

Advanced Field Theory (C003210)

Course size *(nominal values; actual values may depend on programme)*

Credits 6.0

Study time 180 h

Course offerings in academic year 2024-2025

A (semester 1)

English

Gent

Lecturers in academic year 2024-2025

Craps, Ben

VUB

lecturer-in-charge

Offered in the following programmes in 2024-2025

[Master of Science in Teaching in Science and Technology\(main subject Physics and Astronomy\)](#)

crdts

6

offering

A

[Master of Science in Physics and Astronomy](#)

6

A

Teaching languages

English

Keywords

Position of the course

Contents

- 1 Use of symmetries to fix theories
- 2 Poincaré algebra, its representations and the implied properties of particles
- 3 Kaluza-Klein idea of extra dimensions
- 4 Extensions of the symmetries to supersymmetry
- 5 Strings as classical and quantum mechanical field theory.
- 6 Description of theories of superstrings and duality

Initial competences

The course is aimed at students who have already studied the basics of field theory, electromagnetism and gravity (relativistic).

Final competences

The student comes in contact with the state of present research on fundamental interactions and the ideas and methods used therein, among other things by reading selected articles.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Lecture

Study material

None

References

Course content-related study coaching

Assessment moments

end-of-term assessment

Examination methods in case of periodic assessment during the first examination period

Oral assessment, Assignment

Examination methods in case of periodic assessment during the second examination period

Oral assessment, Assignment

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

The students study an article or text including questions or exercises. They hand in a text which makes clear that they have done computations and present their work for the other students. The mark is based on the text that was handed in and on the presentation.

Calculation of the examination mark

Paper: 50%

Presentation: 50%