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Drift-Alfvén Waves Excited by Internal Density Gradients in the Large Plasma Device[1] ERIC LAWRENCE, WALTER GEKELMAN, JAMES MAGGS, STEPHEN VINCENA, PATRICK PRIBYL, UCLA — The auroral ionosphere is filled with field-aligned density enhancements and depletions. In this experiment a density enhancement is produced with a small BaO-coated cathode ($d \sim 10$ cm). It generates an electron current in the core of the Large Plasma Device (LAPD) at UCLA ($n \sim 2 \times 10^{12}$ cm^{-3}, 0.5 kG $\leq B \leq$ 2.0 kG, $d \sim 60$ cm, and $L \sim 18$ m). The background plasma is formed by a pulsed DC discharge from a large ($d \sim 70$ cm) emissive cathode. The small cathode is located 10 m downstream from and faces the background plasma source. It is biased relative to a local molybdenum mesh anode and can be pulsed with a capacitor bank or modulated with an AC signal. The density gradients excite coherent drift waves that couple to Alfvén waves. Plasma flows are measured with Mach probes and radial electron temperature profiles are determined with swept Langmuir probes. Correlation measurements from magnetic and Langmuir probes are used extensively to characterize these drift-Alfvén waves.

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