



Seminar

Quantum computing approaches to quantum many-body problems

Jinzhao Sun

Imperial College London

Time: 3:00 pm, Sept. 7, 2023 (Thursday)

时间: 2023年9月7日 (周四) 下午3:00

Venue: Room w563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

Understanding quantum many-body behaviours has been a longstanding pursuit that captures great research attention across disciplines. While quantum systems are generally considered challenging to compute by classical means, quantum computing emerges as a promising avenue for studying these systems. In this talk, I will begin with an overview of the current state of quantum computing. I will then introduce several quantum algorithms designed for quantum many-body problems, delving into the associated algorithmic complexities. I will also present findings related to quantum simulation of materials and molecules. Finally I will discuss the limitations inherent in quantum computation with noisy or early fault-tolerant quantum devices in the context of quantum many-body problems.

About the speaker

Jinzhao Sun received his PhD in physics from the University of Oxford and received his BSc in physics from Peking University. He joined Imperial College London in 2022 as a Research Associate after his PhD. He has broad research interests in quantum computing, quantum many-body physics, quantum materials, and quantum information.