Institut Henri Poincaré

11 rue Pierre et Marie Curie, 75231 Paris cedex 05

String Theory in Greater Paris

Rencontres Théoriciennes

“Supergravité, théorie des cordes et théorie M”

Jeudi 16 Juin 2022, 10:00

Craig Lawrie

DESY

What can we learn from SCFTs with a=c ?

I will explore a special subset of the 4d SCFT landscape, with N=1 and N=2 supersymmetry and identical central charges : a = c, without any large N limit. Such SCFTs are obtained via N=1 or N=2 diagonal gauging of collections of non-Lagrangian Argyres-Douglas and conformal matter theories and I will discuss the classification problem for consistent gaugings with interacting infrared SCFTs in both cases. For N=2 the classification is in terms of an ADE Dynkin diagram. Moreover, we find that the Schur indices for such theories can be written in terms of that of N=4 super-Yang-Mills theory upon rescaling fugacities. In particular, we find that the Schur index of the $\widehat{D}_4(SU(N))$ *theory for N odd is written in terms of MacMahon's generalized sum-of-divisor function, which is quasimodular. Some such theories have a genus zero class S description, however their Higgs branch Hilbert series and Hall-Littlewood indices are different, providing a counterexample to a long-proposed conjecture. We find such examples are ubiquitous when there are at least four twisted punctures. We verify this distinction via multiple independent computations, including the study of the 3d mirrors of the class S theories. I will introduce each of these concepts and explain how they can be used to study the landscape of SCFTs and their features.*

Institut Henri Poincaré, salle 314, 3ème étage

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