Communiqués de presse

IBM conçoit ses plus puissants processeurs quantiques universels

IBM double la puissance de calcul pour les systèmes commerciaux IBM Q avec un nouveau processeur • Les développeurs, les chercheurs et les programmeurs exécutent plus de 300 000 expériences quantiques sur le Cloud IBM

Yorktown Heights, N.Y. - 17 mai 2017: IBM (NYSE: IBM) a annoncé aujourd'hui avoir conçu et testé avec succès ses processeurs les plus puissants pour l'informatique quantique universel.IBM (NYSE: IBM) a annoncé aujourd'hui avoir conçu et testé avec succès ses processeurs les plus puissants pour l'informatique quantique universel.

Lancé en mars 2017, IBM Q est une première dans le monde industriel pour concevoir des systèmes d'informatique quantique universels disponibles pour des applications commerciales et scientifiques. Les systèmes et services IBM Q seront fournis via la plateforme Cloud d'IBM. ce dernier a d'abord proposé un accès public à ses processeurs quantiques il y a un an, pour servir d'outil de validation à la recherche scientifique, de ressource pour les cours universitaires et accompagner l'enthousiasme autour de l'informatique quantique. À ce jour, les utilisateurs ont exécuté plus de 300 000 expériences quantiques sur le Cloud IBM.

Aujourd'hui, avec l'introduction de deux nouveaux processeurs pour IBM Q, la compagnie établit les bases pour résoudre les problèmes concrets dans le business et la science, qui sont insolubles même avec les systèmes informatiques classiques actuels les plus puissants. Les deux nouveaux processeurs développés par IBM incluent :

· Un processeur 16 qubit qui permettra d'effectuer des expérimentations plus complexes que celle réalisées sur le processeur 5 qubit précédemment disponible. Il est accessible gratuitement par les développeurs, les programmeurs et les chercheurs pour exécuter des algorithmes autour des expériences quantiques, travailler avec des bits quantiques individuels et explorer des tutoriels et des simulations. L'accès bêta est disponible aujourd'hui grâce à un nouveau kit de développement logiciel à disposition sur GitHub https://github.com/IBM/qiskit-sdk-py.

· Le premier prototype de processeur commercial d'IBM de 17 qubits qui exploite des améliorations significatives en matière de matériaux, dispositifs et architecture pour en faire le processeur quantique le plus puissant créé à ce jour par IBM. Il a été conçu pour être au moins deux fois plus puissant que les processeurs d'aujourd'hui pour le public sur le Cloud IBM, et sera la base des premiers systèmes commerciaux IBM Q disponibles en avant-première.

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IBM Builds Its Most Powerful Universal Quantum Computing Processors

IBM Doubles Compute Power for IBM Q Commercial Systems with New Processor

Developers, Researchers and Programmers Execute more than 300,000 Quantum Experiments on IBM Cloud

Yorktown Heights, N.Y. - 17 May 2017: IBM (NYSE: IBM) announced today it has successfully built and tested its most powerful universal quantum computing processors. The first new prototype processor will be the core for the first IBM Q early-access commercial systems. The first upgraded processor will be available for use by developers, researchers, and programmers to explore quantum computing using a real quantum processor at no cost via the IBM Cloud. The second is a new prototype of a commercial processor, which will be the core for the first IBM Q early-access commercial systems.

Launched in March 2017, IBM Q is an industry-first initiative to build commercially available universal quantum computing systems for business and science applications. IBM Q systems and services will be delivered via the IBM Cloud platform. IBM first opened public access to its quantum processors one year ago, to serve as an enablement tool for scientific research, a resource for university classrooms, and a catalyst of enthusiasm for the field. To date users have run more than 300,000 quantum experiments on the IBM Cloud.

With the introduction of two new processors today for IBM Q, the company is building the foundation for solving practical problems in business and science that are intractable even with today's most powerful classical computing systems. The two new IBM-developed processors include:

· A 16 qubit processor that will allow for more complex experimentation than the previously available 5 qubit processor. It is freely accessible for developers, programmers and researchers to run quantum algorithms and experiments, work with individual quantum bits, and explore tutorials and simulations. Beta access is available today through a new Software Development Kit available on GitHub https://github.com/IBM/qiskit-sdk-py.

· IBM's first prototype commercial processor with 17 qubits and leverages significant materials, device, and architecture improvements to make it the most powerful quantum processor created to date by IBM. It has been engineered to be at least twice as powerful as what is available today to the public on the IBM Cloud and it will be the basis for the first IBM Q early-access commercial systems.· A second experimental processor that has 16 qubits and will allow for more complex experimentation than the previously available 5 qubit processor freely accessible for developers, programmers and researchers to run quantum algorithms and experiments, work with individual quantum bits, and explore tutorials and simulations. Beta access is available today through a new Software Development Kit available on GitHub https://github.com/IBM/qiskit-sdk-py.

"The significant engineering improvements announced today will allow IBM to scale future processors to include 50 or more qubits, and demonstrate computational capabilities beyond today's classical computing systems," said Arvind Krishna, senior vice president and director of IBM Research and Hybrid Cloud. "These powerful upgrades to our quantum systems, delivered via the IBM Cloud, allow us to imagine new applications and new frontiers for discovery that are virtually unattainable using classical computers alone."

The inherent computational power of a quantum processor to solve practical problems depends on far more than simply the number of qubits. Due to the fragile nature of quantum information, increasing the computational power requires advances in the quality of the qubits, how the qubits talk to each other and minimizing the quantum errors that can occur.

IBM has adopted a new metric to characterize the computational power of quantum systems: Quantum Volume. Quantum Volume accounts for the number and quality of qubits, circuit connectivity, and error rates of operations. IBM's prototype commercial processor offers a significant improvement in the Quantum Volume. Over the next few years, IBM plans to continue to push the technology aggressively and aims to significantly increase the Quantum Volume of future systems by improving all aspects of the processors, including incorporating 50 or more qubits. Experts can learn more here: https://ibm.biz/BdiaQe.

While technologies that currently run on classical computers, such as Watson, can help find patterns and insights buried in vast amounts of existing data, quantum computers will deliver solutions to important problems where patterns cannot be found because there isn't enough data and the possibilities that you need to explore to get to the answer are too enormous to ever be processed by classical computers.

Future applications of quantum computing may include:

-- Business Optimization: Providing improved solutions to complex optimization problems found in supply chains, logistics, modeling financial data, and risk analysis;
-- Materials and Chemistry: Untangling the complexity of molecular and chemical interactions leading to the discovery of new materials and medicines;

-- Artificial Intelligence: Making facets of artificial intelligence such as machine learning much more powerful; or

-- Cloud Security: Using the laws of quantum physics to enhance the security of private data in the cloud.

For more information, please visit www.ibm.com/ibmq.

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