Towards realistic physics at large quantum number

Report of Contributions

Contribution ID: **1**   Type: **not specified**

6D N=(2,0) SCFTs at large-R-charge and the 2D conformal block

Monday 13 May 2024 09:30 (1 hour)

I will compute the OPE data of large-R-charge operators in 6D N=(2,0) SCFTs using the moduli effective action. Using the work of Beem, Rastelli, and Rees, this is related to the large-order behaviour of the 2D (Virasoro) conformal block. I will compute the 2D data numerically to show consistency with the result from 6D effective action. Based on these, a general conjecture about the large-order behaviour of the Virasoro block will also be presented.

Presenter: WATANABE, Masataka

Contribution ID: **2**   Type: **not specified**

Dimensionally Reducing Generalized Symmetries

Monday 13 May 2024 11:00 (1 hour)

Presenter: NARDONI, Emily (Kavli IPMU)

Contribution ID: **3**   Type: **not specified**

(Large) charge covexity and hairy black holes in AdS

Tuesday 14 May 2024 09:30 (1 hour)

Presenter: NAKAYAMA, Yu

Contribution ID: 4   Type: **not specified**

Conformal ladder graphs as thermal partition functions

Tuesday 14 May 2024 11:00 (1 hour)

I describe a recently discovered correspondence between L-loop conformal ladder graphs in D=2 and D=4 fishnet CFTs, and thermal partition functions of massive free scalars in d=2L+1 dimensions. The correspondence reveals some previously unobserved algebraic and differential relations among the conformal graphs. It also provides a statistical field theory interpretation for the all-loop resummation of the ladder graphs. Other possible implications of the correspondence are also discussed.

Presenter: PETKOU, Anastasios

Contribution ID: **5**   Type: **not specified**

New perspective in fermionic CFTs at large charge

Tuesday 14 May 2024 13:30 (1 hour)

I will present some results concerning large-charge sectors of 3d CFTs with fermionic degrees of freedom. I will focus on theories that are weakly coupled at large-N, allowing for analytic determination of finite-density ground states. Other than superfluid ground states, certain large-charge sectors are described by filled Fermi Sphere ground states, whose stability beyond the large-N expansion is still an open problem. If time allows it, I will present a few recent ideas on matrix-model effective theories for monopole operators in fermionic (gauge) theories.

Presenter: DONDI, Nicola

Contribution ID: **6**   Type: **not specified**

Monodromy defects and holography

Wednesday 15 May 2024 09:30 (1 hour)

With an aim to further quantify non-pertubative defects in quantum field theory, we study two-dimensional magnetic defects in four dimensional SUSY quantum field theories which preserve a two-dimensional superconformal symmetry along the defect. These can be thought of as an infrared limit of a magnetic solenoid. On general grounds such magnetic defects support localized chiral edge states, and in our system we generically preserve a (0,2) supersymmetry. We compute various physical observables such induced currents rotating around the solenoid, as well as central charges of the defect, as a function of the monodromies. Time permitting, we also comment on the analagous case of one dimensional defects in three dimensional QFTs.

Presenter: ROBERTS, Matthew

Contribution ID: **7**   Type: **not specified**

Towards Standard Model at large charge

Wednesday 15 May 2024 11:00 (1 hour)

Presenter: ANTIPIN, Oleg

Contribution ID: **8**　　　　　　　　　　　　　　　　　Type: **not specified**

Squeezing information out of QCD

Wednesday 15 May 2024 13:30 (1 hour)

Presenter:　SANNINO, Francesco

Contribution ID: **9** Type: **not specified**

String Interactions in Yang Mills Theory

Thursday 16 May 2024 09:30 (1 hour)

Presenter: KOMARGODSKI, Zohar

Contribution ID: **10**   Type: **not specified**

The EFT of Large Spin Mesons

Thursday 16 May 2024 11:00 (1 hour)

As well known, mesons with large spin J in large Nc QCD can be described as rotating open strings using effective field theory (EFT). However, some subtleties arise for light quarks, due to the breakdown of the derivative expansion near the endpoints. Building on previous works on the subject, I will describe a consistent treatment of such endpoints'singularities and obtain results, in a systematic 1/J expansion, for the spectrum of the leading and daughter Regge trajectories. Interestingly, the redshift factor associated with the quarks'acceleration implies that the applicability regime of the EFT is smaller than for static fluxtubes. Depending on time, I will also mention some extensions of the EFT of phenomenological interests, such as the quarks'spin, and the pseudo-axion, a massive string mode identified in lattice simulations of 4d fluxtubes. Finally, I will comment on the comparison with data in 4d QCD, and discuss the prospects for applying a similar EFT to the study of the glueball spectrum in Yang-Mills theory.

Presenter: CUOMO, Gabriel

Contribution ID: **11** Type: **not specified**

NLO in the large charge sector in the critical O(N) model at large N

Thursday 16 May 2024 13:30 (1 hour)

Presenter: SBERVEGLIERI, Giacomo

Contribution ID: **12**
Type: **not specified**

Baby steps toward Lorentzian CFT at large charge

Friday 17 May 2024 09:30 (1 hour)

Presenter: MONIN, Alexander

Contribution ID: **13**   Type: **not specified**

An EFT approach to large charge convexity

Friday 17 May 2024 11:00 (1 hour)

I will present recently understood aspects of large charge convexity, and its violation, using an EFT approach. We first distinguish between "quantum" and "semi-classical" violations of convexity. We then show that the latter, if they exist, are extremely constrained by the EFT. Based on work with Riccardo Rattazzi, Alexander Monin, and Tim Cohen.

Presenter: GOMES, Andrew

Contribution ID: **14**   Type: **not specified**

Welcome to IPMU

Monday 13 May 2024 09:25 (5 minutes)

Presenter: Dr ORLANDO, Domenico (INFN Torino)