

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Giant Mechanoelectrical Switching in Ferromagnetic Graphene Nanoribbons HONG LI, RUI QIN, JING ZHOU, QIHANG LIU, ZHENGXIANG GAO, JING LU, State Key Laboratory of Mesoscopic Physics and Department of Physics, Peking University, Beijing 100871, P. R. China, WAI-NING MEI, R.F. SABIRIANOV, Department of Physics, University of Nebraska at Omaha, Omaha, Nebraska 68182-0266, USA — Giant mechanoelectrical effect is observed when twisting a ferromagnetic zigzag-edged graphene nanoribbon (ZGNR) with collinear spin configuration from ab initio quantum transport calculations. The resulting switch ratio is up to $10^{10}\%$ when the ZGNRs are overturned once and can be even enhanced to over $10^{14}\%$ via multiply overturnings. We find such a switch equivalent to a spin valve without resort to an external magnetic field. Furthermore, consideration under Noncollinear situation is also in progress.

Hong Li
State Key Laboratory for Mesoscopic Physics and Dept of Physics,
Peking University, Beijing 100871, P. R. China

Date submitted: 22 Nov 2010

Electronic form version 1.4