

PHYS-720

Quantum Chaos and Black Holes

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Cursus	Sem.	Type
Physics		Opt.

Contact language	English
Credits	1
Session	
Exam	Oral
Workload	30h
Hours	20
Lecture	20
Number of positions	

Frequency

Only this year

Summary

This class will introduce quantum chaos and its connection to black holes and quantum gravity. We will first review chaos in classical mechanics, before turning to semi-classical chaos and random matrix theory, thermalization and the Eigenstate Thermalization Hypothesis.

Content

This class will introduce quantum chaos and its connection to black holes and quantum gravity. We will first review chaos in classical mechanics, before turning to semi-classical chaos and random matrix theory, thermalization and the Eigenstate Thermalization Hypothesis. We will then turn to quantum gravity, and study scrambling in black holes and the butterfly effect, the bound on chaos. Finally, we will discuss spectral and operator statistics in chaotic conformal field theories and discuss gravitational wormholes.

Note

Host: V. Gorbenko

Keywords

Chaos, Random Matrix Theory, Black Holes

Learning Prerequisites**Recommended courses**

Quantum Field Theory I, II