

**Announcing the Final Examination of Amin Ahmadi for the Degree of Doctor of Philosophy in Physics**

**Date:** Tuesday, April 4, 2017

**Time:** 4:30 p.m.

**Room:** PSB 445

**Dissertation title:** Charge and Spin Transport in Low-Dimensional Materials

**Abstract:**

My research has been focused on two main areas. First, electronic transports in chiral carbon nanotubes in the presence of charged adatoms. To study such systems we employed recursive Green's function technique to evaluate the conductance using the Landauer formula. Comparing with the experimental data, we determined the effective amplitude and the range of scattering potentials. In addition, using a similar approach we explained qualitatively an unusual conductance feature in a metallic carbon nanotube. The second part of my study was concerned to the dynamical spin injection and spin currents in low-dimensional materials. We have developed an atomistic model to express the injected spin current in terms of the system's Green's function. The new formulation provides a framework to study the spin injection and relaxation of a system with an arbitrary structure.

**Outline of Studies:**

Major: Physics

**Educational Career:**

M. S. University of Central Florida, USA, 2013

M. S. Iran University of Science and Technology, Iran, 2006

B. S. Iran University of Science and Technology, Iran, 2004

**Committee in Charge:**

Dr. Eduardo Mucciolo (Chair)

Dr. Enrique Del Barco

Dr. Masa Ishigami

Dr. Jing Guo (External Committee Member)

Approved for distribution by Dr. Eduardo Mucciolo, Committee Chair, on March 28, 2017.

The public is welcome to attend.