initial wave. The experiments are performed in the NRL Space Physics Simulation Chamber facility. The waves are excited with coaxial-ring and dipole antennas which operate from a few kHz to 1 GHz in the power range of 1 milliwatt to 10's of watts. The transmitted wave signals are received by smaller electrostatic and electromagnetic antennas which can be moved in the radial and axial directions. The phase and amplitude data is Fourier analyzed over 2-D space to give perpendicular and parallel wavelengths. A controllable magnetic field profile is used run the experiment as either an infinite plasma or resonant cavity.

<sup>1</sup>Work supported by ONR.

Erik Tejero  
Global Strategies Group North America Inc

Date submitted: 25 Jul 2011

Electronic form version 1.4