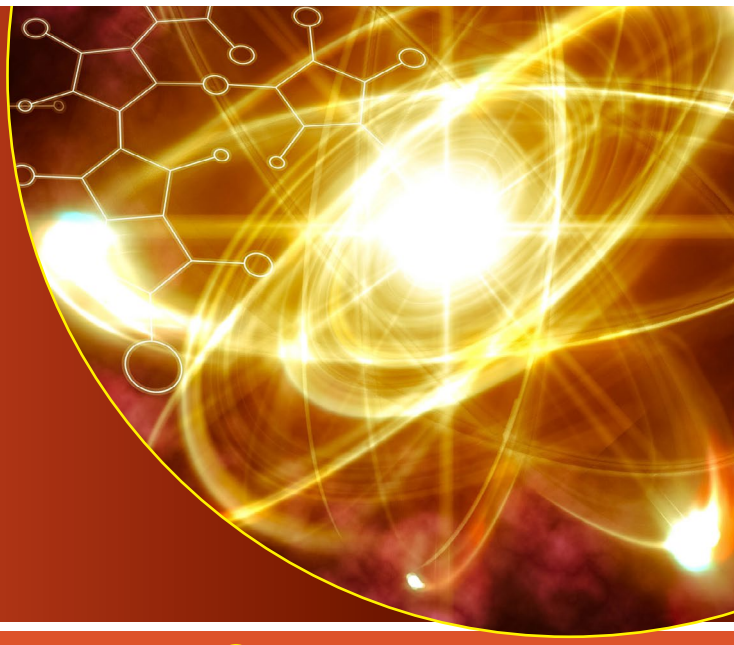
UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

COLLEGE OF AGRICULTURE, ENGINEERING AND SCIENCE

CQCtec
Centre for Quantum Computing & Technology

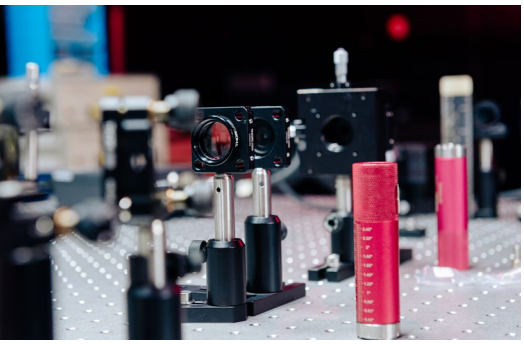
Official Launch
of the
UKZN Centre for Quantum Computing and Technology

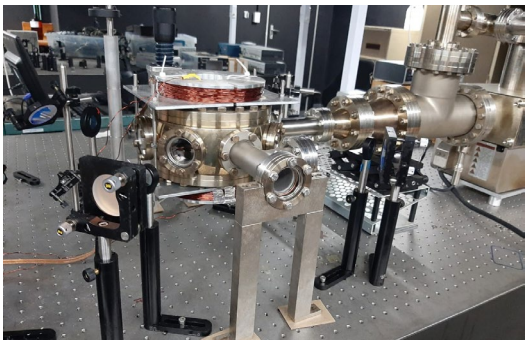


28 November 2025 Friday

10h00 to 14h00

Main Joosub Hall, UKZN Westville Campus





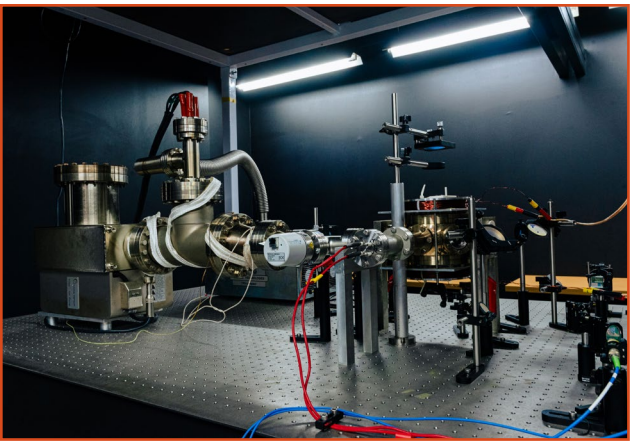
Programme

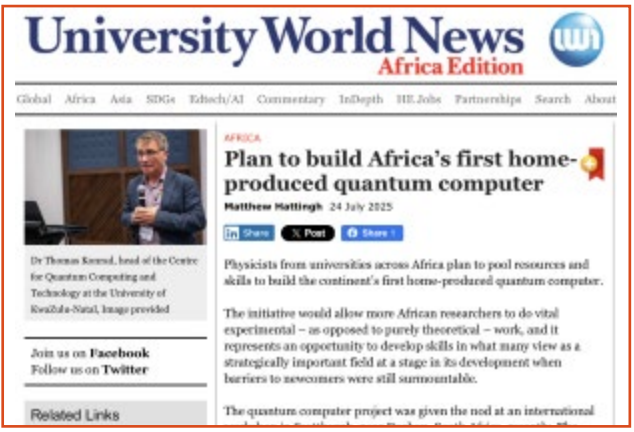
09h30	Registration	All
10h00	Official Opening	**Ms Khomotso Mthimunye:** *Chair of Council, UKZN*
10h05	Opening remarks	**Professor Anil Chuturgoon:** *DVC Research, UKZN*
10h15	Vision for the Centre for Quantum Computing and Technology	**Professor Thomas Konrad:** *Director CQCtec, UKZN*
10h30	Musical Interlude	Ms Lu Dlamini and Band
10h40	Keynote Address	**The Honorable Ms Nomalungelo Gina:** *Deputy Minister DSTI*
11h00	Official Launch of the Centre	**The Honorable Ms Nomalungelo Gina:** *Deputy Minister DSTI*
11h10	Musical Interlude	Ms Lu Dlamini and Band
11h20	Quantum Communication in Cities	**Dr Grégoire Ribordy:** *Co-founder and CEO, IDQ*
11h50	Quantum Storytelling	**Dr Gcina Mhlophe**
12h05	The Path to Quantum Advantage	**Dr Voica Radescu:** *EMEA and APAC Lead for IBM Quantum Innovation Centers / Manager*
12h25	Musical Interlude	Ms Lu Dlamini and Band
12h35	Announcement of Winner: International Year of Quantum Science and Technology School Art Competition	**Professor Alan Matthews:** *Deputy Director, CQCtec*
12h45	Closing Remarks/Vote of Thanks	**Professor Fhatu Mudau:** *DVC College of Agriculture, Engineering & Science, UKZN*
12h55	Lunch and Exhibition	
14h00	Ends	

ENQUIRIES: Sally Frost: frosts@ukzn.ac.za / 073 160 1409

UKZN Centre for Quantum Computing and Technology

ukungena ngeqholo kokungaziwa | per audacia ad ignotum | to boldly go into the unknown




University World News
Africa Edition

Global Africa Asia SDGs Edtech/AI Commentary InDepth HE Jobs Partnerships Search About

AFRICA

Plan to build Africa's first home-produced quantum computer

Matthew Hattingh 24 July 2025

Dr Thomas Konrad, head of the Centre for Quantum Computing and Technology at the University of KwaZulu-Natal. Image provided

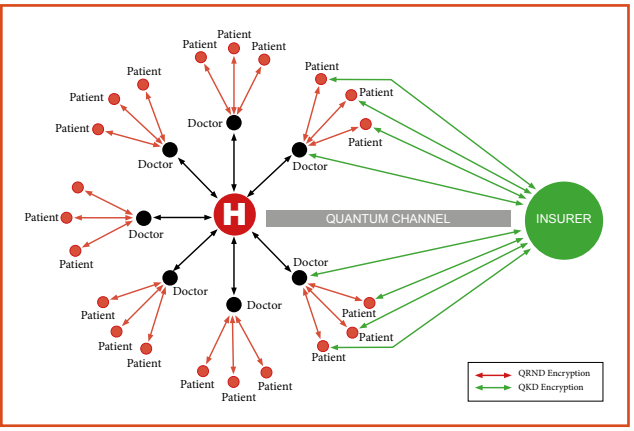
Physicists from universities across Africa plan to pool resources and skills to build the continent's first home-produced quantum computer.

The initiative would allow more African researchers to do vital experimental – as opposed to purely theoretical – work, and it represents an opportunity to develop skills in what many view as a strategically important field at a stage in its development when barriers to newcomers were still surmountable.

The quantum computer project was given the nod at an international

Join us on Facebook
Follow us on Twitter

Related Links



The Centre for Quantum Computing and Technology, established in June 2025, conducts research to apply quantum physics to technology. Various innovations have been arising from the Second Quantum Revolution, which started in the late 20th Century, based in particular on quantum properties of superposition and entanglement. Systems that apply these quantum properties will provide the most important technological advances in the 21st Century.

Quantum Computing

Quantum Computing is a category of Quantum Technology that stands out as a field in itself because of the unprecedented supercomputing power it promises. On the one hand, there is quantum hardware that stores and processes quantum information in the form of quantum bits, or qubits. An international race is on to build ever larger quantum computers, with billions of dollars being invested. On the other hand, there is quantum software, with extensive research on use cases in areas such as health, finance, and logistics, as well as the threat that quantum computing will break conventional cryptographic codes based on mathematical complexity.

Quantum Communication and Sensing

The two other categories of Quantum Technology are Quantum Communication and Quantum Sensing. Quantum Communication is exemplified by Quantum Key Distribution (QKD), which transmits cryptographic keys provably secure against cybercrime and unbreakable for quantum computers. Quantum Sensing involves a range of sensors that are far more sensitive and smaller than current sensors, and allow, for example, for non-invasive medical diagnostics among many applications in medicine, manufacturing and environmental monitoring.

Quantum Vision

The Vision of the Centre is to be globally competitive in our research, to provide a talent pipeline for training of local graduates, and to commercialise quantum technology with the objective to create a South African quantum economy. We aim to build a critical mass of world-class expertise and develop state-of-the-art laboratory and manufacturing infrastructure. This will be done in an all-Africa collaboration that aims to place Africa in the international arena of quantum technology.

Quantum Projects

Projects in the pipeline are to be a reseller for the Swiss-based company *IDQ*, the world leader in QKD systems, to assemble QKD systems in partnership with the Netherlands-based *Single Quantum*, and to sell and develop quantum sensing devices in partnership with the Stockholm-based *Quantum Scopes*. In Quantum Computing we are working on optimisation of manufacturing logistics, applications of quantum chemistry, analysis of ecological systems and pattern recognition. In addition, we aspire to be an international centre for Verification and Validation of quantum devices, and ultimately to be part of a collaboration to build Africa's first quantum computer.

Quantum Partnerships

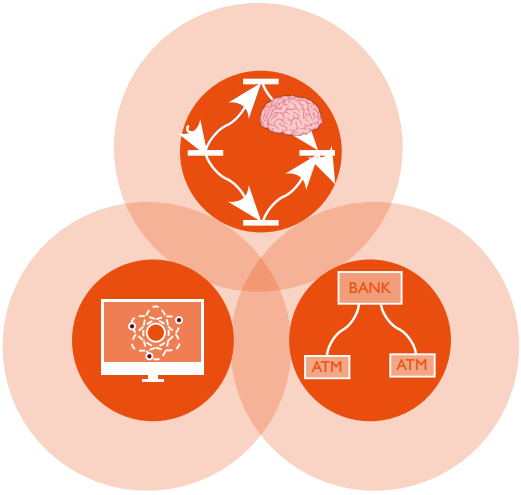
The Centre will be a forum for multidisciplinary research at UKZN and aims to generate income to support its students and research. The Centre aspires to create a local quantum technology industry that generates wealth, jobs and strategic independence for the region, producing devices and computing capability to solve a range of economic, social and environmental problems. Creating both local expertise and manufacturing capacity in quantum technology will add to productivity, prosperity and enhanced well-being for South African society, providing and exporting improved and non-invasive medical diagnostics and treatment, creating new drugs and materials, securing communication against cybercrime, and designing more efficient logistics, transport and manufacturing, among many other benefits.

The Centre for Quantum for Quantum Computing and Technology

Develops innovative technology to provides services and solutions to Industry

Optimisation of Transport, Logistics and Production Lines

Quantum Computers promise unprecedented computational power. The Centre develops algorithms to exploit and explore this power in order to optimise production lines in plants which may reduce costs significantly. We aim to apply our methods to find solutions to Transport and Logistics featuring similar optimisation tasks.



Banking and Health: Post-Quantum Privacy of Data Exchange

Cybercrime has repeatedly disrupted Health Care in South Africa and worldwide over the last decade. Stolen health care data can lead to identity theft, insurance fraud, and physical violence against patients. The banking sector is equally sensitive to cybercrime.

Data security will even become more vulnerable in future due to attacks facilitated by new technologies. For example, quantum computers threaten to break encryption schemes based on mathematical complexity. Already today, Quantum Key Distribution (QKD) can protect data transfer from these risks and make it provably secure. QKD is a mature technology that can be readily added to your communication infrastructure. In the simplest case two QKD appliances connected by single-mode fibre continuously produce private keys shared between a sender and a receiver. The Centre aims to sell products to protect privacy of data exchange between companies, data centres, and clients. This is important for all industries dealing with sensitive data.

Health Care and Medical Applications

Data Analysis: By means of machine learning techniques the Centre aims to analyse medical data, e.g., to find the optimal distribution of funds to fight severe acute malnutrition in children. We plan to use quantum machine learning for data analysis and pattern recognition.

Quantum imaging and metrology: Quantum Sensors can

- reduce noise levels and improve resolution using single photons, electrons/positrons, and nuclear spins.
- provide non-invasive imaging techniques, for example with "interaction-free" measurements or ultra-sensitive single photon detectors.

Together with Netherlands-based company Single Quantum and other partners the Centre aims to provide

- Non-invasive cerebral blood flow imaging helmets using scattering of infrared light and single photon detection which could be used in hospitals for stroke and epileptic patients.
- Improved optical tools, e.g. fluorescence and phase contrast microscopes.
- High-precision detection of magnetic fields and magnetic nano-particle markers, e.g. to monitor cancer cells.

1ST QUANTUM REVOLUTION

Radically transformed electronics, communication, imaging and analysis of materials and medical applications. For example, it led to the discoveries of transistors, lasers and electron microscopes, nuclear weapons, power plants, X-ray imaging, MRI and PET scans as well as various cancer treatment methods.

2ND QUANTUM REVOLUTION

Quantum Imaging/Sensing, Quantum Communication and Quantum Computing. New Medical applications include unprecedented levels of image resolution and diagnostics, monitoring, and data security. Quantum Computers are anticipated to revolutionise data analysis and pattern recognition as well as drug design and in general optimisation of medical treatment and infrastructure.