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Reversible and Quantum Circuits

Optimization and Complexity Analysis

This book presents a new optimization flow for quantum circuits realization. At the reversible level, optimization algorithms are presented to reduce the quantum cost. Then, new mapping approaches to decompose reversible circuits to quantum circuits using different quantum libraries are described. Finally, optimization techniques to reduce the quantum cost or the delay are applied to the resulting quantum circuits. Furthermore, this book studies the complexity of reversible circuits and quantum circuits from a theoretical perspective.

- Provides a comprehensive introduction to the field of reversible and quantum circuits;
- Discusses optimization and mapping technology of reversible and quantum circuits;
- Includes complexity analysis of reversible and quantum circuits.

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