

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Phase coherent states in graphene heterostructure with chiral asymmetry¹ JUNHUA ZHANG, ENRICO ROSSI, Department of Physics, College of William and Mary — The chiral nature of the fermionic excitations in graphene, bilayer graphene, and topological insulators, induces unique electronic properties in these materials. In bilayer heterostructures the interlayer interaction can induce the formation of an interlayer phase coherent state. An interesting class of heterostructures is constituted by bilayers in which the electrons in the two layers have different chirality. An example of such a system that can be realized experimentally is the heterostructure formed by single layer graphene and bilayer graphene. In this talk I will discuss the conditions for the realization of an interlayer phase-coherent state in chiral-asymmetric heterostructures. In particular I will show how the voltage difference between the two layers affects the conditions for the realization of the phase coherent state, and its properties. I will then discuss the relevance for experiments of our results.

¹Work supported in part by the Jeffress Memorial Trust, Grant No. J-1033

Junhua Zhang
Department of Physics, College of William and Mary

Date submitted: 11 Nov 2011

Electronic form version 1.4