

Abstract Submitted  
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**A numerical investigation of the effects of bounce-resonant and velocity-resonant particles on Landau damping in a non-neutral electron plasma** BRYAN G. PETERSON, GRANT W. HART, Brigham Young University — We are investigating the Landau damping mechanism for electrostatic oscillation modes in a non-neutral electron plasma in a Malmberg-Penning trap. In particular we are examining the effects of velocity-resonant particles where the particle velocity is very near the wave phase velocity and bounce-resonant particles where the particle bounce frequency in the trap is near the oscillation frequency of the mode.<sup>1</sup> Because the particle turning points are generally not coincident with the end nodes in the electrostatic oscillations, a particle can be bounce-resonant but not velocity-resonant, and vice versa. RATTLE, a PIC simulation code for a non-neutral plasma is being used to evaluate the effects of particle velocity distributions which do or do not contain resonant particles.

<sup>1</sup>M. E. Koepke, Bull. Am. Phys. Soc., 49, 40 (2004).

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