

中央大學物理學系

Department of Physics, National Central University



Colloquium

An atom-waveguide interface: a resource for quantum science and quantum technology

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Date: 2024/05/07 (Tue)

Venue: S4-625

Time: 14:00-16:00

Abstract:

An atomic array coupled to a one-dimensional nanophotonic waveguide allows photon-mediated dipole-dipole interactions and nonreciprocal decay channels. Such an array possesses many intriguing quantum phenomena due to its distinctive and emergent quantum correlations. In this talk, I will present how this platform can be a resource for studying quantum science and for quantum technology. In particular, I will discuss the delocalization phenomenon and graph state generations in this platform, which are relevant to quantum avalanche of many-body localization and one-way quantum computing, respectively. Our results can provide insights into nonequilibrium quantum dynamics and showcase the capability of atom-nanophotonic interface in preparing scalable high-dimensional graph states with stationary qubits.