

Abstract Submitted
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Laboratory experiment on the excitation of whistler-mode chorus waves¹ XIN AN, BART VAN COMPERNOLLE, JACOB BORTNIK, VIKTOR DECYK, RICHARD THORNE, University of California, Los Angeles — Whistler-mode chorus waves play an important role in accelerating electrons to relativistic energies in the heart of the outer radiation belt, as well as in precipitating electrons to the atmosphere. An experiment in the Large Plasma Device at UCLA generates both broadband and discrete chirping whistler-mode emissions using a gyrating electron beam injected into a cold background plasma. The mode structure of these emissions is identified using a phase-correlation technique. The emission forms of the whistler waves depend on plasma density, beam density and magnetic field profiles. A kinetic simulation in accordance with the experiment shows an initial relaxation of the electron beam by Langmuir waves and subsequently growing whistler waves through cyclotron resonance and Landau resonance.

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