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Simulation of Landau levels using electromagnetically induced transparency

Date: 2023/03/14 (Tue)

Venue: S4-625

Time: 14:00-16:00

Abstract:

The quest of utilizing neutral particles to simulate the behavior of charged particles in a magnetic field makes the generation of the artificial magnetic field of great interest. We theoretically propose an optical scheme to generate effective gauge potentials for stationary-light polaritons in the static laboratory frame. To demonstrate the capabilities of our approach, we present a recipe for having dark-state polaritons in degenerate Landau levels. Our scheme paves a novel way towards a versatile quantum simulator for mimicking different Hamiltonians by electromagnetically induced transparency.