Prof. Philip KIM –University of Harvard - USA

Seminar on the occasion of the Tomassoni-Chisesi award 2018

Title: Stacking atomic layers: quest for new material platform for emerging physics

Abstract:

Modern electronics has been heavily relied on the technology to confine electrons in the interface layers of semiconductors. In recent years, scientists discovered that various atomically thin materials including graphene, a single atomic carbon layer, can be isolated. In these atomically thin materials, quantum physics allows electrons to move only in an effective 2-dimensional (2D) space. By stacking these 2D quantum materials, one can also create atomic-scale heterostructures with a wide variety of electronic and optical properties. I will discuss the creation of new heterostructures based on atomically thin materials and emerging new physics with technological implications therein.

Prof. Scott AARONSON (University of Texas at Austin)

Seminar on the occasion of the Tomassoni-Chisesi Award 2018

Title: Three Questions About Quantum Computing

Abastract:

I'll discuss some of my work in quantum computing over the past 18 years, organizing it in terms of three questions. First, how can we demonstrate, using near-future hardware, that quantum computers can get any genuine speedups at all over classical computers (ideally useful speedups)? Second, what sorts of problems would be hard even for quantum computers, and can we turn the intractability of those problems to our advantage? Third, are there physically reasonable models of computation even more powerful than quantum computing, or does quantum computing represent an ultimate limit?