



Seminar

Quantum information processing with superconducting circuits

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Time: 4:00pm, Oct. 16, 2017 (Monday)

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Venue: Room W563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

A growing interdisciplinary effort is underway to build a machine capable of exploiting quantum effects to process information more efficiently than is possible with classical physics alone. In this talk I will focus on recent progress with superconducting circuits, a leading platform for quantum information processing. After a brief introduction I will discuss two examples: The first one is a method to perform joint measurements in a multi-qubit system, a prerequisite for stabilizer quantum error correction. The second example is a proposal of a superconducting coherent Ising machine with full connectivity for solving hard optimization problems. I will conclude with an outlook on some outstanding challenges.

About the speaker

Dr. Simon Nigg graduated in 2004 with a major in Physics from the Technical University of Munich and obtained a Diploma in Physics in the group of Prof. Ignacio Cirac at the Max Planck Institute for Quantum Optics in Garching, Germany. He obtained his PhD from the University of Geneva in Switzerland in 2009, where he worked in the field of mesoscopic electron transport physics in the group of the late Prof. Markus Büttiker. From 2010 to 2013, Simon was a postdoctoral fellow at Yale University, CT USA, in the group of Prof. Steven Girvin. During this time, he worked mainly on quantum error correction, circuit quantization and microscopic decoherence mechanisms in superconducting qubits. In 2013 Simon was awarded an Ambizione Fellowship from the Swiss National Science Foundation and worked as an independent researcher in the physics department of the University of Basel, Switzerland until 2017. His current research is focused on quantum information processing and mesoscopic physics.