Théorie de la gravitation

Lecturers
Stéphane DETOURNAY (Coordinator) and Frank FERRARI

Course mnemonic
PHYS-F432

ECTS credits
5 credits

Language(s) of instruction
French

Course period
First term

Campus
Plaine

Course content

Reminder on special relativity; the Principle of Equivalence; the geometric description of space-time: tensor calculus, covariant derivatives, curvature; the energy-momentum tensor; the Einstein's equations; Applications: the spherically symmetric field, the Schwarzschild's solution, solar system experiments, black holes, introduction to cosmology.

Objectives (and/or specific learning outcomes)

To present the relativistic theory of gravitation and its classic applications.

Pre-requisits and co-requisits

Course having this one as co-requisit

PHYS-F418 | Advanced general relativity | 5 crédits

Teaching method and learning activities

Online lectures and problem solving by the students

References, bibliography and recommended reading

Weinberg, Gravitation and Cosmology; Misner et al., Gravitation; Hawking and Ellis, The large scale structure of space-time; Hartle, Gravity; Price, General Relativity Primer

Course notes

Université virtuelle

Other information

Place(s) of teaching

Plaine

Contact(s)

Adrien Fiorucci (afiorucc@ulb.ac.be)

Evaluation method(s)

Other

Evaluation method(s) (additional information)

First session: personal work and 2 or 3h written exam.

Second session: written or oral exam

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

First session:

1) Personal work: 50% of the grade; Written exam: 50% of the grade.

Main language(s) of evaluation

French

Programmes

Programmes proposing this course at the faculty of Sciences

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