

NITheCS Colloquium

NITheCS

National Institute for
Theoretical and Computational Sciences



In celebration of World Quantum Day

Why is it so hard to know what quantum computers are good for?

Dr Maria Schuld

DATE: Tuesday, 14 April 2026 | 16h00–17h00 SAST

VENUES:

- **Stellenbosch University:** Road House Cinema at the Neelsie
- **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 world is getting 'quantum ready': many governments have announced their 'quantum strategies', and industries from finance to automobiles built in-house quantum research teams. The uncomfortable truth, however, is that we cannot foresee yet what quantum computers will actually be used for one day.

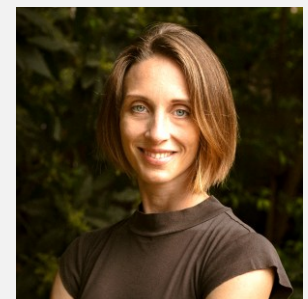
In this talk I will take a look behind the scenes of industrial quantum applications research, explain why it is so difficult to reason about algorithms and their performance at this stage, and sketch what we know today. The aim is to enable an informed debate on how countries on the African continent should prepare for the future of quantum technologies without being blinded by misleading global narratives.

BIOGRAPHIES

Maria spent the past nine years at Xanadu, a Canadian quantum technology startup, where she led the quantum machine learning research team.

She co-authored the book *Machine Learning for Quantum Computers* as well as numerous papers on the intersection between AI and quantum sciences, and was one of the core developers of the PennyLane open-source software framework for quantum computing.

Maria received her PhD in physics in 2017 from the University of KwaZulu-Natal in South Africa, and also holds a postgraduate degree in political science.



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