Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Tunneling measurements in graphene-hexagonal boron nitride-based heterostructures[1] U. CHANDNI, Institute for Quantum Information and Matter and Department of Physics, California Institute of Technology, Pasadena, California 91125, USA, K. WATANABE, T. TANIGUCHI, National Institute for Materials Science, 1-1 Namiki, Tsukuba Ibaraki 305-0044, Japan, J.P. EISENSTEIN, Institute for Quantum Information and Matter and Department of Physics, California Institute of Technology, Pasadena, California 91125, USA — Van der Waals heterostructures is an emerging field involving the study of layered materials consisting of various crystalline atomic planes exfoliated from bulk crystals and then stacked, often by hand, in custom-made patterns. Vertical tunneling structures made out of such quasi-2D crystals are potentially very interesting and may provide a new playground to observe electron-electron interaction effects in graphene and related materials. In the present work, we report the fabrication and study of several such tunnel junctions, including metal-hexagonal boron nitride (hBN)-metal, metal-hBN-graphite and metal-hBN-graphene devices. Tunneling measurements done at low temperatures and high magnetic fields reveal interesting and distinct features in each of these designs.

[1]We acknowledge funding provided by the Institute for Quantum Information and Matter, an NSF Physics Frontiers Center with support of the Gordon and Betty Moore Foundation through Grant GBMF1250.

U. Chandni
Institute for Quantum Information and Matter and Dept of Physics,
California Institute of Technology, Pasadena, California 91125, USA

Date submitted: 13 Nov 2014 Electronic form version 1.4