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INTERNATIONAL YEAR OF
Quantum Science
and Technology

COLLOQUIUM

A Brief History of Open Quantum Systems

Dr Graeme Pleasance (Stellenbosch University)

DATE: Monday, 28 July 2025 | 16h00–17h00 SAST

VENUES:

- **Stellenbosch University:** Neelsie Cinema
- **University of the Witwatersrand:** Room P215, 2nd Floor, Physics Building
- **North-West University:** Seminar room K310, Physics building G5
- **Online**

--- A recording of the talk will be published on the NITheCS YouTube channel afterwards ---

ABSTRACT

The theory of open quantum systems plays a pivotal role in our understanding of the Universe, bridging various fields spanning quantum information and thermodynamics, to measurement and decoherence. In this talk, I will attempt to cover some of the key historical milestones in the development of the theory, tracing its evolution from fundamental principles to modern day applications. I will then present some aspects of my own research, with a particular focus on the relevance of open quantum systems to quantum technologies.

BIOGRAPHY

Graeme Pleasance is a postdoctoral researcher in the Quantum@SUN group at Stellenbosch University, led by Prof Francesco Petruccione. He graduated with an MSci in Theoretical Physics from the University of Birmingham in 2013 and received his PhD from the University of Sussex in 2018. From 2018 to 2022, he held a postdoctoral research position in the Quantum Research Group at the University of KwaZulu-Natal. His research interests lie broadly in the theory of open quantum systems, quantum thermodynamics and quantum information. Currently, he is working on the development of nonperturbative techniques for treating strongly-coupled open quantum systems, with applications to nonequilibrium thermodynamics.



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