WORLD QUANTUM DAY APRIL 14

NITheCS
National Institute for Theoretical and Computational Sciences

INTERNATIONAL YEAR OF Quantum Science and Technology

COLLOQUIUM

A Quantum Celebration

--- on World Quantum Day ---

Monday, 14 April 2025 | 16h00–17h00 SAST
Attend online or at the Neelsie Cinema, Stellenbosch University

Quantum Technology: what it is, origins and future - a personal view

Prof Barry Garraway
(University of Sussex, UK)

ABSTRACT
The year 2025 has been designated the International Year of Quantum Science and Technology. In this talk, aimed at a general audience, I will present my experience of Quantum Technology. We will explore its foundations and origins, and the following questions. How did quantum technology grow to what it is today? Will you get to use quantum technology? Have you used it already without knowing? Can you believe the hype, and what might happen in the future? We will explore these questions and more.

BIOGRAPHY:

Barry is a Professor of Physics at the University of Sussex.
After completing his undergraduate degree at Oxford University, Barry moved to Manchester and did his PhD in the field of quantum optics. He subsequently undertook postdoctoral studies in Helsinki and Imperial College London. He received a Leverhulme research fellowship at Sussex University and was an Associate Research Director at CNRS (France) in 2008. He has worked in the fields of quantum optics and ultra-cold atoms throughout his career as well as being involved in recent developments in quantum technology. Highlights have included the study of decaying quantum systems and most recently developing the theory and application of new types of traps for ultra-cold atoms.

Brain on a Quantum

Prof Menica Dibenedetto
(Maastricht University, Netherlands)

ABSTRACT
This talk explores the intersection of quantum computing, brain function, and AI. It examines how quantum-inspired approaches may offer new insights into cognition, neural dynamics, and information processing, drawing from quantum physics, neuroscience, and machine learning. Neuromorphic computing, modelled after the brain, provides a framework for efficient AI, while quantum neuromorphic computing enhances this by using quantum principles. The goal is to spark discussion on how emerging quantum technologies could reshape our understanding of both natural and artificial intelligence.

BIOGRAPHY

Dr Menica Dibenedetto is a physicist with an interdisciplinary background in quantum computing, AI, computational biology, and neuroscience. She studied Physics at the University of Bari, Italy, before earning a PhD in Physics from RWTH Aachen University in Germany, where she focused on simulating proteins responsible for neurodegenerative diseases. She then pursued postdoctoral research in computational neuroscience, exploring complex systems and cognitive modelling.
Now an Assistant Professor at Maastricht University, she coordinates the Quantum Computing Research Team. Her research focuses on Quantum AI, exploring both classical AI for quantum computing and quantum computing for AI. Additionally, she holds an Executive Master's in Business Administration.

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NRF National Research Foundation

SA QuTI South African Quantum Technology Initiative

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