

Colloquium Notice

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Relativity, quantum physics, and graphene

The two most important achievements in physics in the 20th century were the discoveries of the theory of relativity and quantum physics. In 1928, Paul Dirac synthesized these two theories and wrote the Dirac equation to describe particles moving close to the speed of light in a quantum mechanical way, and thus initiated the beginning of relativistic quantum mechanics. Graphene, a single atomic layer of graphite discovered only a few years ago, has been provided physicists opportunities to explore an interesting analogy to relativistic quantum mechanics. The unique electronic structure of graphene yields an energy and momentum relation mimicking that of relativistic quantum particles, providing opportunities to explore exotic and exciting science and potential technological applications based on the flat carbon form. As a pure, flawless, single-atom-thick crystal, graphene conducts electricity faster at room temperature than any other substance. While engineers envision a range of products made of graphene, such as ultrahigh-speed transistors and flat panel display, physicists are finding the material enables them to test a theory of exotic phenomena previously thought to be observable only in black holes and high-energy particle accelerators. In this presentation I will discuss the brief history of graphene research and their implications in science and technology.

Monday

March 26, 2012

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326