Collider Particle Physics

Introduction to the course

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Chapter Summary

- Class schedule
- Programs
- Books
- Exam
- …..

How to contact the teacher

- **Professor: Claudio Luci; claudio.luci@roma1.infn.it**
  office: Marconi Building, second floor, room 251-A
  tel. 06 49914334

- **Assistant Professors: Massimo Corradi; massimo.corradi@roma1.infn.it**
  Stefano Rosati; stefano.rosati@roma1.infn.it

- **Web site: http://www.roma1.infn.it/people/luci/corso_cpp.html (try this link)**

- **reception time:**
  - **Monday: 11-12 (in my office) ; or 15-19 (in the LabSS)**
  - **Tuesday: 12-13 (in my office); or 16-18 (in my office)**
  - **Wednesday: 10 – 12 (in my office)**

  - **or send me an email to choose a date**

Class Schedule

Course of 6 CFU: 3 CFU lectures + 3 CFU exercises
→ 3 x 8 + 3 x 12 = 60 hours in the classroom

- **Class times:**
  - **Monday: 14-15; Tuesday: 14-16; Wednesday: 8-10 Careri Classroom, Marconi Building**

- **First Lecture: Wednesday September 25th; Last Lecture: Wednesday December 18th**
  - **→ 37 days = 62 hour lectures**

- **In principle we have a few more hours in January, that we could use as backup, just in case..**

Lesson Program

- ***Historical Overview of Particle Physics (not in the program)***
- **Accelerators and Colliders**
- **The first hadron collider: the ISR at CERN**
- **A reminder of the Standard Model Principles**
- **Discovery of the W and Z at the SppS**
- **LEP Physics (Lep1 and Lep2)**
- **Hera Physics (deep inelastic scatterring and more)**
- **LHC Collider**
- **Discovery of the Higgs boson at LHC**
- **Precision Physics at LHC**
- **Top quark physics at LHC and Tevatron**
- **New Physics searches at LHC**
- **CP violation in the B_0 system at B factories** **(if we will run out of time, it will be excluded from the program)**

Bibliography

- Nuclear and Particle Physics; Burcham and Jobes; Pearson Prentice Hall
- Elementary Particle Physics Yorikiyo Nagashima – Wiley VCH – 3 vol
- Mark Thomson; Modern Particle Physics (2013) Cambridge University Press
- Introduction to Particle Physics; A.Bettini
- Martin – Shaw; Particle Physics
- Perkins; Introduction to high energy physics
- Particles and Nuclei; Povh, Rith, Scholz, Zetsche;
- Griffiths; Introduction to high energy physics
- Halzen-Martin; Quark & Leptons
- Cahn-Goldhaber; experimental foundations of particle physics

- Slides presented during the lectures that you can find on my web page
- Other material that I have and/or I will put on my web page

http://pdg.lbl.gov/

Exams

- **It is oral only.**

1. you can choose the first topic among the ones presented during the lectures

2. Then we will ask two more questions

Pay attention: *I am used to give also a ``historical" introduction of the different subjects in order to better understand why some choises were done instead of others, or to understand what were the people feelings and/or the technical challenges at that time, but the "history" is not part of the exam, so don't focus on these parts.*

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End of chapter -1