

# Joint CQSE & NCTS Seminar

2024  
Nov. 1, Friday

Time: Nov. 18, 14:20 ~ 16:20

Title: Quantum Advantages using superposed trajectories

Speaker: 陳岳男教授 (QFort, National Cheng-Kung University)

Place: Rm. 104, Chin-Pao Yang Lecture Hall, Department of Physics/CCMS, NTU

Online Link:

<https://nationaltaiwanuniversity-zbh.my.webex.com/nationaltaiwanuniversity-zbh.my/j.php?MTID=m7601bdfa496ccaf8aac2838aab8c25f2>

## **Abstract:**

Superposition of trajectories, which modify quantum evolutions by superposing paths through interferometry, has been utilized to enhance various quantum communication tasks. However, little is known about its impact from the viewpoint of open quantum systems. Thus, we examine this subject from the perspective of system-environment interactions. We show that the superposition of multiple trajectories can result in quantum state freezing, suggesting a space-time dual to the quantum Zeno effect. In addition, nontrivial Dicke-like super (sub) radiance can be triggered without utilizing multiatom correlations. We further show that the superposition of trajectories can be used to enhance the performance of the steering heat engine and the quantum battery.

