

Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Experimental Investigation of Whistler Wave Propagation in the NRL SPSC¹ DAVID BLACKWELL, WILLIAM AMATUCCI, GURUDAS GANGULI, GEORGE GATLING, US Naval Research Lab, CHRISTOPHER COMPTON, CHRISTOPHER COTHRAN, ERIK TEJERO, DAVID WALKER, Global Strategies Group North America, Inc. — Recent results of whistler wave propagation experiments in the Space Physics Simulation Chamber facility at the Naval Research Lab are presented. The full spectrum of whistler waves up to the electron cyclotron frequency cutoff is explored. Changing antenna near and far field radiation patterns are compared to varying transmitter power and plasma parameters. Transitions between helicon-like perpendicular long wavelength modes and short wavelength parallel whistler modes are clearly evident. These results are compared with transmitted antenna power measurements vs. frequency for recommendations of optimum operating conditions and antenna design. The background spectrum of whistlers excited by a filament plasma source and the interaction of driven whistlers with this spectrum is also explored. The waves are driven and detected using balanced dipole and loop antennas which measure the amplitude and phase of the wave in two dimensions (r and z). The magnetic field is varied from a few Gauss to 200 Gauss, with the density variable over three decades from 10^7 - 10^{10}cm^{-3} .

¹Work supported by ONR.

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Date submitted: 17 Jul 2009

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