Theoretical Quantum Physics

Group Seminar

11:00 AM
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Online (Zoom)

Using Single-Electron Sources to Create, Detect and Exploit Entanglement for Teleportation

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Abstract

Recent experimental advances enable the controlled creation and manipulation of single-electron excitations. These single electrons are promising candidates for quantum information processing due to their potential for scalability and integration with existing devices. For many quantum information processing tasks, entanglement is a crucial ingredient. The controlled creation, detection, and manipulation of entanglement is therefore a requirement for any platform to perform non-trivial quantum information processing tasks. In this talk, I will present theoretical work on creating entanglement using single-electron sources. I will further present how this entanglement can be detected using a Bell inequality, and how it can be exploited for quantum teleportation using current technology.

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