Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Broken Symmetry States in Twisted Bilayer Graphene YOUNGWOOK KIM, JONG MOK OK, JUN SUNG KIM, Department of Physics, Pohang University of Science and Technology, Korea, JAESUNG PARK, SUYONG JUNG, Center for Quantum Measurements, Korea Research Institute of Standards and Science, Korea, DONG SU LEE, Soft Innovative Materials Research Center, Korea Institute of Science and Technology, Korea, INTEK SONG, HEE CHEUL CHOI, Department of Chemistry and Division of advanced Materials Science, Pohang University of Science and Technology, Korea, K. WATANABE, T. TANIGUCHI, National Institute for Materials Science, Japan — Graphene bilayer with multiple degeneracy provides an access to rich quantum Hall states (QHS) with broken symmetry, arising from electron-electron interactions and Zeeman splitting. Here, we present quantum Hall effect in high-quality twisted bilayer graphene. At high density regime, we found several QH plateaus are suppressed or emerged with magnetic fields, indicating transitions between different QH states. We ascribe this to imperfect screening of twisted bilayer, which results in different Landau levels formation on each layer and their mixings. As low density regime, odd integer QHS are observed, suggesting an important role of the interlayer charge transfer for stabilizing broken symmetry QHS

Youngwook Kim
Pohang Univ of Sci & Tech

Date submitted: 14 Nov 2014 Electronic form version 1.4