



## 中心系列讲座 ICQM Weekly Seminar Series

### “Study intrinsic graphene in suspended devices”



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**Time: 4:00pm, Aug. 19, 2011 (Friday)**

**时间: 2011年8月19日 (周五) 下午4:00**

**Venue: Room 607, Conference Room A , Science Building 5**

**地点: 理科五号楼607会议室**

#### Abstract

Graphene offers opportunities for studying Dirac fermion physics and for applications in state-of-the-art electronics. The experimental realization of many of its unique properties, however, had been baffled by the smearing effects from disorders which induce scattering and potential fluctuations. Suspending graphene from the substrate allows isolation of the material from the environment, and significantly improves the quality of the graphene devices[1]. I will talk about two examples where experimental studies of the intrinsic properties of graphene were made possible in the suspended devices. 1. Interaction effect. Fractional quantum Hall effect[2] and electron-electron interaction induced re-shaping of the Dirac cone had been observed in suspended graphene devices[3], while being elusive in graphene/SiO<sub>2</sub> devices. 2. Low frequency noise. Low frequency noise in graphene shows universal mobility dependence and is affected both by different scattering mechanisms, and by potential fluctuations[4]. Suspended graphene shows significantly reduced low frequency noise compared to graphene/SiO<sub>2</sub>.

#### About the Speaker

Prof. Xu Du received Bachelor of Engineering degree from Beijing University of Aero. & Astr. in 1996, Master of Science degree from Beijing University in 1999, and ph.D degree from University of Florida in 2004. In 2009 he joined the faculty of department of Physics and Astronomy at Stony Brook University. His research interest is mainly in mesoscopic physics and applications of nanomaterials, where he published several important works in prestigious physics journals including Nature and Science, with a total citation of over 1700 times. He received U.S Air Force Office of Scientific Research Young Investigator Award.