

Abstract Submitted  
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**Electrostatic Instabilities in Unmagnetized Quantum Plasmas of Arbitrary Composition** SHANE RIGHTLEY, DMITRI UZDENSKY, CIPS, University of Colorado — We present a fully kinetic numerical solution of the linear dispersion relation for electrostatic waves in quantum plasmas in arbitrarily-degenerate Fermi-Dirac equilibrium. We utilize the solution to study the effects of degeneracy and quantum recoil on instabilities in quantum plasmas. We report a full linear analysis of quantum kinetic effects in one-dimensional streaming instabilities in plasmas with multiple populations of particles. This presentation discusses specifically current-driven instabilities, such as the Buneman and ion-acoustic instabilities. These are important as sources of anomalous resistivity. Cases considered include arbitrarily degenerate electrons streaming through cold ions, and beams of electrons or positrons streaming through degenerate electrons. It is found that in quantum plasmas the current-driven instabilities are diminished.

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