PHYS-504

Modern approaches to quantum gravity

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Cursus	Sem.	Type
Physicien	MA1, MA3	Opt.
Physics		Obl.

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

Remark

MA3 only

Summary

This course is an introduction to holography, the modern approach to quantum gravity. The 2026-2027 edition will consist of 3 parts taught by 3 different external teachers.

Content

1. Confomal Field Theory
2. S-matrix Bootstrap
3. The strong CP problem

Keywords

Conformal Field Theory, S-matrix Bootstrap, AdS/CFT, holography

Learning Prerequisites

Required courses

General Relativity, Quantum Field Theory I and II

Recommended courses

Quantum Field Theory III

Learning Outcomes

- Formulate conformal and S-matrix bootstrap problems

Transversal skills

- Continue to work through difficulties or initial failure to find optimal solutions.
- Assess one's own level of skill acquisition, and plan their on-going learning goals.

Teaching methods

Lectures + exercise sessions

Assessment methods

oral exam

Supervision

Assistant.e.s	Yes

Resources

Moodle Link

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