



## PHYSICS AND ASTRONOMY COLLOQUIUM

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### **“Berry’s Phase and Topological Currents in Graphene Nanostructures”**

#### Abstract

The overall phase of a quantum state was for many years thought not to affect the observed properties of physical systems. That this is not the whole story was pointed out in 1984 by Michael Berry who showed that the evolution of the overall phase of the quantum state of a system whose Hamiltonian is varied slowly can have non-trivial consequences. In this talk the concept of Berry’s phase will be introduced. Its implications for the electronic structure and transport properties of graphene, a two-dimensional material consisting of a single atomic layer of carbon atoms, will be explained. Recent claims that Berry’s phase-related effects have been observed in non-local resistance measurements on a graphene “valleytronic” device will be discussed from a theoretical perspective.

Wednesday, September 28, 2016

3:00 p.m.

Elliott Building

Room 167