NITheCS Colloquium

NITheCS
National Institute for Theoretical and Computational Sciences

NITheCS 2025: Consolidation, Impact, and the Path to a Pan-Disciplinary Future

Prof Francesco Petruccione (NITheCS & Stellenbosch University)

DATE: Monday, 30 March 2026 | 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 year 2025 marked a decisive phase in the evolution of the National Institute for Theoretical and Computational Sciences (NITheCS), transitioning from consolidation to measurable national impact. This colloquium provides a structured overview of the Institute's achievements across its core mandates: research, human capacity development, collaboration, and engagement.

On the research front, NITheCS strengthened its pan-disciplinary model through the establishment and maturation of ten Research Focus Areas, fostering collaboration across institutions and disciplines while increasing scientific output and visibility. Particular attention will be given to patterns of collaboration, including the involvement of Historically Disadvantaged Institutions, and the emergence of integrative research themes aligned with national and global challenges.

In training and capacity development, 2025 saw a significant expansion of postgraduate engagement, alongside the continued growth of the South African Theory and Applied Computational School (SATACS) programme. New initiatives aimed at strengthening the pipeline from Honours to PhD level will be discussed, with an emphasis on inclusivity and scalability.

From an institutional perspective, NITheCS further consolidated its Hub-and-Nodes model, strengthened governance structures, and deepened partnerships with national stakeholders, including the Department of Science, Technology and Innovation and the National Research Foundation. The Institute also advanced its commitment to open science and digital collaboration, positioning itself as a national platform for distributed, high-impact research.

BIOGRAPHY

Francesco Petruccione is a physicist and academic leader, currently Professor of Physics at Stellenbosch University and Director of NITheCS, after previously serving as its Interim Director. He formerly held roles at the University of KwaZulu-Natal, including Professor and Pro Vice-Chancellor of Big Data and Informatics.

Born in Genoa, Italy, he studied physics at the University of Freiburg, earning his PhD (1988) and Habilitation (1994). His research spans quantum information, computing, and complex systems. He established a Centre for Quantum Technology and held a South African Research Chair in Quantum Information Processing.

Prof Petruccione has published over 190 papers, co-authored key monographs, and serves on multiple editorial boards. In 2023, he received the Order of the Star of Italy.

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