Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Coulomb blockade in few-layer MoS2 based single electron transistor KYUNGHOON LEE, ZHAOHUI ZHONG, Department of Electrical Engineering and Computer Science, University of Michigan — Transition metal dichalcogenides (TMDCs) based two dimensional materials are attracting much attention for their interesting electronic and optical properties, including high on/off current ratio, indirect to direct band gap transition, and valley polarized carrier transport. Nevertheless, study of the low temperature electron transport in atomic thin layered TMDCs is still in its infancy. One of the major hurdles for electron transport study lies in the large metal/semiconductor junction barrier for carrier injection, which leads to the contact resistance dominated charge transport in short channel nanoscale devices. Here, we report on the fabrication of few-layer MoS2 single electron transistor using low work function metal for the contact electrodes. We observed Coulomb blockade phenomena attributed to single electron charging on a fairly clean quantum dot. The details of the bias, gate and temperature dependence will be discussed..

Kyunghoon Lee
Univ of Michigan - Ann Arbor

Date submitted: 14 Nov 2014 Electronic form version 1.4