PHYS-504

Modern approaches to quantum gravity

Guica Monica Maria

Cursus	Sem.	Type
Ing.-phys	MA1, MA3	Opt.
Physicien	MA1, MA3	Opt.
Physics		Obl.

Language of teaching	English
Credits	8
Session	Winter
Semester	Fall
Exam	Oral
Workload	240h
Weeks	14
Hours	**4 weekly**
Courses	2 weekly
Exercises	2 weekly
Number of positions	

Summary

This course is an introduction to holography, the modern approach to quantum gravity.

Content

1. Motivation from black hole thermodynamics
2. The very basics of string theory
3. Statement of the correspondence (discussion of the decoupling limit)
4. A basic introduction to CFT and to the geometry of AdS
5. Computing correlation functions (time permitting: holographic renormalization, real time, finite temperature)
6. Entanglement and the emergence of gravity (time permitting)
7. Beyond AdS/CFT: non-conformal and other backgrounds (time permitting)

Keywords

AdS/CFT, holography

Learning Prerequisites

Required courses

General Relativity, QFT

Teaching methods

blackboard lectures + TA sessions
there will be handwritten lecture notes + recommended literature

Assessment methods

oral exam

Supervision

Assistants	Yes
Others	TA: Adrien Martina

Resources

Moodle Link

- https://go.epfl.ch/PHYS-504