



NEW YORK CITY COLLEGE OF TECHNOLOGY
Physics Department
Seminar in Theoretical Physics

Advances in Nanodevices Modeling: Ballistic Transport and Multidimensional Spectroscopy

Presented by:

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Thursday, March 25 at 1:00 PM
Namm 805 (Conference Room in Dean's Office)

Abstract

Recent advantages in the fabrication techniques of nano-size electronic devices puts great emphasis on their transport and spectroscopy as one of the primary experimental techniques. I report on the ballistic electron transport in graphene nanoribbons (GNR's). In mutually perpendicular electric and magnetic fields those are shown to exhibit dramatic changes in their band structure and electron transport properties, including oscillations of the ballistic conductance. I also discuss some aspects and advantages of multidimensional spectroscopy of semi-conducting quantum dots (QD's). Using the micro-cavity coupled to weakly confined excitons in QD's, I report on the signatures of carrier multiplication in the single and two photon emitted frequency resolved fluorescence. Also, I will also discuss the appearance of Rabi multiplets.