



PHYSICS AND ASTRONOMY COLLOQUIUM

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Deconstructing the Electron: Quantum Physics in One Dimension

Abstract

The effect of interactions on quantum particles is a long standing question, with important consequences for most realistic systems. In one dimension interactions lead to a radically new type of physics, very different from the one we know for higher dimensional systems. Once a pure theoretical game, such one dimensional physics has forcefully entered reality with the progress in miniaturization of electronic devices, and the appearance of novel physical system such as cold atoms in optical lattices. I will present the main concepts underlying this physics, known as Luttinger liquid, and show the various realizations of such systems that recent progress in material science; nanotechnology and cold atomic physics have provided. I will discuss where the field is standing now, and what today's challenges are.

Wednesday, January 09, 2013

3:30 p.m.

Bob Wright Centre

Room A104