

Overview of quantum information processing

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Two pillars of science and technology in the 20th century have been quantum mechanics and information theory. Although they had historical paths with only small overlap, the decrease in the size of transistors points to a stronger correlated future. Moreover, it has been discovered in the last 15 years that manipulating information using quantum mechanics allows performing tasks that are impossible or intractable using the classical laws of physics.

I will give a review of quantum information processing, from its motivation to recent developments, emphasizing the difficulties that have been overcome and the ones ahead on the way to build quantum information processors.