OFFICIAL LAUNCH OF NITheCS

PROGRAMME

9 – 11 SEPTEMBER 2025

Welcome!

We are delighted to have you with us for the auspicious occasion of our launch.

Over the coming days, we will reflect on the journey that has brought us here, share our vision and mission, and explore opportunities for knowledge sharing, collaboration, and innovation.

We look forward to your contributions in shaping the future of theoretical and computational sciences in South Africa and beyond.

SUMMARY OF EVENTS

Tuesday, 9 September	10h00 – 13h00	Research Focus Areas Presentations
	13h00 – 14h00	Lunch
	14h00 – 16h00	Stakeholders Meeting
	16h00 – 17h00	Machine Learning Workshop (Part 1)
	18h30 – 21h30	Dinner & *fundamano 3* Theatre Production
Wednesday, 10 September	10h00 – 14h00	NITheCS Official Launch Ceremony & Lunch
	15h00 – 17h00	Machine Learning Workshop (Part 2)
	17h00 – 18h00	Public Lecture: Prof Matthias Troyer (Microsoft)
Thursday, 11 September	09h00 – 12h00	Machine Learning Workshop (Part 3)

DETAILED PROGRAMME

Research Focus Areas Presentations

Date: Tuesday, 9 September
Time: 10h00 – 13h00
Venues: NITheCS Seminar Room, Merensky Building, Stellenbosch and Online
REGISTER TO ATTEND ONLINE

	SPEAKER	NITheCS FOCUS AREA
10h10 – 10h15	Prof Francesco Petruccione *NITheCS Director*	Welcome
10h15 – 10h30	Prof Cang Hui *Stellenbosch University*	Complexity in Biological Systems E5: Unravelling Complexity in Coupled Earth, Environmental, Economic, Ecological and Evolutionary Systems
10h30 – 10h45	Prof Amanda Weltman *University of Cape Town*	Computational and Theoretical, Gravity, Astrophysics, and Cosmology
10h45 – 11h00	Prof Will Horowitz *University of Cape Town*	Decoding the Universe: Quantum Gravity and Quantum Fields
11h00 – 11h15	Prof Özlem Tastan Bishop *Rhodes University*	Afrocentric Solutions for Disease Control and Health Care
11h15 – 11h30	Dr Regina Maphanga *Council for Scientific and Industrial Research (CSIR)*	Computational Modelling of Functional Materials for Driving Sustainable Innovation
11h30 – 11h45	**Coffee Break**	
11h45 – 12h00	Dr Hermann Donfack *University of Johannesburg*	Driving Innovation in Finance for Sustainable Growth: Pioneering Solutions for Emerging Markets and Energy Transitions
12h00 – 12h15	Prof Pedro Monteiro *Stellenbosch University*	A South African Community Earth System Modelling Platform: Carbon-Climate Modelling, Education and Innovation in Support of Regional Climate-Development Risk and Opportunities
12h15 – 12h30	Prof Inger Fabris-Rotelli *University of Pretoria*	Elevating data analytics and machine learning in South Africa: Advancing capacity and statistics and machine learning through focused and collaborative research initiatives
12h30 – 12h45	Prof Ilya Sinayskiy *University of KwaZulu-Natal*	Quantum Technologies
12h45 – 13h00	Prof Zurab Janelidze *Stellenbosch University*	Mathematical Structures for Foundations and Innovations: Uncovering Universal Theoretical Principles and Building Integrated Mathematical Capacity to Foster South Africa's Future Scientific, Technological, and Economic Progress
13h00 – 14h00	**Finger Lunch**	

Stakeholders Meeting

Date: Tuesday, 9 September
Time: 14h00 – 16h00
Venue: NITheCS Seminar Room, Merensky Building, Stellenbosch

This session brings together our key stakeholders to engage in dialogue on NITheCS's strategic vision and explore future initiatives.

Machine Learning Workshop (Part 1)

Hosted by the Focus Area: Elevating Data Analytics and Machine Learning in South Africa: Advancing capacity in statistics and machine learning through focused and collaborative research initiatives.

Date: Tuesday, 9 September
Time: 16h00 – 17h00
Venue: NITheCS Seminar Room, Merensky Building, Stellenbosch

All PIs are invited to attend this collaboration session. Please prepare a brief presentation outlining the data science, machine learning, and statistics needs of your focus area. The presentations will be followed by a brainstorming session to identify opportunities for collaboration and training.

Dinner & Theatre Production

Date: Tuesday, 9 September
Time: 18h30 – 20h00 (dinner)
              20h00 – 21h30 (theatre production)
Venues: Drostdy Theatre,
              cnr Alexander & Bird Streets, Stellenbosch
              & Online
Parking: Drostdy Theatre underground parking

ATTEND IN PERSON OR **ATTEND ONLINE**

Our guests will enjoy dinner at the Drostdy Theatre, followed by a special performance of the acclaimed FutureMath theatre production *fundamano 3* – a vibrant blend of art, comedy, music, science, philosophy, and dance that explores key questions in creative ways.

Now in its third edition, *fundamano* continues the Mathematics on Stage series, launched during the International Year of Basic Sciences for Sustainable Development (2022).

NITheCS Launch Ceremony

Date: Wednesday, 10 September
Time: 10h00 – 14h00
Venues: Jan Mouton Learning Centre, De Beer Road, Stellenbosch University Main Campus and Online
Parking: Neelsie Student Centre underground parking

REGISTER TO ATTEND ONLINE

09h30 – 10h00	Arrival and Registration
10h00 – 10h05	**Music Prelude and Seating**
10h05 – 10h15	Opening and Welcome Dr Gillian Arendse *Programme Director*
10h15 – 10h25	Welcome Address Prof Deresh Ramjugernath *Rector and Vice-Chancellor, Stellenbosch University*
10h25 – 10h30	**Musical Interlude**
10h30 – 11h00	Keynote Address Dr Mlungisi Cele *Director-General, Department of Science, Technology and Innovation (DSTI)*
11h00 – 11h20	NITheCS Vision Prof Francesco Petruccione *Director, NITheCS*
11h20 – 11h30	Strategic Partners' Perspectives Dr Happy Sithole *Centre Manager, National Integrated Cyber Infrastructure System (NICIS)* Prof Langa Khumalo *Chief Director, SADiLaR*
11h30 – 11h35	**Musical Interlude**
11h35 – 12h05	Guest Speaker 'What does fundamental research need to disrupt?' Dr Maria Schuld *Quantum Machine Learning Team Lead, Xanadu*
12h05 – 12h35	Guest Speaker 'Accelerating Scientific Discovery with Quantum, HPC and AI' Prof Matthias Troyer *Technical Fellow and Corporate Vice-President of Quantum, Microsoft*
12h35 – 12h45	Closing Remarks and Vote of Thanks Prof Sibusiso Moyo *Deputy Vice-Chancellor: Research, Innovation and Postgraduate Studies, Stellenbosch University*
12h45 – 13h45	**Lunch**
13h45 – 14h00	Inauguration of the NITheCS offices

Machine Learning Workshop (Part 2)

Hosted by the Focus Area: *Elevating Data Analytics and Machine Learning in South Africa: Advancing capacity in statistics and machine learning through focused and collaborative research initiatives.*

Date: Wednesday, 10 September
Time: 15h00 – 17h00
Venue: NITheCS Seminar Room, Merensky Building, Stellenbosch

This session will delve deeper into advanced topics and practical applications.

Public Lecture

'A Quantum Future of Computing'

Prof Matthias Troyer
Technical Fellow and Corporate Vice-President of Quantum, Microsoft

Date: Wednesday, 10 September
Time: 17h00 – 18h00
Venues: -   Stellenbosch University: Neelsie Cinema
-    University of the Witwatersrand: Room P215, 2nd Floor, Physics Building
-    North-West University: Seminar Room K310, Physics Building G5, Potchefstroom Campus
-    Online

ABSTRACT:

For millennia, we've counted with tools like the abacus. Then came classical computers, transforming science and society. Now, for the first time in history, we're changing the very rules of computation. Quantum computing harnesses the laws of quantum mechanics – the same laws that govern atoms and molecules – to solve problems that classical computers may never crack. It's not just faster; it's a new paradigm. Combined with AI, quantum computing offers a powerful engine for accelerating discovery: simulating chemical processes, designing new molecules and materials atom by atom, and addressing global challenges in energy, climate, and health. Breakthroughs in quantum hardware, algorithms, and applications have brought us to the threshold of a new age of discovery. And this transformation is global: it will empower scientists everywhere and thrive on the creativity of a diverse, international talent pool. In this lecture, I will share a roadmap for quantum computing, explore how it converges with AI, and show how we're moving from foundational experiments to scalable systems that can transform science – and society.

VIEW DETAILS | REGISTER TO ATTEND

Machine Learning Workshop (Part 3)

Hosted by the Focus Area: *Elevating Data Analytics and Machine Learning in South Africa: Advancing capacity in statistics and machine learning through focused and collaborative research initiatives.*

Date: Thursday, 11 September
Time: 09h00 – 12h00
Venue: NITheCS Seminar Room, Merensky Building, Stellenbosch

The final day of the Workshop offers deeper insights and valuable hands-on experience in the field.

We extend our sincere gratitude to you for your participation in our launch programme.