

Early applications of quantum computers

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Abstract: Superconducting qubits are considered leading candidates for implementing quantum computers. State-of-the-art experiments to date featured on the order of ten qubits. While that number is too small for any practical application, a question that emerges is what can be studied to learn more about the application space of small quantum computers. I will present toy examples exploring precisely this question, after describing the basic principles of superconducting qubits. In addition, I will present and summarize experiments aimed at understanding quantum errors including demonstrations of the $[2,0,2]$ and $[4,2,2]$ codes.