THE CHINESE UNIVERSITY OF HONG KONG
Department of Physics

SEMINAR

Atom-Light Interaction: Cavity QED With and Without Cavity

by

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Time: 2:00 – 3:00 p.m.
Place: Rm G26, Science Centre North Block, CUHK

ALL INTERESTED ARE WELCOME
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Abstract

Interaction between atom and quantized light field is a key focus of quantum optics. One of the most iconic quantum optical models is the Dicke model, which concerns the interaction between an ensemble of two-level atoms with a single mode optical cavity. It features a second-order superradiance phase transition. In the first part of the talk, I will consider an extension of the Dicke model by replacing the two-level atoms with multi-level atoms. We show that, in this extended Dicke model, the order of the superradiance phase transition can be controlled to a certain extent and the system can feature multi-critical points. In the second part, I will discuss two other systems, a quantum magnetic system and a trapped ion system, whose physics can be described by Dicke-like Hamiltonians, as such, some interesting cavity QED phenomena can be observed without cavity.

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