

City University of Hong Kong
Department of Electrical Engineering &
Optica Student Chapter
Jointly present a Seminar on

Silicon Photonic Quantum Computing

by

Dr. Jianwei Wang

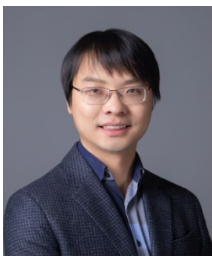
*Department of Physics
Peking University*

- Date : **10 January 2023 (Tuesday)**
Time : **10:00 am – 11:00 am**
Venue : **B5211, Yeung Kin Man Academic Building**
City University of Hong Kong
Language : English
Note : Everyone must do RAT on the day before entering the venue.

Abstract

On-chip generating, controlling, storing and detecting quantum states of light with integrated photonic circuits provides the way to realizing complex quantum technologies for applications in the fields of quantum computation, simulation and communication. In this talk we present recent progress in large-scale integrated photonic circuit for quantum information processing. We will discuss several silicon-photonic quantum devices that is able to generate, manipulate and analyze various entanglement structures, e.g., multidimensional entanglement, multiphoton entanglement, and topologically protected entanglement. Several state-of-the-art large-scale programmable quantum photonic chips will be introduced, for the study of quantum coherence, generation of entanglement, and quantum computing. We will then show the demonstrations of several quantum computing models and algorithms, including Gaussian quantum Boson sampling, quantum simulation of physical and chemical systems, linear combinations of unitarian for quantum information processing, and cluster-state quantum computing. These results show silicon-integrated quantum photonics as a route towards large-scale quantum information processing, pointing the way to applications in fundamental science and quantum technologies.

Biography



Dr. Jianwei Wang is an Assistant Professor in the Physics of Peking University. He obtained his PHD in the University of Bristol in 2016. His group focuses on quantum information science and technologies with integrated optics. The group is developing large-scale integrated quantum photonic devices for applications in the fields of quantum computations, quantum simulations and quantum communications, as well as for the understanding of fundamental respects of quantum physics. He is also interested in developing hybrid quantum technologies of integrated optics, trapped ions, cold atoms, and superconducting systems. He has published more than 30 peer-reviewed papers in Science, Nature Physics, Nature Photonics, Nature Review Physics, Nature Communications, Science Advances, PRL and Optica.

~~~~~ All are welcome ~~~~~