

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Modification of Berry phase in graphene with in-situ hydrogenation.¹ CHUAN-WU CAO, CHAO-YI CAI, SHI-MIN CAO, JIAN-HAO CHEN, International Center for Quantum Materials, School of Physics, Peking University, and Collaborative Innovation Center of Quantum Matter, Beijing 10087 — Surface modification has become a powerful tool to engineer spin-orbit interactions in two dimensional materials. Here we report in-situ hydrogenation of graphene devices in ultra-high vacuum environment with magnetotransport measurement. With low hydrogen concentration, the Shubnikov–de Haas oscillation is preserved in the graphene samples. By analyzing the oscillation, we find that the Berry phase of Graphene can be modified continuously by increasing hydrogenation, which may point to increasing spin-orbital coupling strength in the 2D electron system.

¹This work is supported by the National Basic Research Program of China (973 Grant Nos. 2013CB921900, 2014CB920900), and the National Natural Science Foundation of China (NSFC Grant Nos. 11374021, 11327406).

Chuan-Wu Cao
Peking University

Date submitted: 20 Nov 2016

Electronic form version 1.4