Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Theoretical investigation of graphene on STO(111) surface DONGHAN SHIN, ALEXANDER A. DEMKOV, Univ of Texas, Austin — Graphene, a two-dimensional electronic system which consists of a single layer of graphite, is considered a possible candidate for nano-electronic applications as it has a very high electron mobility. One of the problems in realizing this in practice is the difficulty of doping. Using density functional theory we explore the possibility of field-doing graphene by placing a graphene sheet on a (111)-oriented SrTiO3 (STO) surface that is highly polar. We investigate the electronic structure of the system. Our results suggest that two conduction channels can form near the Fermi level. One is mainly composed of π-like carbon based orbitals, while the other is localized at the oxide surface.

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Date submitted: 06 Nov 2015 Electronic form version 1.4