MAR16-2015-007472

Abstract for an Invited Paper
for the MAR16 Meeting of
the American Physical Society

Origins of Nonlocality Near the Neutrality Point in Graphene

JOSHUA FOLK, University of British Columbia

Nonlocal measurements are an effective experimental tool for probing non-charge characteristics of carriers using a (charge) transport measurement. For example, nonlocal signals in a Hall bar geometry can indicate spin currents, or valley currents, or heat currents flowing through a sample without an accompanying charge current. We present an experimental study of nonlocal electrical signals near the Dirac point in graphene, with the goal of disentangling the various types of current that might give rise to nonlocality. The in-plane magnetic field dependence of the nonlocal signal confirms the role of spin in this effect, as expected from predictions of the Zeeman spin Hall effect in graphene, but our experiments show that thermo-magneto-electric effects also contribute to nonlocality, and the effect is sometimes stronger than that due to spin.