Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

hBN/graphene heterostructures for spectroscopy studies in normal and superconducting regime RICCARDO PISONI, Massachusetts Institute of Technology/Politecnico di Milano, JOEL I-JAN WANG, Massachusetts Institute of Technology/Harvard School of Engineering and Applied Sciences, LANDRY BRETHEAU, Massachusetts Institute of Technology, KENJI WATANABE, TAKASHI TANIGUCHI, National Institute for Materials Science (NIMS), Japan, PABLO JARILLO-HERRERO, Massachusetts Institute of Technology — Tunneling spectroscopy is a powerful tool to study the electronic properties of materials, as it has the capability of probing the electronic density of states at energies away from the Fermi level. Though local probes, such as scanning tunneling spectroscopy (STS), are widely used to elucidate the novel electronic properties of graphene, planar (2-D to 2-D) tunneling is also desirable for its capability to probe the global behavior of a 2-D electronic system. To study the intrinsic properties of the material via tunneling, one must employ a proper tunneling barrier and minimize the local doping introduced by the tunneling. Here we present a fabrication technique involving ultra thin hexagonal Boron Nitride (hBN) as both a tunneling barrier and an encapsulation overlayer to protect the 2-D Van der Waals material under study. In particular we focus on the fabrication of ultra thin hBN/graphene/hBN Van der Waals heterostructures that allows us to perform tunneling spectroscopy in graphene in normal and superconducting regime.

Riccardo Pisoni
Massachusetts Institute of Technology/Politecnico di Milano

Date submitted: 06 Nov 2015 Electronic form version 1.4