Abstract Submitted
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Laboratory investigation of whistler and lower hybrid wave characteristics[1] WILLIAM AMATUCCI, DAVID BLACKWELL, GURUDAS GANGULI, GEORGE GATLING, Naval Research Laboratory, DAVID WALKER, CHRIS COMPTON, SFA, Inc. — An experimental investigation of the generation and propagation of whistler and lower hybrid waves is underway in the NRL Space Physics Simulation Chamber. Wave propagation is being investigated in conditions simulating the Earth's radiation belt environment. These studies are carried out in both homogeneous plasma and plasma containing density structures. In homogeneous plasma, resonance cone propagation of the waves is observed, consistent with theoretical predictions. In plasma containing a density depletion layer, wave ducting within the layer has been observed. For these experiments, we have fabricated and tested transmitting and receiving magnetic loop antennas and electric field dipole receiving antennas. Preliminary comparisons of the two antenna styles indicate that loop antennas couple significantly more wave power into the plasma. Efforts are currently underway to further quantify these observations. Experimental results related to the propagation characteristics of whistler/lower hybrid waves under these conditions will be presented.

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William Amatucci
Naval Research Laboratory

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