

Abstract Submitted
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Modeling axisymmetric radial Bernstein modes in a finite-length non-neutral plasma MARK HUTCHISON, ROSS L. SPENCER, BRYAN G. PETERSON, GRANT W. HART, Brigham Young University — Axisymmetric radial Bernstein modes are known to exist in non-neutral plasmas and have been studied theoretically, but detection of these modes has still proven to be difficult due to self-shielding. While it is improbable that these modes will be detected in long systems, there is a possibility of exciting and detecting these modes in a finite-length plasma by oscillating the confinement potentials in a Malmberg-Penning trap. Generating axisymmetric radial Bernstein modes in a short plasma will sufficiently couple the axial and radial motions that a clear oscillation signature may be observed on detection rings placed at the ends of the plasma. We are analyzing the excitation and frequency of these modes using an r-z particle-in-cell code in order to explore the possibility of detection via this method. We will be discussing our code and our progress in carrying out these objectives.

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