

Quantum Computing: basic principles, present architectures, future possibilities

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In recent years, we find almost every day news about the soon-to-be-built quantum computers and how they will open a new era by fundamentally changing today's information technology. In this talk we hope to shed light on these statements. First, we introduce the basic quantum physics principles that led to the idea of a quantum computer. Next, we review what tasks and how far classical computers are going to be surpassed by possible future large-scale quantum computers. Finally, we show some simple experiments on free cloud quantum computers: the IBM Quantum Experience Machines.