

Abstract Submitted
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Nonlinear excitation of fast magnetosonic waves via quasi-electrostatic whistler wave mixing NATHAN ZECHAR, Riverside Research, Beavercreek, OH, VLADIMIR SOTNIKOV, JAMES CAPLINGER, Air Force Research Laboratory, WPAFB, OH, ARTHUR CHU, University of Illinois at Urbana-Champaign, Urbana, IL — We report on experiments of nonlinear simultaneous generation of low frequency fast magnetosonic waves and electromagnetic whistler waves using two loop antennas in the afterglow of a cold magnetized helium plasma. The exciting antennas each have a frequency that is below half the electron cyclotron frequency, and the difference between the two is just below the lower hybrid frequency. They both directly excite whistler waves, however their nonlinear interaction excite the low frequency fast magnetosonic waves at the frequency given by their difference. Plasma is generated using a helicon plasma source in a one meter length cylindrical chamber. The spatial and temporal data of the electromagnetic and electrostatic components of the plasma waves are then captured with developed diagnostic techniques. Wave spectra, general structure and time domain frequencies observed will be reported.

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