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Modeling and simulation of open quantum systems: purified pseudomode approach and its extensions

Dr Pengfei Liang (Inner Mongolia University)

Friday, 28 March 2025 @ 14h00-15h00 SAST

Venues: Online and Physics Seminar Room, Stellenbosch University

ABSTRACT

Accurate characterization of the environmental effects on a quantum system remains a fundamental challenge in the theory of open quantum systems. In this talk, I will introduce the purified pseudomode approach developed by us recently. This method allows for efficient modeling and numerically-exact simulation of general linear-Gaussian baths. Extensions of this method to model bath input-output and nonlinear system-bath interactions will also be discussed.

BIOGRAPHY

Dr Pengfei Liang received his PhD degree in Beijing normal university in 2019. He then moved to the Beijing computational science research center (CSRC) and the graduate school of China academy of engineering physics (GSCAEP) for postdoc research. He joined Inner Mongolia University as a researcher in 2024. His current research interests focus on the development of efficient tools for the modeling and simulation of open quantum systems, and on the application of tensor-network techniques.

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