Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Effect of electron-electron interactions in thermoelectric power in graphene FERESHTE GHAHARI, YURI ZUEV, Columbia University, Department of Physics, KENJI WATANABE, TAKASHI TANIGUCHI, Advanced Materials Laboratory, National Institute for Materials Science, Japan, PHILIP KIM, Columbia University, Department of Physics — Thermoelectric power (TEP) of graphene is previously measured in the disorder limited transport regime where the semiclassical Mott relation agrees with experimental data. In this presentation, we report the TEP measurement on graphene samples deposited on hexa boron nitride substrates where drastic suppression of disorder is achieved. Our results show that at high temperatures where the inelastic scattering rate due to electron-electron (e-e) interactions is higher than the elastic scattering rate by disorders, the measured TEP exhibit a large enhancement compared to the expected TEP from the Mott relation. We also investigated TEP in the quantum Hall regime at a high magnetic fields, where we observed symmetry broken integer quantum Hall and fractional quantum Hall states due to the strong e-e interactions.

Fereshte Ghahari
Columbia University, Department of Physics

Date submitted: 10 Nov 2011 Electronic form version 1.4