

Physique des particules

Lecturer

Barbara CLERBAUX (Coordinator)

Course mnemonic

PHYS-F416

ECTS credits

5 credits

Language(s) of instruction

French

Course period

First term

Course content

Fundamental concepts in particle physics. Neutrinos and neutrino oscillations. Introduction to the Standard Model (SM) of electroweak interactions, the Brout-Englert-Higgs mechanism. Experimental tests of the SM, latest results on the study of the BEH boson at CERN. Introduction to the CKM matrix and to CP violation.

Objectives (and/or specific learning outcomes)

The course provides an integrated understanding of fundamental interactions grounded in particle physics. The course associates theoretical and experimental aspects. It studies some key questions in particle physics, and describes the building of the Standard Model (SM) in particle physics.

Teaching method and learning activities

The course is taught at the blackboard or from slides. Personal work consists of two parts : (i) advanced exercises and (ii) applications : measurement of the forward backward asymmetry using the data collected by the CMS experiment at CERN.

References, bibliography and recommended reading

"Introduction to Elementary Particles", David Griffiths, 2nd Revised Edition (2008), Wiley-VCH

"Introduction to High Energy Physics", D. H. Perkins, Cambridge University Press (4th edition), ISBN 0 521 621968

"Particle Physics", B.R.Martin and G. Shaw, Wiley (3rd edition)

"An introduction to the Standard Model of Particle Physics", W.N. Cottingham and D.A. Greenwood, Cambridge

Other information

Contact(s)

B. CLERBAUX - IIHE (ULB-VUB) - Téléphone: 02 629 3214 - e-mail: bclerbau@ulb.ac.be

Evaluation method(s)

Other

Evaluation method(s) (additional information)

Oral examination and reports on the personal works.

Determination of the mark (including the weighting of partial marks)

The mean is taken between the result from the oral examination and the results from the personal works, weighed proportionally to the ECTS.

Main language(s) of evaluation

French and English

Programmes

Programmes proposing this course at the faculty of Sciences

MA-PHYS | **Master in Physics** | finalité Research/unit 1 and finalité Teaching/unit 1