



PHY1323 General Relativity

[30h+15h exercises] 5 credits

This course is taught in the 2nd semester

Teacher(s): Jean-Marc Gérard
Language: French
Level: First cycle

Aims

A detailed description of general relativity, including the mathematical tools needed. Introduction to Einstein and Lemaitre's cosmology.

Main themes

1. Introduction : from Newton's theory of gravitation to Einstein's equivalence principle.
2. Mathematical tools : differential geometry; tensors
3. Tests of general relativity around a massive spherical object : gravitational redshift and time dilatation; precession of Mercury perihelion; light deflection; radar echo; black holes; gravitational waves.
4. Cosmology : from Einstein's static universe to Lemaitre's expanding universe.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisites: theory of restricted relativity

Other credits in programs

FSA13BA	Troisième année de bachelier en sciences de l'ingénieur, orientation ingénieur civil	(5 credits)	
MAP22	Deuxième année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(5 credits)	
PHYS13BA	Troisième année de bachelier en sciences physiques	(5 credits)	Mandatory