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A comparison of electron velocity distribution measurements in the SPSC J. W. R. SCHROEDER, Wheaton College (IL), E. M. TEJERO, US Naval Research Laboratory, F. SKIFF, University of Iowa — Velocity-resolved particle measurements are important for many laboratory studies at the forefront of fundamental plasma physics. Energy analyzers have been used for decades to record field-aligned velocity distributions. Unfortunately, energy analyzers typically lack resolution to measure distributions on the timescale of waves in laboratory plasmas, making interactions of waves and particles difficult to study in the lab. An alternate technique that enables faster measurements, termed wave absorption, uses a probe wave whose absorption depends on the phase-space density of resonant particles. Wave absorption has been used to study electron heating in tokamak plasmas and wave-particle interactions between Alfvén waves and electrons. Wave absorption measurements have not previously been directly compared with energy analyzer measurements. Using the Space Physics Simulation Chamber (SPSC) at the Naval Research Laboratory, whistler-mode wave absorption measurements of the background electron distribution are compared with energy analyzer measurements in the same plasma. Complicating effects, like the frequency-dependent radiation pattern of whistler-mode waves and the finite gyroradius of electrons, will be considered.

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