



東京大学大学院理学系研究科・理学部

物理学教室 談話会

Sir Martin Wood Prize Lecture

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“Measurement and Control of the Phase of an
Electron Wave”

2018年2月16日(金) 午後5時～午後6時30分

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The phase of a wave function is the most fundamental concept of quantum mechanics. Using electron wave interferometers, numerous attempts have been made to measure and control the phase shift of an electron wave. Despite the apparent simplicity, however, no reliable phase measurement had been realized because multiple-path interference usually masks the unambiguous information of the phase. In this talk, I present that a pure two-path interference is realized by combining an Aharonov-Bohm ring with parallel tunnel-coupled quantum wires, where the phase shift can be measured and electrically controlled. We also embedded a quantum dot into one of the two paths to measure the scattering phase through an artificial atom. We have revealed influences of the parity of orbital wave function in the quantum dot and the interaction between a local spin confined in the quantum dot and conducting electrons in the reservoirs, i.e. the Kondo effect.

講演終了後、ホワイトにて講演者を囲んだ簡単なレセプションがあります。