Silicon Quantum Computer

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According to Moore's law, the performance (integration) of silicon electronics continues to double every 18 months. At this rate, a volume that processes one-bit of information will reach the volume of a single atom by 2030. It is therefore important to start thinking about how to store and process one-bit of information by a single atom of silicon. Information processing at such an atomic level is governed by the laws of quantum mechanics rather than classical mechanics on which today's computers are based. Therefore, single silicon atom computers are quantum computers.

In this talk I will describe the difference between quantum computers and today's computers and discuss how we may be able to bridge today's classical world and the future quantum world using silicon.

Keyword:
Quantum computer: A quantum computer makes direct use of quantum mechanical phenomena, which allow for a state 0 and 1 rather than 0 or 1 of classical computers we use everyday. As a result, superparallel computing that allows for completion of missions impossible by today's classical computer will become possible.