Introduction to Elementary Particle Physics 1

Lectures and Seminars: 4 hours each week:
Wednesday 15^{00} to 17^{00} NFTMC B435,
Monday 14^{00} to 16^{00} NFTMC A435

02/06 Overview, Introduction; discussion of homework and of seminar talks

02/07 Historical Particles

02/11 Historical Particles

02/13 Elementary particle dynamics: QED

02/18 Elementary particle dynamics: QCD

02/20 Elementary particle dynamics: weak

02/25 Elementary particle dynamics: embedding parton processes

02/27 Elementary particle dynamics: exercises

03/04 Special Relativity: 4 vectors + invariants + characterisation

03/06 Special Relativity: energy, momentum, mass, time dilation, length contraction

03/13 Special Relativity exercises: 4 vectors + . . . , energy, momentum, mass, . . .

03/18 Special Relativity: collisions

03/20 OpenReading conference

03/25 Special Relativity exercises: collisions

03/26 17:30, NTFMC D401: Dr. Christoph Schäfer, CERN

03/27 Special Relativity: Lorentz transformations

04/01 Special Relativity exercises: Lorentz transformations

04/03 Special Relativity homework 1

04/08 Special Relativity homework 2

04/10 Symmetries 1

04/24 Symmetries 2

04/29 Symmetries 3

05/02 Symmetries exercises

05/06 Symmetries Homework

05/08 Presentations

05/13 Repetition of Homework

> 05/15 Exam

Attendance required;

Homework suggested; will count towards the grade; less credit for late homework;

Grading: 100 points = 100%,

30 homework and presentation of homework

20 seminar presentation and attendance: meaning active participation

50 final exam: written and oral; 50% required to pass the course.

email: `tgajdosik@yahoo.com` **NTFMC A431**

webpage: `http://web.vu.lt/ff/t.gajdosik/wop/` (will be updated)

Books are available

Seminar presentation

The idea of the presentation is to involve the students into the discussion about particle physics and related areas.

The student chooses a subject for the presentation and clarifies with me, if the subject is suitable or not. If it is suitable the student will get a time during the lecture to present the subject to the fellow students. The presentation can be given in English or in Lithuanian. The presentation should be rather short, i.e. about 5 minutes, and it has to be presented using the computer.

- The presentation has to be prepared in a computer readable format:
  - **.pdf** is recommended
- The presentation should be given orally. It is recommended, that the student does not just read a text, but explains the subjects freely in his own words.
- The student should be able to answer questions from his fellow students. That does not mean, that he has to have all the answers.

The presentation helps also practicing the necessary presentation of the bachelor thesis at the end of the students bachelor studies.

Homework

Without calculating some problems any lecture in theorectical physics remains a fairy tale. In that sense the homework is required to profit from this lecture. The solving of problems helps to understand, whether the student has understood the material or not. At the exam it is too late to recognise, that one has not learned the required material.

The students are invited to come before the homework is due to discuss the problems and ask. I will gladly help them to understand the problem and guide them to the solution. The best way to arrange for a meeting is to write an email to arrange a time, as I can not guarantee that I will have always immediately time for the questions or that I will be always in my room (NTFMC A431).

I do not plan to give points for homework that is brought much later than its due date. It will nevertheless help to do the homework, even if it is late, as the exam will have questions and problems to solve similar to the home, too.

Exam

The exam will be a written test, that I want to discuss afterwards with the student.