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SEMINAR

Approximating Invertible Maps by Recovery Channels: Optimality and an Analysis of Qudit Channels

Prof Nadja Bernardes (Federal University of Pernambuco, Brazil)

Friday, 20 October 2023 @ 14h00 SAST
Venue: Physics Seminar Room, Stellenbosch University, and online

ABSTRACT
We investigate the problem of reversing quantum dynamics, specifically via optimal Petz recovery maps. We focus on typical decoherence channels, such as dephasing, depolarizing, and amplitude damping. We illustrate how well a physically implementable recovery map simulates an inverse evolution. Furthermore, we extend our analysis to qudit channels by devising a state-independent framework that quantifies the ability of the Petz map to recover a state for any dimension. Under certain conditions, dimensionality plays a role in state recovery.

BIOGRAPHY
Nadja Bernardes is a Professor of Physics at the Federal University of Pernambuco (Recife, Brazil), with research focusing on quantum information theory, particularly open quantum systems and non-Markovian dynamics. Nadja holds a PhD in Physics from the Max Planck Institute for the Science of Light (Erlangen, Germany 2012), where she researched long-distance quantum communication. She is on the board of the Brazilian Physical Society and a researcher at the National Institute of Quantum Information Science and Technology.

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