Overview: Basic concepts on Quantum Mechanic

Classical physics

Javier Orduz-Ducuara

[1]Baylor University

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Contents

What do we want?

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

General Objective (chap. 1)

Appraise historical facts, experiments, and mathematical concepts 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 chapter, participants will...

Particular Objectives

- Revise some Physics schemes, and its branches
- Discuss in the room about basic concepts
- Do exercise (Padlet, Kahoot, forms, and some other exercises),
- Symbolize physics concepts through mathematics concepts.

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How many branches there are in physics?

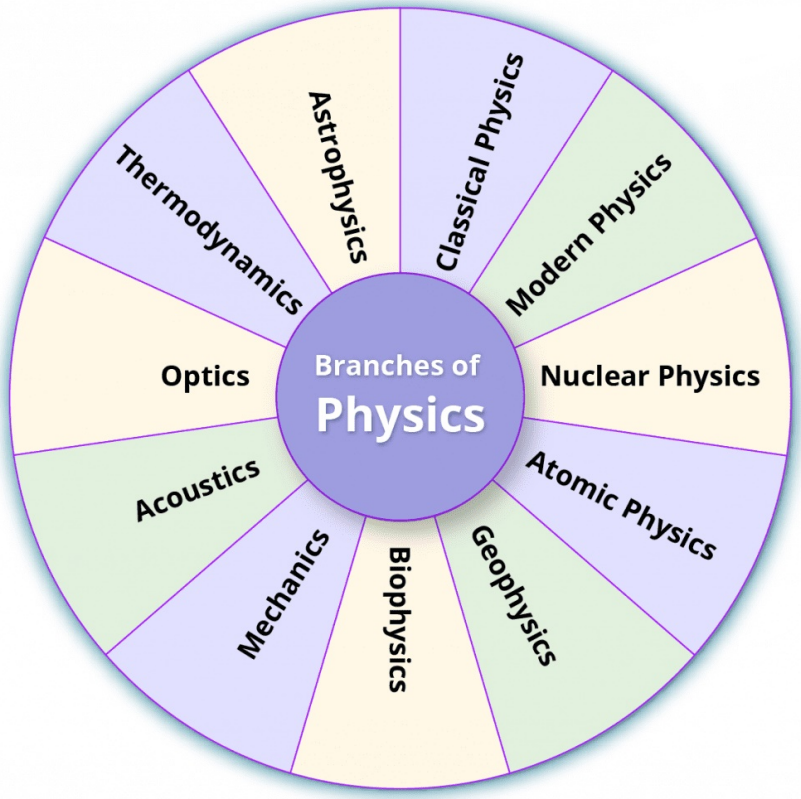

Figure: Different branches of Physics. [Figure source.]

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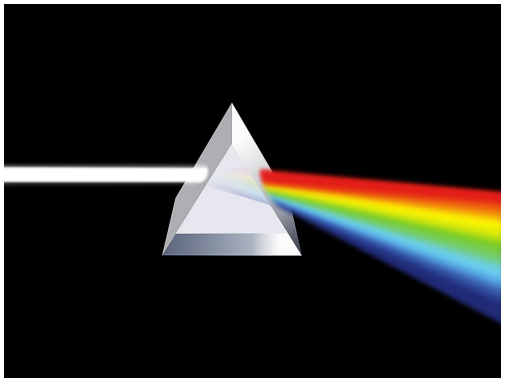
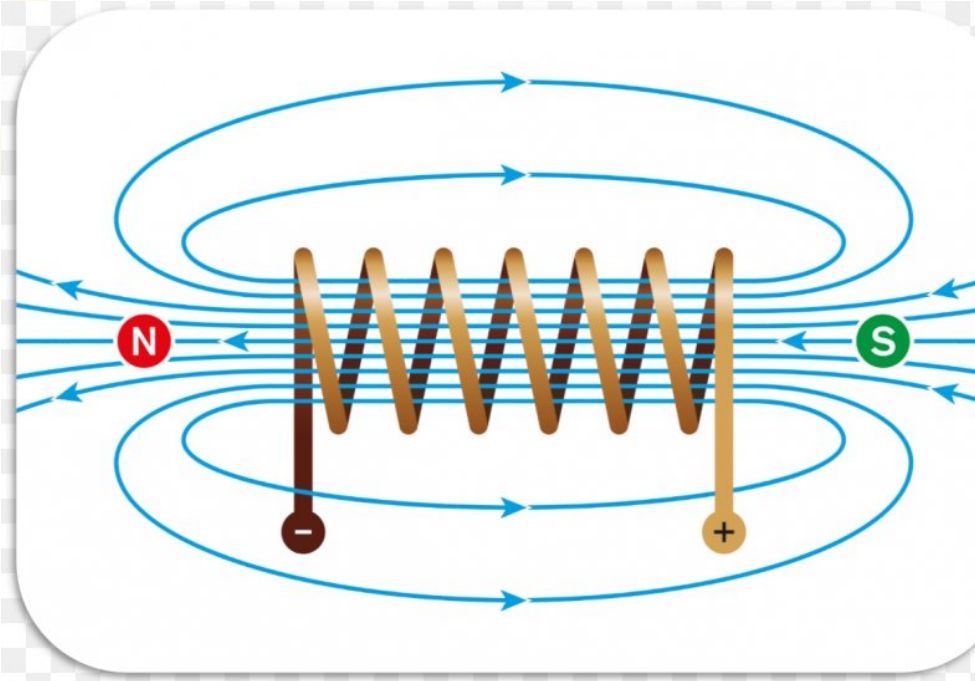
Branches

Optics
Part of the Physics dedicated to study the light.



Branches

Electromagnetism
Part of Physics which studies the relationship between electric currents and magnetic fields.



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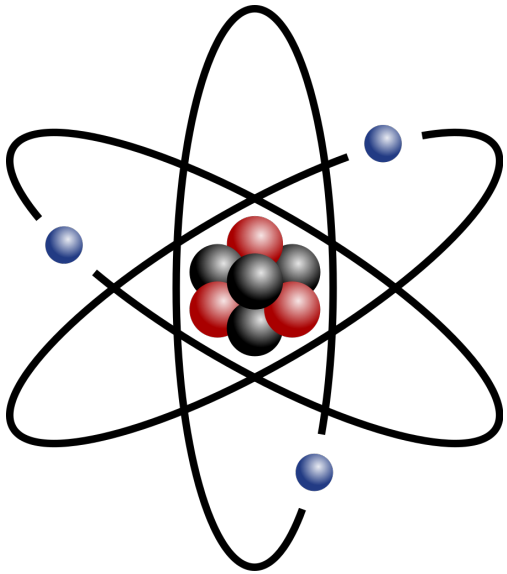
Branches

Nuclear Physics
is the field of physics that studies atomic nuclei and their constituents and interactions, in addition to the study of other forms of nuclear matter.



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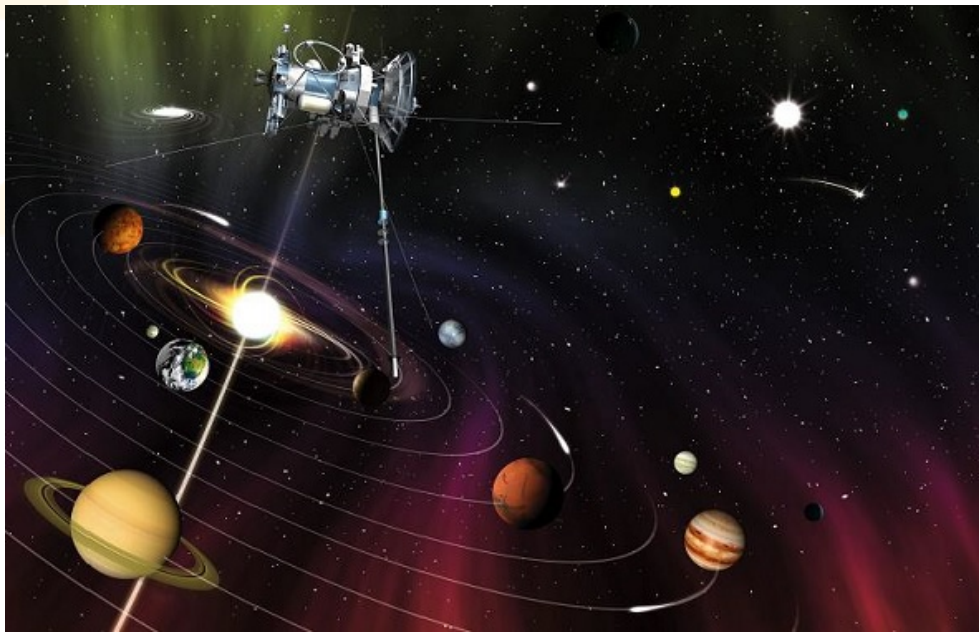
Branches

Astrophysics
is a science that employs the methods and principles of physics in the study of astronomical objects and phenomena.
Interstellar Medium Among the subjects studied are the Sun, other stars, galaxies, extrasolar planets, the interstellar medium and the cosmic microwave background



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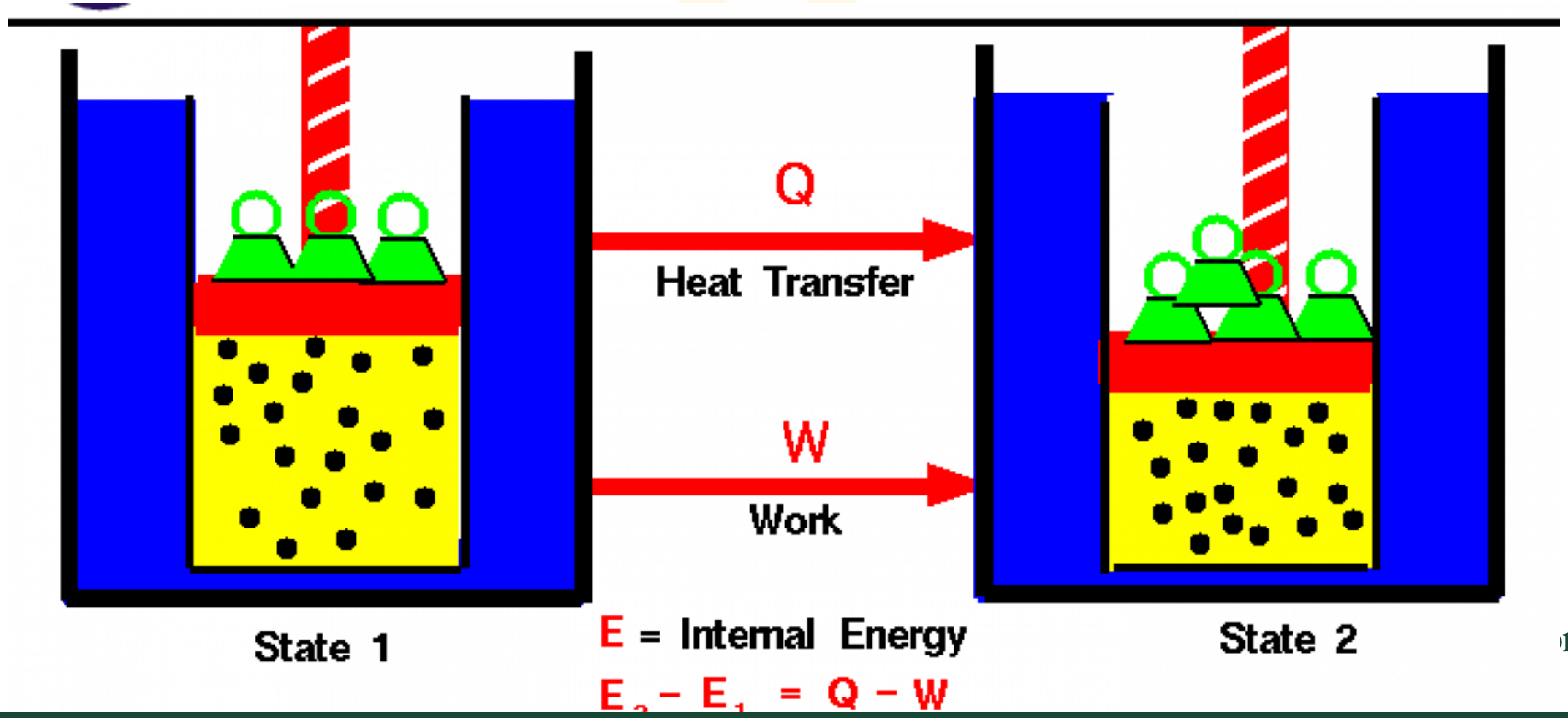
Branches

Thermodynamics

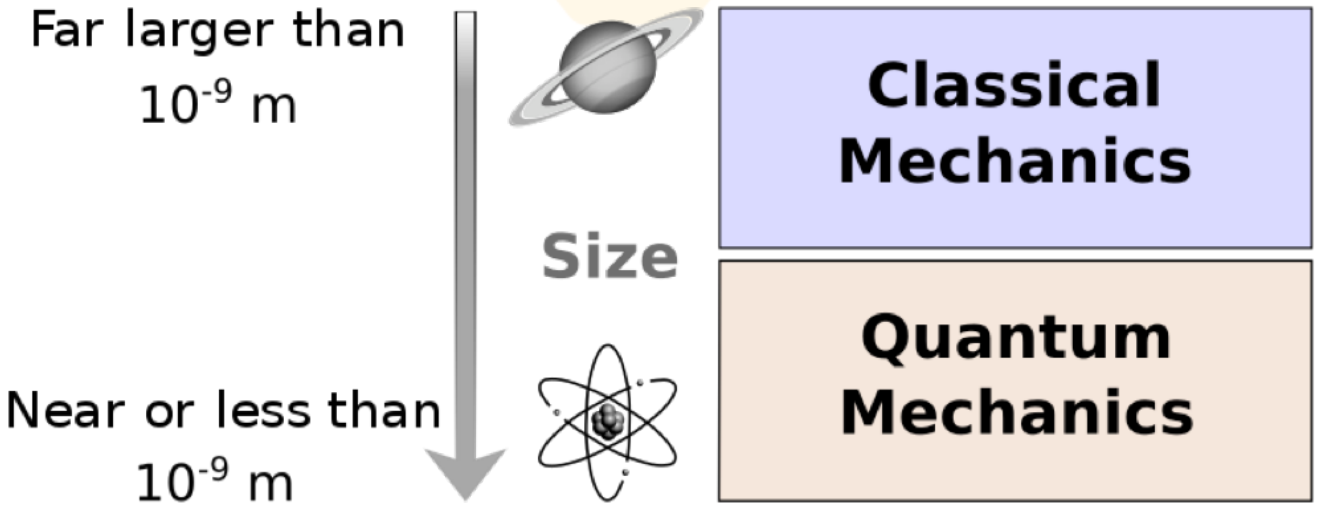
is a branch of physics that deals with heat, work, and temperature, and their relation to energy, radiation, and physical properties of matter.



Branches

Classical Mechanics

set of concepts, theories, laws and experiments considered before 1900s.



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Classical and Modern

Classical physics

is all of the physics provided by Newton, plus thermodynamics, and electromagnetism.

Modern Physics

it is the branch of the physics referred mainly because of the discovery that many physical phenomena could not be explained by the classical physics.

Modern Physics

General relativity

is a theory of gravitation developed by Albert Einstein between (1905, World Year of Physics)1907 and 1915.

Quantum Mechanics

is a fundamental theory in physics that provides a description of the physical properties of nature at the scale of atoms and subatomic particles. [(Go to slides)]

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Fundamental concepts: Newtonian's Mechanics

In this part, we will use this material [(Go to slides)] to retake some classical concepts.

Conclusions

- We revised some Physics schemes, and its branches
- We discussed in the room about basic concepts
- We did exercise (Padlet, Kahoot, forms, and some other exercises),
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Conclusions

General conclusion

We appraised 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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References

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