PH4154
Nuclear and Particle Physics

Introduction

August 1, 2025

Details

Instructor: Sourabh Dube (A362, sdube@iiserpune.ac.in)

TA: Bapi Basak (bapi.basak@students.iiserpune.ac.in)

Additional support (specifically for termpapers) :

"experimental" topics: Prachurjya Hazarika (prachurjya.hazarika@students)
Riya Sharma (riya.sharma@students)
"theoretical" topics: Dhruva K S (k.s.dhruva@students)
Supritha Bhowmick (supritha.bhowmick@students)

Website: http://sites.iiserpune.ac.in/~sdube/ph4154/

Course contents

- Historical development
- Particles and their interactions
- Symmetries in particle physics
- Feynman calculus
- Introduction to experimental particle physics
- Models of nuclei
- Review of KG and Dirac equation.
- Assorted topics (symmetry breaking, neutrino oscillations)

Notes

I may not post notes regularly. (I may, I may not – so take notes)

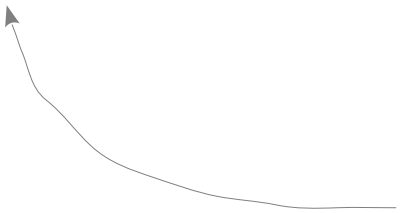
I may put up interesting relevant things to read, but broadly you are on your own.

I do intend to follow textbooks ... I will let you know where I am sourcing material from.
I am happy to have regular office hours if people wish.

Introduction to Elementary Particles, D. Griffiths (Wiley)
Particle Physics, B. R. Martin and G. Shaw (Wiley)
Introductory Nuclear Physics, Kenneth S. Krane

Assessment

Quiz 1	10%	September 19
MidSem exam	30%	September 29
EndSem exam	35%	November 22
TermPaper	25%	Details Dates: **Sep 10, Nov 7**



We shall discuss details next Friday when everyone is here.

Chapter 3 of the Griffiths particle physics book covers relativistic kinematics.
This is left for **self-study**.
I will post some notes, and one assignment.
This assignment will be solved/discussed in class on August 14^{th}.

I will post assignments on the webpage regularly. These will help you practice for the midsem/endsem exam.

Solutions will be posted in 10-15 days of the assignment – but you can discuss it with the TA (Bapi).