2 qubits in action, new step towards the quantum computer

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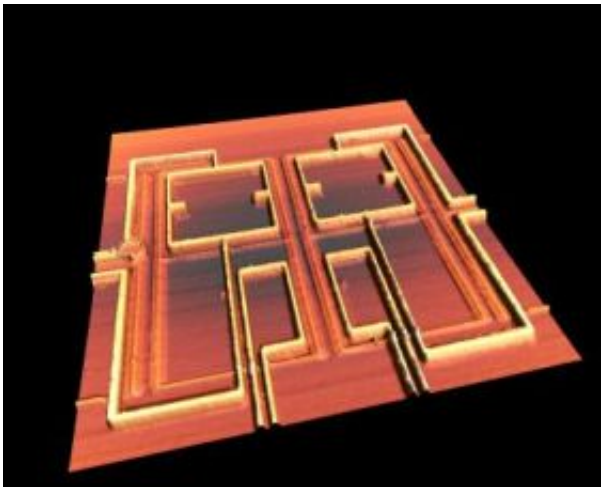

Superconducting rings on a chip. Credit: TU Delft

Researchers at Delft University of Technology have succeeded in carrying out calculations with two quantum bits, the building blocks of a possible future quantum computer. The Delft researchers are publishing an article about this important step towards a workable quantum computer in this week's issue of *Nature*.

Quantum computers have superior qualities in comparison to the type of computers currently in use. If they are realised, then quantum computers will be able to carry out tasks that are beyond the abilities of all normal computers.

A quantum computer is based on the amazing properties of quantum systems. In these a quantum bit, also known as a qubit, exists in two states at the same time and the information from two qubits is entangled in a way that has no equivalent whatsoever in the normal world.

It is highly likely that workable quantum computers will need to be produced using existing manufacturing techniques from the chip industry. Working on this basis, scientists at Delft University of Technology are currently studying two types of qubits: one type makes use of tiny superconducting rings, and the other makes use of 'quantum dots'.

Source: Delft University of Technology