



Cours de physique théorique

agrégé par l'École doctorale « Physique en Île-de-France » – ED PIF

Bootstrapping Conformal Theories in Arbitrary Dimension

Sheer El-Showk

LPTHE, Jussieu

Miguel Paulos

CERN, Genève

*Les vendredis 11, 18, 25 septembre
et 2, 9, 16 octobre 2015 à 10h00.*

Conformal field theories (CFTs) are special kinds of quantum field theories with enhanced spacetime symmetry, relevant in a variety of systems ranging from condensed matter to quantum gravity.

In these lectures we shall discuss CFTs in general spacetime dimension and then focus on the so-called conformal bootstrap, which highly constrains the structure of these theories. This will include a derivation of various necessary concepts such as the OPE, crossing symmetry and conformal blocks. We will then describe how the modern bootstrap reformulates crossing symmetry as a numerical problem that can be systematically studied and solved on a computer. Finally we will show how these methods have been used to achieve state-of-the-art results on important problems in strongly coupled physics such as the three dimensional Ising model.

Lieu : IPhT, CEA Saclay, Orme des Merisiers, Bât. 774, p. 1A Salle C. Itzykson.

Accès : navettes CEA du RER B Le Guichet vers CEA Ormes, toutes les 15 minutes de 8h00 à 9h45, ou bus publics Mobicaps 9 et 10, Albatrans 91.06 et 91.10.

Renseignements : <http://ipht.cea.fr> ou ipht-lectures@cea.fr