Chapter 12: Modular Exponentiation as a Quantum Operation

This section is already in the book plan, but it has not been written fully yet. The book owner can press Generate section to write this part with the language model connected to TheoryTrace.

Section plan:

Explains how to implement the map |x>|y> to |x>|y + a^x mod N> reversibly and efficiently. The chapter covers repeated squaring, controlled modular multiplication, workspace registers, uncomputation, and the importance of polynomial circuit size.

References

References will be added when this section is generated.

Document information

Chapter 12: Modular Exponentiation as a Quantum Operation

Project	Shor's Algorithm from First Principles
Document	Document 1.16
Author	mujirin
Verifier	Not verified
Downloaded	July 05, 2026 22:26 KST
Status	Working
Document link	https://www.theorytrace.com/projects/shors-algorithm-from-first-principles/documents/-chapter-12-modular-exponentiation-as-a-quantum-operation/