

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Metal-terminated carbon based nanostructures¹ SAHAR MIRSHAMSI, YAN WANG, HAI-PING CHENG, Dep of Physics and Quantum Theory Project. Uni. of Florida — Carbon based structures have attracted immense interest in many different fields and among them graphene has attracted more attention because of its unique physical properties. Hybrid metal-Carbon nanostructures are of interest because of their electronic and magnetic properties. We have studied magnetic correlations at zigzag edges of metal terminated graphene nanoribbons by calculating the transverse and longitudinal fluctuations of magnetic moments from first-principles. With inclusion of non-collinear spin-orbit coupling, we have investigated the continuous rotation of the electron spin which occurs along the ribbon edges (spin waves). Also, we report here effects of edge disorders and finite size effects. Finally, we extend our model to include multiple layers and studying the inter-layer magnetic coupling and the effect to the inter-edge magnetic coupling of the ribbon.

¹Supported by DOE/BES-DE-FG02-02ER45995 and NSF/DMR-0804407 and computed at UF-HPC center.

Sahar Mirshamsi
Dep of Physics and Quantum Theory Project. Uni. of Florida

Date submitted: 28 Nov 2010

Electronic form version 1.4