

Experimental realization of Shor's quantum factoring algorithm using NMR

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Abstract

The number of steps in order to find the prime factors of an integer increases exponentially with the number of digits of the integer, for all classical algorithms known at present. However, P. Shor presented a quantum algorithm in 1996 that factors integers efficiently. Shor's quantum factoring algorithm was first realized experimentally by L. Vandersypen *et al.* in 2001 using nuclear magnetic resonance (NMR) spectroscopy. The talk presents the experimental implementation of factoring the number 15 and discusses the limits of NMR for quantum computation. Two other experimental implementations of Shor's quantum factoring algorithm are mentioned.