Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Whistler Wave generation by an electron beam in a LAPTAG Plasma Physics experiment[1] GABRIEL BRIDGES, John Marshall H.S., PATRICK PRIBYL, WALTER GEKELMAN, University of California, Los Angeles, SAM THOMAS, John Marshall H.S., HENRY BIRGE-LEE, North Hollywood H.S., JOE WISE, Wildwood Academy, CAMI KATZ, Harvard Westlake, BOB BAKER, University H.S. (ret), KEN MARMIE, Roosevelt Middle School, BEN WOLMAN, Palisades H.S., SAMUEL BUCKLEY-BONNANO, Harvard Westlake — A multigrid pulsed electron beam (E_{beam} = 1-4.8 KV, area =1.32 cm^2, τ >5 μs) is inserted into a background plasma (He, n = 5X10^{10} cm^3, B_{0z} = 80 G, L = 1.5 m, dia = 40 cm). The pulsed electron beam power supply, can generate up to 4800 Volts at 10 Amps and was constructed by the LAPTAG high school students. The beam can be oriented at any angle with respect to the background magnetic field. The pulsed beam generates whistler waves by Cherenkov radiation. The waves are detected with 3 axis magnetic pickup probes which can be moved in planes transverse or parallel to the background magnetic field under computer control. The whistler wave pattern is used to determine the wavenumber $\vec{\mathbf{k}}$ and Fourier analysis of the signal determines ω. The wave dispersion relation is compared to theory.

[1]Work done at BaPSF at UCLA and supported by NSF and DOE

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Date submitted: 21 Jul 2015 Electronic form version 1.4