

Abstract Submitted
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Two-Stream Instability in Graphene MITCHELL DUFFER, BEN YU-KUANG HU, The University of Akron — We investigate the unstable modes of the two-stream instability in graphene. This instability occurs when a population of electrons streams past another inside graphene. We obtain unstable modes by numerically determining the zeros of the non-equilibrium graphene dielectric function using MATLAB. The dielectric function used in this study, in contrast to previous studies, includes the effects of the particle-hole excitation continuum (PHEC) that normally quells the evolution of unstable plasmons. MATLAB's built in zero solver is employed to solve the sixth order polynomial and determine its roots. For some range of parameters, the zeros are found to exist in upper half of the complex plane. This indicates that there is a range of unstable modes that exists even with the incorporation of PHEC. The presence of these unstable modes signifies that the plasmons' amplitudes increase with time.

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