

(Introduction to) Elementary Particle Physics 1

Lectures and Seminars: 4 hours each week:

Tuesday 15⁰⁰ to 17⁰⁰; lecture hall 211,

Wednesday 11⁰⁰ to 13⁰⁰; lecture hall 211

- 09/05 Overview, Introduction; discussion of homework and of seminar talks
- 09/05 Historical Particles
- 09/06 Historical Particles
- 09/12 Elementary particle dynamics: QED – students presenting
- 09/13 Elementary particle dynamics: QCD – students presenting
- 09/19 no lecture: conference in Poland
- 09/20 no lecture: conference in Poland
- 09/26 Elementary particle dynamics: weak – students presenting
- 09/27 epd: embedding parton processes – students presenting (???)
- 10/03 epd: exercises (means: "students to the blackboard / presenting / discussing")
- 10/04 epd: exercises (means: "students to the blackboard / presenting / discussing")
- 10/10 no lecture: conference in Riga
- 10/11 no lecture: conference in Riga
- 10/17 Special Relativity: 4 vectors + invariants + characterisation
- 10/18 Special Relativity: energy, momentum, mass, time dilation, length contraction
- 10/25 Special Relativity exercises: 4 vectors + ..., energy, momentum, mass, ...
- 10/26 Special Relativity exercises: 4 vectors + ..., energy, momentum, mass, ...
- 10/31 Special Relativity: collisions
- 11/01 Public Holiday: All Saints day
- 11/07 Special Relativity exercises: collisions
- 11/08 Special Relativity exercises: collisions
- 11/14 Special Relativity: Lorentz transformations
- 11/15 Special Relativity exercises: Lorentz transformations
- 11/21 Special Relativity homework presentations 1
- 11/22 Special Relativity homework presentations 2
- 11/28 Symmetries 1
- 11/29 Symmetries 2
- 12/05 Symmetries 3
- 12/06 Symmetries exercises
- 12/12 Symmetries homework
- 12/13 Repetition of homework, questions
- > 12/18 Exam

Attendance required;

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

Grading: 100 points = 100%,

25+ homework and presentation of homework

25+ seminar presentation and attendance: meaning active participation

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

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NTFMC A431

webpage: <http://web.vu.lt/ff/t.gajdosik/epp1/> (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 students should distribute the content of the second chapter of Griffith, *Introduction to Elementary Particles*, and present their part during the lecture to the fellow students. The presentation can be given in English or in Lithuanian. The presentation should be rather short, i.e. about 10 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 theoretical 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 plan to give less 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 homework.

Exam

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