



Quantum Entangled Interferometers and Their Applications

Date: August 31, 2022 (Wednesday)

Time: 3:00 p.m.

Hybrid Mode

In Person: Room 522, 5/F, Chong Yuet Ming Physics Building, HKU

Zoom Online Lecture: <https://bit.ly/3AaGdoC>

Meeting ID: 912 3549 7373

Password: 2859



Prof. Zheyu Jeff OU

City University of Hong Kong

Abstract:

A new type of quantum interferometer utilizes nonlinear parametric processes as the wave splitting and recombination elements. Because of the nonlinear interaction, the fields inside the interferometer are intrinsically entangled and quantum mechanically correlated. This type of quantum correlated interferometer exhibits some unique properties that we will review in this talk. Because of these properties, this type of interferometer is superior to traditional beam splitter-based interferometers in many aspects. We will present its various forms and its realizations with different types of waves such as microwave, atomic waves (both internal and external degrees), and sound waves. We will discuss its applications in quantum metrology, quantum imaging, quantum spectroscopy, and quantum state engineering.

Biography:

Professor Ou obtained his BS in 1984 from Peking University and his Ph.D. in 1990 from University of Rochester. He is a leading expert in quantum optics, especially in quantum interference, for which he is famous for the Hong-Ou-Mandel interferometer. He pioneered the field of multi-photon interference, which he summarized in the monograph "Quantum Multi-Photon Interference" published by Springer in 2007. Professor Ou's current research focuses on quantum metrology, quantum sensing, quantum state engineering, quantum information and communication, and more fundamental quantum measurement process. He is also interested in quantum entanglement between atoms and photons, temporal mode characterization and engineering of photons, quantum noise of amplifiers. Professor Ou is a fellow of American Physical Society and of Optica (formerly Optical Society of America).

Anyone interested is welcome to attend!

Phone: 28592360 Fax: 25599152