

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Quantum lifetime in BN-encapsulated graphene devices JESSE BALGLEY, SCOTT DIETRICH, Columbia University, LEI WANG, Cornell University, VITTO HAN, BO WEN, YUANDA GAO, JAMES HONE, CORY DEAN, Columbia University — Encapsulating monolayer graphene in BN has lead to vastly enhanced device quality, leading to significantly increased mobility and quantum lifetimes on the order of picoseconds. However, magnetoresistance measurements in the quantum Hall regime reveal remnant disorder that continues to inhibit transport measurement. Here we report a study of the Shubnikov-de Haas oscillations in very high mobility devices. Comparison of the mean scattering and quantum lifetimes suggest that remote impurities remain the dominant scattering mechanism. The source of this remnant disorder, and the consequence for mobility enhancement in BN-supported 2D materials beyond graphene is discussed.

Scott Dietrich
Columbia University

Date submitted: 06 Nov 2015

Electronic form version 1.4