

The Vienna Center for Quantum Science and Technology
VCQ

invites you to a

COLLOQUIUM TALK

by

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Coherent Effects in Biological Processes: A Case Study in the Dynamics and Response of Open Quantum Systems

The inquiry into non-trivial quantum effects in biological systems has persisted since the inception of quantum mechanics. Recent experiments utilizing non linear ultrafast spectroscopy of molecular aggregates have reignited this discussion. In this seminar, we will delve into recent research conducted within our group aimed at characterizing the possible origin and nature of coherent oscillations observed in the spectral response of pigment protein complexes (PPCs). These complexes serve as the fundamental components in light-induced reactions, crucial for processes ranging from photosynthesis to vision.

We will explore the methodologies employed, which span from quantum master equations to tensor network simulations, to dissect the intricacies of PPC dynamics. This examination will highlight the significant challenges in establishing a quantitative connection between the experimental spectral response and underlying theoretical models. Furthermore, we will investigate the application of resource theories, rooted in the formalism of quantum information theory, to offer a complementary perspective on this enduring debate.

Monday, 3 June 2024

at Helmut Rauch Lecture Hall
Atominstytut Wien, Stadionallee 2, 1020 Vienna

17:00 Get-together

17:30 VCQ Student Talk

Stefan Ludescher: Rotation boxes within and beyond quantum theory

17:45 VCQ Colloquium Talk

19:00 BBQ

Host: Markus Müller