

Quantum Computation (QC) is a type of computation where unitary and measurement operations are executed on linear superpositions of basis states. This paper provides a brief introduction to QC, particularly emphasizing methods for quantum data compression and decompression. We also discuss a number of related topics in quantum information theory, including quantum error correction (that is, techniques for decreasing decoherence errors in QC), bounds for quantum communication and I/O complexity. Furthermore, we enumerate a number of methodologies and technologies for doing QC.