## SEMPARIS – Séminaires en région parisienne

http://string.lpthe.jussieu.fr/semparis/

## **Cours**

## Vendredi 18 Octobre 2019, 10:00

IPHT, Salle Claude Itzykson, Bât. 774( https://courses.ipht.cnrs.fr/?q=en/node/226

Domaines: hep-th—math-ph—quant-ph

Titre: Lorentzian methods in conformal field theory (4/4)

Orateur: Slava Rychkov (IHES, ENS)

Résumé: Paraphrasing Alexander Polyakov, "Conformal Field Theory is a way to learn about elementary particles by studying boiling water". There is a technical statement behind this joke: Euclidean Conformal Field Theory, under certain conditions, can be rotated to the Lorentzian signature, and vice versa. This means that even statistical physicists studying finite-temperature phase transitions on a lattice should learn about the Minkowski space! The goal of this course will be to explain various classical and recent results pertaining to this somewhat surprising conclusion.

## Plan of the course:

- Elementary introduction to Euclidean CFT in d> 2 dimensions;
- The Osterwalder-Schrader theorem about the Wick rotation of general reflection-positive Euclidean Quantum Field Theories, and its limitations;
- The Luescher–Mack theorem about continuation of CFT correlation functions to the Lorentzian cylinder, and its limitations;
- Recent results about the analytic structure of Lorentzian CFT correlators.