

## 2010

Single electron qubit developed - "Quantum Computing Leap Forward: Altering a Lone Electron Without Disturbing Its Neighbors"

Multiplexed design speeds up transmission of quantum information through a quantum communications channel - [147]

Qubits manipulated electrically, not magnetically - [151]

## 2011

Multimode quantum interference - [155]

14 qubit register - [159]

D-Wave claims to have developed quantum annealing and introduces their product called D-Wave One. The company claims this is the first commercially available quantum computer - [160]

Repetitive error correction demonstrated in a quantum processor - [161]

Diamond quantum computer memory demonstrated - [162]

Qmodes developed - [163]

Decoherence suppressed - [164]

Practical error rates achieved - [167]

Quantum computer employing Von Neumann architecture - [168]

## 2012

D-Wave claims a quantum computation using 84 qubits - [171]

Reported creation of a 300 qubit/particle quantum simulator - [175] [176]

1QB Information Technologies (1QBit) founded. World's first dedicated quantum computing software company - [178]

First design of a quantum repeater system without a need for quantum memories -

[179]

New low overhead method for fault-tolerant quantum logic developed, called lattice surgery - [183]

## 2013

First resource analysis of a large-scale quantum algorithm using explicit fault-tolerant, error-correction protocols was developed for factoring - [186]

## 2014

Documents leaked by Edward Snowden confirm the Penetrating Hard Targets project, by which the National Security Agency seeks to develop a quantum computing capability for cryptography purposes. [187] , [188], [189], [190]

Researchers in Japan and Austria publish the first large-scale quantum computing architecture for a diamond based system - [191]

Scientists transfer data by quantum teleportation over a distance of 10 feet (3.048 meters) with zero percent error rate, a vital step towards a quantum Internet [193] [194]

Nike Dattani & Nathan Bryans break the record for largest number factored on a quantum device: 56153 (previous record was 143). - [195] [196]

## 2015

Quantum error detection code using a square lattice of four superconducting qubits - [199]

D-Wave Systems Inc. announced on 22 June that it had broken the 1000 qubit barrier. - [200]

Two qubit silicon logic gate successfully developed - [201]

Quantum computer, along with quantum superposition and entanglement, emulated by a classical analog computer, with the result that the fully classical system behaves like a true quantum computer. - [202]

## 2016

IBM releases the Quantum Experience, an online interface to their superconducting systems. The system is immediately used to publish new protocols in quantum information processing - [204] [205]

Google, using an array of 9 superconducting qubits developed by the Martinis group and UCSB, simulates a hydrogen molecule. - [206]

## 2017

D-Wave Systems Inc. announces general commercial availability of the D-Wave 2000Q quantum annealer, which it claims has 2000 qubits - [208]

IBM unveils 17-qubit quantum computer—and a better way of benchmarking it. - [210]

Microsoft reveals Q Sharp, a quantum programming language integrated with Visual Studio. Programs can be executed locally on a 32-qubit simulator, or a 40-qubit simulator on Azure - [212]

Intel confirms development of a 17-qubit superconducting test chip - [213]

IBM reveals a working 50-qubit quantum computer that can maintain its quantum state for 90 microseconds - [214]

## 2018

QuTech successfully tests silicon-based 2-spin-qubit processor - [218]

Google announces the creation of a 72-qubit quantum chip, called "Bristlecone", achieving a new record. - [219]

Intel confirms development of a 49-qubit superconducting test chip, called "Tangle Lake" - [221]

On December 21, 2018, the National Quantum Initiative Act was signed into law by President Donald Trump, establishing the goals and priorities for a 10-year plan to accelerate the development of quantum information science and technology applications in the United States. - [226] [227][228]

## 2019

IBM unveils its first commercial quantum computer, the **IBM Q System One**,<sup>[229]</sup> designed by UK-based **Map Project Office** and Universal Design Studio and manufactured by Goppion - **[229]** **[230]**

**Nike Dattani** and co-workers de-code D-Wave's Pegasus architecture and make its description open to the public. **[231]** **[232]**

Austrian physicists demonstrate self-verifying, hybrid, variational quantum simulation of lattice models in condensed matter and high-energy physics using a feedback loop between a classical computer and a quantum co-processor - **[233]**

A paper by Google's quantum computer research team was briefly available in late September 2019, claiming the project has reached **quantum supremacy**. **[234]** **[235]****[236]**

IBM reveals its biggest yet quantum computer, consisting of 53 qubits. The system goes online in October 2019 - **[237]**

## 2020

<https://quantumcomputingreport.com/our-take/quantum-computing-outlook-for-2020/>

D-Wave Systems opens free access to hybrid quantum computing for coronavirus researchersGeekWire·2 days ago