

MAR13-2012-020330

Abstract for an Invited Paper
for the MAR13 Meeting of
the American Physical Society

Dirac Fermions in a Nanopatterned Two-Dimensional Electron Gas¹

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If a lateral periodic potential with triangular (or honeycomb) lattice symmetry is applied to a conventional two-dimensional electron gas (2DEG), the charge carriers behave like massless Dirac fermions [1,2]. A very interesting and useful point of these newly-generated massless Dirac fermions is that, unlike the case of graphene, their properties can be tuned through the external periodic potential. In this presentation, I will review the electronic properties of those newly-generated massless Dirac fermions in an artificial 2DEG superlattice system and will discuss how the electronic structure of those massless Dirac fermions changes depending on the external periodic potential [3].

- [1] C.-H. Park and S. G. Louie, Nano Lett. 9, 1793 (2009).
- [2] M. Gibertini et al., Phys. Rev. B 79, 241406 (2009).
- [3] C.-H. Park et al., in preparation.

¹This work was partly supported by Research Settlement Fund for the new faculty of SNU.