

Conformal Field Theories in Higher Dimensions (Back to the Bootstrap 3)

Tuesday 21 May 2013 - Friday 31 May 2013

CERN

Scientific Programme

Talks take place in CERN TH Conference Room; coffee breaks in CERN TH Common Room

Week 1

Tuesday, May 21

Morning session "Precision bootstrap" 9:30 am - 12:00 am (w/coffee break)

Chair: David Poland

Presenters:

Sheer El-Showk "Spectrum extraction: case study in the 2d Ising model" (1211.2810)

David Simmons-Duffin "Status of the 3d Ising project"

Afternoon session "Bootstrap in SUSY theories" 14:00 - 16:30 (w/coffee break)

Chair: Leonardo Rastelli

topics to be discussed: conformal bootstrap in $N=4$ SYM (1304.1803) and related

Wednesday, May 22

Morning session "Conformal blocks" 9:30 am - 12:00 am (w/coffee break)

Chair: Hugh Osborn

Presenters:

Slava Rychkov about the “Rho coordinate” (1303.1111)

Matthijs Hogervorst about the “Diagonal limit” (1305.1321)

Liam Fitzpatrick about the “Large D limit” (1305.0004)

<u>Afternoon talk</u>: TH colloquium 14:00

John Cardy “Entanglement in Quantum Field Theory”

Thursday, May 23

<u>Morning session</u> “Lattice studies of CFTs” 9:30 am - 12:00 am (w/coffee break)

Presenters:

Agostino Patella about lattice studies of the conformal gauge theories

Richard Brower about "lattice radial quantization approach" to 3d Ising

<u>Afternoon session</u> “Constraints from RG flows” 15:00 - 17:30 (w/coffee break)

Chair: Riccardo Rattazzi

Presenters:

Boaz Keren-Zur "Probing RG flows with a background dilaton"

Sergey Solodukhin about "Entanglement entropy and a-theorem"
(1304.4411)

Friday, May 24

Morning session "Conformal defects" 9:30 am - 12:00 am (w/coffee break)

Chair: John Cardy

Presenters:

Marco Meineri "Line defects in 3d Ising model"

Balt van Rees "Bootstrap program for boundary CFT_d"

Afternoon session "Constraints from Minkowski signature" 14:00 - 16:30 (w/coffee break)

Presenters:

Jared Kaplan about AdS Locality and the "Callan-Gross theorem"

Alexander Zhiboedov "Topics in Lorentzian CFT"

Week 2

Monday, May 27

Morning talk: 10:00

Hugh Osborn “A metric for four dimensional QFTs?”

Afternoon talk: 14:00

Gerhard Mack “Bootstrap approach to General Relativity with cosmological constant”

Tuesday, May 28

Afternoon talk: 14:00

Cornelius Schmidt-Colinet “Lower bound on boundary entropy in 2d CFTs”

Abstract: We derive a lower bound on the entropy of boundary states in a class of two-dimensional conformal field theories by a simple application of the linear functional method. The bound holds for gapped unitary theories with central charge greater than one. By including the first few states of the bulk spectrum, one can obtain information on the boundary spectrum and multiplicities that a boundary state satisfying the bound should have.

Wednesday, May 29

Morning talk: 10:00

Anatoly Dymarsky “On the four-point function of the conserved currents and stress-energy tensors in a CFT”

Abstract: We discuss to what extent the full set of symmetries, i.e. conformal symmetry and general diffeomorphisms, constraint the form of the four-point correlation function of the stress-energy tensors and conserved currents in a general conformal field theory. At the level of the 4pt function we confirm the hypothesis that the number of the unconstrained degrees of freedom coincides with those of the scattering amplitude (of the gravitons/gauge bosons) in $d+1$ dimensional Minkowski space. We also outline a way to formulate the bootstrap equations in terms of only unconstrained degrees of freedom.

Afternoon talk: TH colloquium 14:00

Leonardo Rastelli “The Superconformal Bootstrap Program”

Abstract: In the past few years our understanding of CFTs in higher dimensions has dramatically advanced. General structural properties have been clarified, many new (supersymmetric) theories have been constructed, and powerful new tools have been developed. A surprisingly versatile and effective tool is the modern incarnation of the conformal bootstrap. In this talk I will illustrate some of these new ideas focussing on $N=2$ and $N=4$ superconformal field theories in four dimensions. I will outline the (complete?) catalogue of these theories that has emerged in recent years and describe what we are learning about their operator spectrum.

Thursday, May 30

Afternoon talk: 15:00 (NOTE UNUSUAL TIME)

Zohar Komargodski “ $N=1$ Supersymmetry on Curved Spaces”