

# **CLASSICAL FIELD THEORY**

## A Quick Guide

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## Preface

Greetings,

*Classical Field Theory, A Quick Guide to* is compiled based on my independent study PH492: Topics in Classical Field Theory notes with professor Robert Bluhm. Sean Carroll's *Spacetime and Geometry: An Introduction to General Relativity*, along with other resources, serves as the main guiding text.

This text is a continuation of *General Relativity and Cosmology, A Quick Guide to*. Familiarity with classical mechanics, linear algebra, vector calculus, and especially general relativity is expected. I will not be covering a review of general relativity, but instead will jump directly into an introduction to field theory and the Lagrangian formulation of general relativity and Einstein equations.

Enjoy!

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# 1 Introduction to Classical Field Theory

## 1.1 Overview of Lagrangian Formulation of Classical Mechanics

## 1.2 The Lagrangian in field theory

## 1.3 Field Theory: A Mechanical Example

## 1.4 Field Theory: An Electromagnetic Example