Electrical Transport in Molecules, Nanotubes and Graphene

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Abstract:

Recently available carbon based nanoscale materials such as carbon nanotubes and graphene, a single atomic sheet of graphite, provide us ample opportunities to explore unique electric transport phenomena in low dimensional systems. Novel transport phenomena based on enhanced quantum physics in these nanoscaled structures may lead to new device applications. In this presentation, I will discuss exotic electric transport phenomena in carbon based nanomaterials, such as room temperature ballistic transport in nanotubes, unusual quantum Hall effect in graphene, and single molecular electronics utilizing carbon nanotube electrodes.