

2. Basic Quantum Computing with Deutsch Algorithm

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Deutsch Algorithm

Key Concept: Discrimination

Key Concept: Phase estimation

Universal gate set

Deutsch Algorithm

Key Concept: Discrimination

Discrimination in Deutsch Algorithm

Deutsch Algorithm is only Discrimination of unitaries!

Key Concept: Phase estimation

Phase estimation in Deutsch Algorithm

Deutsch Algorithm requires Phase Estimation to get the superposition result!

Universal gate set

Prerequisite: bloch sphere and rotation gate

Example: Controlled Y gate

Approximating quantum circuits via discrete gate set

Solovay-Kitaev Theorem

- Lecture notes for EE547: Introduction to Quantum Information Processing (Fall 2024)