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Conversion of lower hybrid waves to whistler waves in the presence of a density striation BART VAN COMPERNOLLE, WALTER GEKELMAN, PATRICK PRIBYL, UCLA — The conversion of electrostatic waves to electromagnetic waves is a fundamental process in plasma physics. Electrostatic waves in the outer magnetosphere produced by the solar wind are believed to be partially converted into electromagnetic waves which can propagate into the inner magnetosphere, and influence the lifetime of trapped particles in the radiation belts. A new series of experiments in the Large Plasma Device (LAPD) at UCLA focuses on the conversion of lower hybrid waves to whistler waves through the interaction with a density striation. Both the linear regime and the non-linear regime will be studied. In the linear regime the density striation is created by introducing an obstacle in the machine, while in the non-linear regime the density striation will be created by the lower hybrid wave itself through the ponderomotive force. A 16 element slow wave antenna (length 2 m, f $<$ 150 MHz) has installed, and is fed by 16 arbitrary waveform generators allowing for arbitrary amplitude and phase on the antenna elements. Electric dipole probes and magnetic loop probes are used to map out the wave patterns inside and outside the striation. Preliminary results in the linear regime showed the presence of both lower hybrid and whistler waves, and showed evidence of a trapped mode within the density striation. Work funded by DOE and performed at the Basic Plasma Science Facility funded by DOE/NSF.

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