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Laboratory Investigation of Whistler and Lower Hybrid Wave Propagation[1] W.E. AMATUCCI, D.D. BLACKWELL, G. GANGULI, G. GATLING, P.W. SCHUCK, Plasma Physics Division, Naval Research Laboratory, Washington, DC 20375, D.N. WALKER, C. COMPTON, Advanced Technology Division, SFA, Inc, Largo, MD 20774 — Many interesting *in situ* and laboratory observations of whistler and lower hybrid waves have been made over the past few decades. Observations such as these have prompted NRL Space Physics Simulation Chamber investigations of nonlinear whistler wave dynamics and lower hybrid solitary structures. For the initial experiments, we have fabricated and tested transmitting and receiving magnetic loop antennas and crossed electric field dipole receiving antennas. Electromagnetic modes launched in the Space Chamber plasma have been identified as whistler waves. Propagation characteristics of both whistler and lower hybrid waves have been investigated in homogeneous plasma conditions. Experiments into the interaction of whistler/lower hybrid waves with pre-existing plasma density structures have begun. In addition, preliminary investigations into the nonlinear properties of whistlers have provided indication of whistler wave ducting. Experimental results related to the propagation characteristics of whistler/lower hybrid waves under these conditions will be presented.

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