

Leading universities partner with IBM to accelerate joint research and drive educational opportunities in quantum computing

Institutions include the University of Notre Dame, Virginia Tech, Harvard University, the University of Chicago, the University of Waterloo, among others

YORKTOWN HEIGHTS, N.Y., April 25, 2019 /[PRNewswire](#)/ -- IBM (NYSE: [IBM](#)) today announced the expansion of the IBM Q Network to include a number of global universities with the intent to partner with IBM to accelerate joint research in quantum computing, and develop curricula to help prepare students for careers that will be influenced by this next era of computing, across science and business.

The [IBM Q Network](#)™ is the world's first community of Fortune 500 companies, startups, academic institutions and research labs working to advance quantum computing and explore practical applications.

Today, IBM is announcing Florida State University, the University of Notre Dame, Virginia Tech, Stony Brook University, and the University of Tokyo will have direct access to IBM Q™'s most-advanced commercially available quantum computing systems for teaching, and faculty and student research projects that advance quantum information science and explore early applications, as academic partners.

Examples of future quantum computing application research and exploration include:

The University of Notre Dame: As part of the IBM Q Network, the university will grow an interdisciplinary quantum-programming community, and prepare a workforce at the undergraduate and graduate levels for the development of novel quantum computing applications in chemistry, physics and engineering and the creation of tools for increasing the efficiency of quantum computers.

Virginia Tech: As a member of the IBM Q Hub at Oak Ridge National Lab, Virginia Tech will work in conjunction with the Department of Energy, and chemistry experts at the IBM Almaden Research Center on the development of new quantum algorithms specifically in the field of quantum chemistry.

Stony Brook University: As a member of the IBM Q Hub at Oak Ridge National Lab, Stony Brook will use its access for joint research and to prepare a new workforce skilled in quantum technologies, including a focus on basic and applied research in science and engineering, and in the development of fundamental advances in quantum computation and associated algorithms.

Additionally, a number of institutions will collaborate with the IBM Q Network on focused research projects with students and faculty to advance the foundational science, technology, and software required to enable more capable quantum systems. These university research collaborators include Duke University, Harvard University, the University of Colorado Boulder, the University of Waterloo, as well as the University of Chicago, Argonne National Laboratory, Fermilab, the University of Illinois at Urbana-Champaign, and Northwestern University through the Chicago Quantum Exchange.

Examples of future joint-research collaborations include:

Duke University: [The Brown Lab](#), led by Dr. Kenneth Brown, which focuses on "quantum systems to build quantum information devices and sensors" will work with IBM in the area of quantum error correction, an algorithmic method for removing errors in quantum computers, which is expected to be important for future quantum computers regardless of the hardware platform.

Harvard University: Through its recent investment in a [Harvard Quantum Initiative](#), Harvard has committed to developing a broad community of researchers and educators in quantum science and engineering, including this collaboration with IBM's Q Network. Harvard students and researchers aim to transform sensing, communications, and computation — while developing the educational platform for quantum engineering and science for the long term.

The University of Colorado Boulder: As part of the IBM Q Network, CU Boulder will seek collaborations with IBM Q scientists and engineers through its [CUbit Quantum Initiative](#), where university, industry and government scientists conduct joint R&D, train students to contribute to the expanding quantum workforce, and engage with a range of industry partners.

The University of Waterloo: Working with IBM, the University of Waterloo will focus on accelerating collaborative research in quantum algorithms and quantum complexity theory.

The University of Chicago, Argonne National Laboratory, Fermilab, the University of Illinois at Urbana-Champaign, and Northwestern University: Researchers from these universities and labs, as part of the [Chicago Quantum Exchange](#), a multi-institution research and development hub for quantum technology anchored at the University of Chicago, will work with IBM Q scientists on software, in particular compilers for distributed quantum systems, as well as quantum transduction for coupling and communicating with quantum computers.

"Developing practical quantum applications that drive business and scientific breakthroughs requires a diverse ecosystem," said Dr. Anthony Annunziata, IBM Q Network Global Lead, IBM Research. "Partnering with these world-leading academic and research institutions is key as we work to educate, empower, and get the next generation of students 'quantum ready' to advance the field."

Beginning this summer, IBM will host developer boot camps and hackathons for hands-on training of the open source IBM Q Experience cloud services platform, and the full-stack open source Qiskit™ quantum software platform on campus at participating universities.

The IBM Q Network provides its organizations with quantum expertise and resources, quantum software and developer tools, as well as cloud-based access to quantum software and developer tools, as well as cloud-based access to IBM's most advanced, commercially available and scalable universal quantum computing systems. In addition, the no-cost and publicly available [IBM Q Experience](#) now supports more than 100,000 users, who have run more than 10 million experiments and published more than 180 third-party research papers. Developers have also downloaded [Qiskit](#) more than 160,000 times to create and run quantum computing programs.

For more information about the IBM Q Network, as well as a full list of all partners, members, and hubs, visit <https://www.research.ibm.com/ibm-q/network/>

About IBM Q

IBM Q is an industry-first initiative to build commercial universal quantum systems for business and science applications. For more information about IBM's quantum computing efforts, please visit www.ibm.com/ibmq.

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