Overview: Basic concepts on Quantum Mechanics

Classical physics
Part III

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Contents

Objectives

In this course [General objective] participants will...

General Objective (chap. 1)

Appraise historical facts and experiments that started the revolutionary change to Quantum Mechanics such as postulates, entanglement, superposition and others, which are used in Quantum Computing

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How do we do?

In this lecture, participants will...

Particular Objectives

- Describe the relevance of Quantum Mechanics Postulates.
- Analyze concepts on Physics and Mathematics.

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What is Quantum Mechanics?

Quantum Mechanics

Concept

is a fundamental theory in physics that provides a description of the physical properties of nature at the scale of atoms and subatomic particles.

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Summary

In our previous lectures, we discuss information about Quantum Mechanics postulates. In this lectures, we will talk about questions, concepts and equations related to Quantum Mechanics.

Kahoot

Go this kahoot (`https://tinyurl.com/ygkwmfd6`)

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About postulates

P1: What is a Hilbert space? and what is a qbit?
P2: what is an operator? Dirac notation?
P3: What does measure means in QM? What kind of probabilities we will use in QM? What tensorial product means? What does post-mesurement state mean?
P4: What tensorial product means? 2-dimensional Hilbert space?
Let us explore mathematics and other concepts
Quantum Computing and mathematics.

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Examples and exercises

1. Verify that the Hadamard gate H is unitary.
2. Verify that $H^2 = I$.
3. What are the eigenvalues and eigenvectors of H?

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Conclusions

- We described the relevance of Quantum Mechanics Postulates.
- We analyzed concepts on Physics and Mathematics.

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References

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