Hamiltonian Mechanics

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Abstract:

"In this talk, we will explore the world of Hamiltonian mechanics from classical to quantum. We discuss Hamilton's Equations and the modified Hamilton's Principle. We look at the role of Poisson brackets as operations and also how the phase space is relevant in Hamiltonian mechanics. This intuitively leads to its important roles in physics- Liouville's Theorem, Virial Theorem and a bonus toy model to investigate, Edward Zwickys Dark Matter hypothesis."

Overview

Bibliography & Image Credits

The Theoretical Minimum: What You Need to Know to Start Doing Physics

Susskind, Leonard, and George Hrabovsky

New York: Basic Books, 2014

Classical Dynamics of Particles and Systems

Bradley W. Carroll and Jerry B. Marion

Addison Wesley Publishing Company

No-Nonsense Classical Mechanics: a Student-Friendly Introduction

Schwichtenberg, Jakob

Karlsruhe, Germany: No-Nonsense Books, 2020

Physics from Symmetry

Schwichtenberg, Jakob

Springer International Publish, 2018