Institut de Physique Théorique

Theoretical physics courses

The space of holographic CFTs

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From 10:15 to 12:30 the 10th, 17th, 24th, 28th, 31st of March 2023. In person at IPhT and online.

This course will provide a modern point of view on the wide world of large N conformal field theory (CFT) in diverse spacetime dimensions, placed in the context of the conformal bootstrap and the AdS/CFT Correspondence.

Some questions we will tackle:

- What is a "Holographic CFT"?
- When does a CFT give rise to an equivalent, emergent simple gravity description?
- What is the conformal bootstrap, and how is it used to constrain and classify the space of consistent large N CFTs and theories of quantum gravity?
- Is string theory the only choice? How can we detect strings and extra dimensions from properties of field theories?
- What precise predictions does quantum gravity seem to make about the space of strongly coupled CFTs?

Provisional lecture plan:

Lectures I and II: Introducing CFTs and their data, large N conformal bootstrap, AdS/CFT, and the notion of "Holographic CFT"

Lecture III: Correlation functions and holography

Lecture IV: Bootstrapping the space of Holographic CFTs

Lecture V: Special focus: Two-dimensional CFTs and AdS_3 gravity

To receive the latest news on this course, please subscribe to its newsletter at the website `courses.ipht.fr`.
Restricted, interactive video-conference: subscription to the course newsletter is compulsory to receive the links.
Open, non-interactive livestream at `youtube.com/ipht-tv`.

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