UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

## Quantum Chaos And Black Holes

**2425-1-113R-08**

### Aims

An introduction to quantum chaos, and its connection to the physics of quantum black holes.

### Contents

Introduction to classical chaos, quantum chaos and random matrix theory. BGS conjecture and semi-classical chaos. Thermalization and scrambling, the bound on chaos. JT gravity as a matrix integral, the black hole information paradox, quantum chaos and CFTs, a tensor model for 3D gravity.

### Detailed program

PhD Class on Quantum Chaos and Black Holes

For more information on the topics covered, see syllabus.

The class will be held:

Tuesdays 12,19, 26 of November + Dec 10 - 16.30-18.30 @ U2-03
Wednesdays 13,20,27 of November + Dec 11 - 9.30 - 11.30 @ U2 - Room 5017

### Prerequisites

Most of the class can be followed simply with a background in quantum mechanics. For the later part of the class, a knowledge of QFT is required and I will assume at least basic knowledge of the AdS/CFT correspondence.

## Teaching form

Lectures

## Textbook and teaching resource

Lexture notes with references will be available

## Semester

Fall

## Assessment method

Pass/fail based on presence/interaction during the class.

## Office hours

By e-mail

## Sustainable Development Goals