

# IBM expands quantum computing program to Africa

IBM announced the expansion of its' quantum computing efforts to Africa in a new collaboration with the University of the Witwatersrand (Wits University) in South Africa. Wits University is the first African partner on the IBM Q Network and will be the gateway for academics across South Africa and to the 15 universities who are part of the African Research Universities Alliance (ARUA).



“This is the latest outcome of the joint partnership between IBM Research and Wits, which started in 2016 when IBM opened its second lab in Africa in Wits University’s Tshimologong Digital Innovation Precinct in Johannesburg. To expand the IBM Q Network to include Wits will drive innovation in frontier-technologies and benefit African-based researchers, academics and students who now have access to decades of quantum computing capabilities at the click of a button,” said Professor Zebulon Vilakazi, Wits Deputy Vice-Chancellor: Research and Postgraduate Affairs.

Quantum computing promises to be able to solve certain problems – such as chemical simulations and types of optimisation – that will forever be beyond the practical reach of classical machines. IBM first made quantum computers available to the public in May 2016 through its IBM Q Experience quantum cloud service and has doubled the power of its quantum computers annually since 2017.



Quantum computing, The next big...wait, what is it really?

Sumit Kumar Sharma 3 Apr 2019



IBM established the IBM Q Network, a community of Fortune 500 companies, startups, academic institutions and research labs working with IBM to advance quantum computing and explore practical applications for business and science.

Researchers at Wits will investigate the use of quantum computing and machine learning in the fields of cosmology and molecular biology with a specific focus on HIV drug discovery. The teams will also jointly study quantum teleportation, a field pioneered by IBM Fellow Charles Bennett.

“For Africa to remain competitive for the coming decades we must get the next generation of students quantum ready,” said Dr. Solomon Assefa, vice president, Emerging Market Solutions and Director, IBM Research - Africa.

As part of the partnership between IBM and Wits, scholars from sixteen ARUA universities including: Addis Ababa University; University of Ghana; University of Nairobi; University of Lagos; University of Ibadan; Obafemi Awolowo University Ile-Ife; University of Rwanda; University Cheikh Anta Diop; University of Cape Town; University of Kwa-Zulu Natal; University of Pretoria; Rhodes University; University of Stellenbosch; University of the Witwatersrand; University of Dar es Salaam and Makerere University, will have the opportunity to apply for access to IBM Q's most-advanced quantum computing systems and software for teaching quantum information science and exploring early applications. To gain access to the IBM Q quantum cloud service, ARUA scholars will be required to submit quality research proposals to a scientific committee of Wits and IBM experts for approval.

“Having access to IBM Q is pivotal for Wits University’s cross-disciplinary research program and allows our researchers in quantum computing, artificial intelligence, and in the broad natural sciences, including in laser technology, quantum optics and molecular design, to leverage the next level of discovery research. It’s envisioned that the first results from this collaboration will be forthcoming in the next two years,” said Vilakazi.

IBM's recently unveiled IBM Q System One, is the world's first integrated universal approximate quantum computing system designed for scientific and commercial use.

IBM's most advanced universal quantum computing systems available through the IBM Q Experience platform. More than 10 million experiments have run on the IBM Q Experience and users have published over 160 third-party research papers. Also, developers can work with Qiskit, a full-stack, open-source quantum software development kit, to create and run quantum computing programs.

To further increase skills development, IBM Q is hosting an invite-only Qiskit Camp in South Africa in December for 200 quantum researchers and computer scientists where they will learn in an immersive environment and receive hands-on training.

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