Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Numerical studies of the magnetism in graphene nanoribbons and graphene dot TIANXING MA, Department of Physics, Beijing Normal University, Beijing 100875, China, ZHONG-BING HUANG, Faculty of Physics and Electronic Technology, Hubei University, Wuhan 430062, China, HAI-QING LIN, Beijing Computational Science Research Center, Beijing 100084, China — Within determinant quantum Monte Carlo simulation, the magnetic properties of graphene nanoribbons and graphene dot are studied. It is predicted that the armchair graphene nanoribbons show carrier mediated ferromagnetism as electron filling is lower than 0.8. The uniform magnetic susceptibility increase as the width of nanoribbons decrease, and it increases greatly as the next-nearest-neighbor hopping energy increases. It is also shown that strain may induce magnetism in doped square graphene dot having zigzag edge. The resultant ferromagnetism in graphene-based system may facilitate the development of spintronics.

Tianxing Ma
Dept of Physics, Beijing Normal University, Beijing 100875, China

Date submitted: 17 Nov 2011 Electronic form version 1.4