Plasma Instabilities in Graphene BEN YU-KUANG HU, The University of Akron, ANTTI-PEKKA JAUHO, Tech. Univ. of Denmark and Helsinki Institute of Technology — We discuss the possibility of the occurrence of plasma instabilities under non-equilibrium conditions in graphene. Specifically, we investigate the stability of the electronic collective modes in graphene with two counterstreaming distributions of carriers by studying the frequency-dependent dielectric function $\epsilon(q, \omega)$ of the system. We find that the linear electronic dispersion of graphene results in instabilities that are qualitatively different from the standard two-stream instabilities for classical plasmas and parabolic-band systems.

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