

Center for Quantum Science and Engineering (CQSE)

Weekly Seminar
Nov. 5, 2010 (Friday)

TIME Nov. 5, 14:30 ~ 15:30
TITLE Quantum phase transitions of light
SPEAKER Dr. Ray-Kuang Lee 李瑞光博士
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PLACE Rm716, CCMS & New Physics Building, NTU

Abstract

With a strongly interacting many-body system formed by engineered composites of optical cavities, few-level atoms, and laser light, we study a photonic condensed-matter analog from the viewpoint of quantum optics. In this talk, we would demonstrate the possibility to have the quantum phase transitions of photonic Mott insulator (excitations localization) to superfluid (excitations delocalization) states, a photonic analogue of Josephson effect (crossovers between two superfluid states), the bipartite entanglement between the field and a finite size two-level atoms, and the existence of a maximum entangled multipartite qubit state, a W-state. Some applications for quantum information processing with these quantum phase transitions of light would be addressed.

