Plan of Action

P02 - Quantum Computing, Information and Quantum Technologies

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1 Objective

To gain a comprehensive understanding of the development of Quantum Computing and Quantum Information. To explore the fundamental principles, theoretical frameworks, and practical applications that define these fields today.

2 Overview

- Week 1 : Introduction to the topic, Familiarization with notation, Review of Linear Algebra.
- Week 2 : Postulates of Quantum Mechanics.
- Week 3 : Quantum Circuits : Algorithms, Qubit operations. Introduction to Qiskit.
- Week 4 : Quantum Circuits : Controlled operations, and Measurement.
- **Midterm Report Submission.**
- Week 5 : Quantum Fourier Transform and Applications : order-finding and factoring.
- Week 6 : Quantum search Algorithms.
- Week 7-8 : Applications Using Qiskit.
- **Endterm Report Submission.**

3 References

- Quantum Computation and Quantum Information - M. Nielsen and I. Chuang
- The Qiskit Textbook