Miniworkshop PRIN Bicocca-INFN-SISSA

Report of Contributions

https://agenda.infn.it/e/42736

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

Gabi Zafrir. On the classification of SCFTs with Q>8 supercharges and reflection groups

Monday, 9 September 2024 15:30 (1 hour)

The classification of CFTs is an interesting QFT problem. While in general quite difficult, progress can be made if sufficient symmetry, and notably supersymmetry, is present. In this talk I will review the attempt to classify SCFTs with more than 8 supercharges in dimensions three to six. I will highlight a connection between SCFTs in this class and a certain class of discrete groups, known as reflection groups. It is hoped that this relation will be of help in the classification of this class of SCFTs and in better understanding their properties.

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

Gabi Zafrir

Monday, 9 September 2024 17:00 (1 hour)

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

Craig Lawrie. The a=c Laboratory

Tuesday, 10 September 2024 14:30 (1 hour)

4d CFTs with identical central charges have a variety of novel physical properties, even when there is not enhanced N=3 or N=4 supersymmetry. I introduce a construction of N=1 and N=2 SCFTs with a=c (from Argyres–Douglas building blocks). I point out interesting features such as the behavior of the Schur index, and the lessons that we can learn about the Higgs branch Hilbert series and Hall–Littlewood index of generic class S theories. Next, I will discuss dualities between these non-Lagrangian a=c theories and Lagrangian theories, including where there is supersymmetry enhancement. Finally, I comment on the existence of a mixed-anomaly between one-form and axial symmetries in these a=c theories, and how that can constrain the infrared behavior of such theories after superpotential deformation.

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

Craig Lawrie

Tuesday, 10 September 2024 16:00 (1 hour)

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

Riccardo Comi. Mirror dualities for 3d N=2 theories

Tuesday, 10 September 2024 10:00 (40 minutes)

Mirror duality in 3d N=4 theories have been studied for a long time and they proved to be very useful to study the dynamics of theories with eight supercharges. Mirror duality for 3d N=2 theories is an open topic with many puzzles that are yet to be solved. I will discuss a proposal for the mirror pair of various 3d N=2 theories, with chiral/non-chiral matter and zero/non-zero Chern-Simons level. I will argue that these mirror pairs can be conveniently constructed using improved bifundamentals that are strongly coupled SCFTs which generalize standard bifundamental hypermultiplets. I will also show how this proposal fits within the picture of Hanany-Witten brane setups with four supercharges.

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

Simone Giacomelli. 4d superconformal theories from S-folds

Tuesday, 10 September 2024 10:40 (40 minutes)

In this seminar I will present a new approach to the study of superconformal theories with eight supercharges. We construct a large new family of these models in string theory, study their moduli space and RG flows between them triggered by relevant deformations. Our framework provides a realization of most known theories with Coulomb branch of low dimension and suggests a new organizing principle for class S theories.

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

William Harding. Wreathed Quivers and Non-Invertible Symmetries

Tuesday, 10 September 2024 11:50 (40 minutes)

This talk focuses on 3d N=4 wreathed quivers, where the wreathing technique involves gauging the automorphism group, or a subgroup thereof, of a given quiver. In particular, I will introduce a prescription for obtaining the superconformal index of wreathed quivers. I will focus on the mirror theory of 3d N=4 SQCD with four flavours, namely the affine D_4 quiver, and consider its wreathing by subgroups H of S_4. Importantly, wreathing by a non-Abelian H gives rise to a non-invertible symmetry characterised by 2-Rep(H). Furthermore, the index can be refined with the generators of certain Abelian subgroups of H, allowing to gauge the different subgroups in various orders and obtain intricate (non-invertible) symmetry webs. Various physical phenomena, such as mixed anomalies and two-groups, can also be detected thanks to the index.

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

Simone Rota. 1-form symmetries on the CB of maximally strongly coupled SCFTs

Wednesday, 11 September 2024 11:50 (40 minutes)

I will analyze the charge lattices and 1-form symmetries in a class of maximally strongly coupled N=2 SCFTs. Here a full classification is available, providing upper bounds for the order of the 1-form symmetry group.

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

Ohad Mamroud. D-branes in the superconformal index

Wednesday, 11 September 2024 10:40 (40 minutes)

I'll discuss the superconformal index of N=4 SU(N) super Yang-Mills and its holographic interpretation as the Euclidean partition function of the dual theory. In both the large N limit and a Cardy-like limit, one can identify certain Euclidean black holes and orbifolds thereof within the index. On the gravity side there are also various SUSY branes on top of these backgrounds. I will describe their origin in the index computation, both in the Cardy limit (as eigenvalue instantons) and in the Bethe Ansatz approach (as certain continuous solutions of the BA equations), and mention their effect on the phase diagram of the theory.

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

Victor Godet. Entanglement and symmetry breaking in AdS/CFT

Wednesday, 11 September 2024 10:00 (40 minutes)

Quantum information theory provides new tools to study conformal field theories, which are particularly relevant in the context of holography. In this talk, I will discuss how entanglement asymmetry, a new information-theoretic measure of symmetry breaking, can be computed within the framework of AdS/CFT. This is based on our recent paper 2407.07969.