Posters and Gong Show: Speakers, Titles, and Abstracts

Gong show: April 9, 4.40 pm to 5.20 pm.

Poster session: April 9, 5.30 pm onwards.

Notes:

The poster session will be held together with the wine reception, split between Terrace cafe, K0.18, and K0.20 (see "KCL Internal map"). Posters will stay up until the evening of Thursday April 12.

No.	**Speakers**	**Titles**	**Poster location**
1	Bansal, Sukruti	Can Volkov-Akulov Goldstone Fields Have a Spin Higher Than 1/2?	Terrace Cafe
2	Bombini, Alessandro	Unitary 4-point correlators from classical geometries	Terrace Cafe
3	Brehm, Enrico	Thermality off Diagonality	Terrace Cafe
4	Bzowski, Adam	Simple field theoretic models for black holes	Terrace Cafe
5	Couzens, Christopher	F-theory and AdS/CFT	Terrace Cafe
6	Cribiori, Niccolò	New D-term in supergravity	Terrace Cafe
7	Driezen, Sibylle	Classical and quantum aspects of the Yang-Baxter Wess-Zumino model	Terrace Cafe
8	Eckhard, Julius	An $\mathcal{N} = 1$ 3d-3d Correspondence	Terrace Cafe
9	Fontanella, Andrea	Integrable AdS massless scattering	Terrace Cafe
10	Gall, Louis	Five-dimensional vector multiplets in arbitrary signature	Terrace Cafe
11	het Lam, Huibert	BPS solutions of six-dimensional (1,0) supergravity coupled to tensor multiplets	Terrace Cafe
12	Hulik, Ondrej/Vasilakis, Orestis	Multi-centered higher spin solutions and W_N conformal blocks	Terrace Cafe
13	Korpas, George	The Coulomb branch integral and mock theta functions	Terrace Cafe
14	Lautz, Sebastian	All $AdS_{4/3}$ supergravity backgrounds with $N > 16$ supersymmetries - uniqueness and (non-)existence	Terrace Cafe
15	Lovrekovic, Iva	Conformal gravity and higher spins	Terrace Cafe
16	Mamandur Kidambi, Abhiram	Calabi-Yau manifolds and sporadic groups	K0.20
17	Markeviciute, Julija	Rotating hairy black holes in $AdS_5 \times S^5$	Terrace Cafe
18	McGady, David	Temperature-reflections and modularity	Terrace Cafe
19	Min, Vincent	Counting microstates of AdS4 black holes in mass deformed ABJM	Terrace Cafe
20	Nosaka, Tomoki	Spontaneous supersymmetry breaking in a Large N gauge theory	Terrace Cafe
21	Pan, Yiwen	Intersecting 3d N=2 mirror symmetry from fiber-base duality	Terrace Cafe
22	Pettit, Michaella	An E11 invariant gauge-fixing	Terrace Cafe
23	Piatek, Marcin	On Classical Conformal Blocks with Applications	K0.18
24	Pope, Giacomo	From Nernst Branes to Negative Branes	K0.18
25	Raviv-Moshe, Avia	Supersymmetric Lifshitz Field Theories	K0.18
26	Shukla, Ashish	On the dynamics of near-extremal black holes	K0.18
27	Truijen, Brecht	Axion Wormholes are Unstable	K0.18
28	van der Schee, Wilke	Jet energy loss in flowing plasma	K0.20
29	van Gorsel, Jeroen	Non-Integrability in 6d N = (1,0) SCFTs	K0.20
30	van Muiden, Jesse	Precision Holography for N=2* on S4 from type IIB Supergravity	K0.20
31	Venken, Gerben	Supersymmetric dS/CFT	K0.20
32	Yokoyama, Shuichi	Flow equation, conformal symmetry and AdS geometries	K0.20
33	Zhao, Wenli	A One-loop Test of Quantum Black Holes in Anti de Sitter Space	Terrace Cafe

Speaker: Bansal, Sukruti

Title: Can Volkov-Akulov Goldstone Fields Have a Spin Higher Than 1/2?

Abstract: Higher-spin gauge theories are based on infinite dimensional symmetries and involve an infinite number of fields of increasing spin. The study of the effects of spontaneous symmetry breaking and the appearance of higher-spin Goldstone fields in these theories is a highly non-trivial problem. It is desirable to start this study from a simplified setup. We consider a simple 3D model in which a massless spin-3/2 field plays the role of the Goldstone of a spontaneously broken higher-spin generalization of supersymmetry algebra. In D=3 the free massless spin-3/2 field does not have local physical degrees of freedom, like all the other massless higher-spin fields. We find that spontaneous breaking of the rigid spin-3/2 symmetry also breaks local supersymmetry and leads to the appearance of local degrees of freedom whose energy is unbounded signalling instability of this model. We obtain similar results for a non-linear generalization of Chern-Simons theory.

Speaker: Bombini, Alessandro

Title: Unitary 4-point correlators from classical geometries

Abstract: The AdS/CFT has been an outstanding tool in theoretical physics for 20 years now. We describe how new holographic methods can be used to understand the microscopic structure of Black Holes. After a brief explanation of the method, in the poster we discuss how information loss can be read off from the Correlators computed in Black Hole geometries. We introduce a set of microstate geometries with $\mathrm{AdS}_3 \times S^3 \times T^4$ asymptotics, which are dual to states of the D1D5 SCFT, and compute holographically the correlators between the "heavy" operators dual to the microstates and two "light" chiral primaries. Contrary to the correlators computed in the classical black hole geometry, our correlators are consistent with unitarity, in particular they do not decay for large values of the Lorentzian time.

Speaker: Brehm, Enrico

Title: Thermality off Diagonality

Abstract: We investigate the off-diagonal sector of eigenstate thermalization using both local and non-local probes in 2-dimensional conformal field theories. A novel analysis of the asymptotics of OPE coefficients via the modular bootstrap is performed to extract the behaviour of off-diagonal matrix elements. We also probe this sector using the semi-classical heavy-light Virasoro blocks. The results demonstrate signatures of thermality and confirms the entropic suppression of the off-diagonal elements as necessitated by the eigenstate thermalization hypothesis.

Speaker: Bzowski, Adam

Title: Simple field theoretic models for black holes

Abstract: Recent developments in AdS/CFT correspondence allow to reformulate the information paradox in terms of purely field theoretic data. In particular, a construction of simple field theoretic models exhibiting hallmark features of black holes (state-dependence, microstate structure, chaos, etc) should be possible. I present two simple models mimicking the behaviour of black holes. The first model features a quantum mechanical double well system and is motivated by the holographic description of black hole solutions of N=8 supergravity. The second model consists of a boundary field theory and is motivated by the analysis of crunching cosmologies.

Speaker: Couzens, Christopher

Title: F-theory and AdS/CFT

Abstract: In this talk we report on recent results on F-theory in the context of AdS/CFT. In particular, we show that there exist solutions without Calabi–Yau factors, yet still admitting an F-theoretic interpretation. This novel feature generalises the standard flat-space F-theory analysis. The dual field theories of all the solutions considered are dimensional reductions of field

theories with varying couplings and in addition to the usual topological twist it is necessary to perform a topological duality twist. We match the holographic charges by using duality twisted anomaly polynomials.

Speaker: Cribiori, Niccolò

Title: New D-term in supergravity

Abstract: Global supersymmetry can usually be broken by F-term or by D-term. The standard embedding of D-terms within local supersymmetry requires the existence of a gauged abelian symmetry rotating the gravitino and the other fermions. The presence of this local R-symmetry has important consequences, e.g. a gravitino mass term may not be allowed. We propose a novel embedding of the Fayet-Iliopolous D-term in supergravity which does not require the gauging of the R-symmetry. When coupled to matter, the model can describe the impact of an anti D3 brane on the supergravity scalar potential.

Speaker: Driezen, Sibylle

Title: Classical and quantum aspects of the Yang-Baxter Wess-Zumino model

Abstract: The property of integrability dramatically simplifies the study of 2d non-linear sigma models and provides a powerful tool for exact checks of the holographic duality. An interesting question is whether we can deform integrable sigma models, turning on more general background fields, while keeping integrability. I will present some aspects of the integrable Yang-Baxter deformation of the 2d Principal Chiral Model with a Wess-Zumino term. For arbitrary groups I will show that the one-loop beta functions display a surprising connection between classical and quantum physics: the classical integrability condition is necessary to prevent new couplings being generated by renormalisation. Furthermore, I will discuss an unanticipated feature of this class of models: when restricting to simply laced groups but staying outside of the integrable locus, a second fixed point emerges which is UV with respect to the IR WZW model.

Speaker: Eckhard, Julius

Title: An $\mathcal{N} = 1$ 3d–3d Correspondence

Abstract: M5-branes on associative three-cycles M_3 in a G_2-holonomy manifold give rise to 3d $\mathcal{N} = 1$ supersymmetric gauge theories $T_{\mathcal{N}=1}[M_3]$. We propose an $\mathcal{N} = 1$ 3d–3d correspondence, where the Witten index of the 3d $\mathcal{N} = 1$ theories $T_{\mathcal{N}=1}[M_3]$ is computed in terms of the partition function of a topological field theory, a super-BF-model coupled to a spinorial hypermultiplet (BFH). The BFH-model localizes on solutions to a generalized set of 3d Seiberg-Witten equations on M_3. Evidence to support this correspondence is provided in the abelian case, as well as in terms of a direct derivation of the topological field theory by twisted dimensional reduction of the 6d $(2, 0)$ theory.

Speaker: Fontanella, Andrea

Title: Integrable AdS massless scattering

Abstract: We consider scatterings of massless world-sheet modes in the integrable AdS3 and AdS2 superstring backgrounds. In AdS3, we show that the S-matrix admits an extra symmetry, the so-called "q-deformed super Poincaré" symmetry. We interpret the boost generator of such symmetry as a connection on a fibre bundle. This leads to a geometrical interpretation of the integrable scattering. In AdS2, we formulate an asymptotic Bethe ansatz by using a technique based on the so-called "free fermion condition". This allows us to overcome the known problem of lack of reference state which prevented the asymptotic Bethe ansatz formulation in the integrable AdS2 background.
The poster summarises these two results, based on arXiv:1706.02634 and arXiv:1608.01631 in collaboration with Alessandro Torrielli.

Speaker: Gall, Louis

Title: Five-dimensional vector multiplets in arbitrary signature

Abstract: We construct the off shell supersymmetry transformations and Lagrangians for five-dimensional vector multiplets in arbitrary signature. The relation between Poincare Lie superalgebras and admissible bilinear forms is used to define the complexified form of a given supersymmetry algebra. We then study potential reality conditions on the complex spinor module and their impact on the R-symmetry group. In each five dimensional signature there is a single superbracket (up to scaling) and a single useful reality condition. The Euclidean and Lorentzian signature theories can be formulated using symplectic Majorana spinors and have a compact R-symmetry group, SU(2). In multiple-time signatures one can use a twisted Majorana condition and have a non-compact R-symmetry group, SU(1,1). We also show that, despite the existence of Majorana spinors in the multiple-time signatures, the corresponding smaller supersymmetry algebra is trivial.

Speaker: het Lam, Huibert

Title: BPS solutions of six-dimensional (1,0) supergravity coupled to tensor multiplets

Abstract: We derive a general local form for supersymmetric solutions of six-dimensional $(1,0)$ supergravity coupled to an arbitrary number of tensor multiplets. These solutions arise naturally from F-theory compactifications on elliptically fibered Calabi-Yau threefolds. We consider some special cases in which the resulting equations can be solved explicitly. In particular we derive black string solutions and calculate their entropy. Upon reducing to five dimensions they yield spinning black hole solutions. Lastly, as an application, we study the attractor mechanism in this theory.

Speaker: Hulik, Ondrej

Title: Multi-centered higher spin solutions and W_N conformal blocks

Abstract: We use the Chern-Simons formulation of gravity to examine the problem of higher spin, multi-centered solutions in AdS(3). We consider particles coupled to gravity via Wilson lines and we extend the formalism so we can have independent coupling to the left or right sector. We choose the gauge such that higher spin gravity is equivalent to the A_N Toda system with delta function sources. Finally we show that the monodromy problem associated with the Toda system is equivalent to the monodromy problem of W_N conformal blocks. Our calculations are valid in the large "c" limit, but extend beyond the heavy-light approximation.

Speaker: Korpas, George

Title: The Coulomb branch integral and mock theta functions

Abstract: We consider correlation functions of $\mathcal{N} = 2$ topologically twisted pure SYM theory on a compact four-manifold. We revisit the Coulomb branch integral, or u-plane integral, of Moore and Witten by including the insertion of a $\bar{\mathcal{Q}}$-exact operator to the path integral of the theory and we show that this allows us to write the Coulomb branch integral as a total derivative in terms of a mock theta function. The result is a contour integral, whose integrand is the mock theta function we mentioned, localized at the cusps of the Coulomb branch $\mathcal{B}$. This allows a straight forward computation of the integral on a specific class of four-manifolds. Our integral resembles the form of contour integrals of partition functions of topological gauge theories on compact four-manifolds using localization methods. Our technique shows that there exists a deep connection between such integrals and mock modular forms and we hope that it will help towards understanding better the topological $\mathcal{N} = 2$ theories, like (topological) class-$\mathcal{S}$ theories that are candidates to provide new four-manifold invariants. This talk is based on hep-th/1707.06235 and upcoming work.

Speaker: Lautz, Sebastian

Title: All $AdS_{4/3}$ supergravity backgrounds with $N > 16$ supersymmetries - uniqueness and (non-)existence

Abstract: We investigate all warped $AdS_4 \times_w M^{D-4}$ and $AdS_3 \times_w M^{D-3}$ backgrounds with the most general allowed fluxes that preserve more than 16 supersymmetries in $D = 10$- and 11-dimensional supergravities. Assuming either that the internal manifold is compact without boundary or that the isometry algebra of the background decomposes into that of $AdS_{4/3}$ and that of the transverse space, we find that there are no AdS_4 backgrounds in IIB supergravity. Similarly, in IIA supergravity, we find a unique such background with 24 supersymmetries, locally isometric to $AdS_4 \times \mathbb{CP}^3$, and in $D = 11$ all such backgrounds are locally isometric to the maximally supersymmetric $AdS_4 \times S^7$ solution. Finally, we establish a non-existence theorem for AdS_3 solutions preserving strictly more than 16 supersymmetries.

Speaker: Lovrekovic, Iva

Title: Conformal gravity and higher spins

Abstract: At the times when gravitational waves have been discovered the motivation for search of the correct quantum theory of gravity has been significantly increased. Since Einstein gravity is not renormalizable one may consider power counting renormalizable conformal gravity theory. This theory however introduces another issue, which are ghosts. Conformal gravity has well defined variational principle, finite response functions, its asymptotic symmetry algebra can be classified into entire set of subalgebras of conformal algebra, and it can also be considered as specific case in the consideration of conformal higher spin theory. The example of the latter can be considering the one loop partition function for both theories in four and six dimensions. In the second part of the talk and the poster I will outline how to determine the coupling coefficient for the particular three point function using Vasiliev's equations of motion, in three dimensional higher spin theory.

Speaker: Mamandur Kidambi, Abhiram

Title: Calabi-Yau manifolds and sporadic groups

Abstract: One of the recent topics of interest in mathematical string theory is the study of the Mathieu moonshine and how it is realized in a string theoretic framework. It has been known for a while that the elliptic genus of the K3 surface has connections to the dimensions of the irreducible representations of the M_{24} Mathieu group. I would like to advertise the results of work done in arxiv.org/abs/1711.09698 where in we perform a systematic analysis for CY n-folds, with particular focus on 5 folds. The analysis includes constructing the CY 5 folds that admit a LG model and computing the $N = 2$ character expansion of the elliptic genus of the CY 5 fold. Through the study of symmetry surfing on the CY5 moduli space, we find that the symmetry associate to the moduli space of 5-folds is something that sits outside the Mathieu 24 group.

Speaker: Markeviciute, Julija

Title: Rotating hairy black holes in $AdS_5 \times S^5$

Abstract: In this talk I will present a numerical study of five-dimensional, rotating, charged black holes with scalar hair in a consistent truncation of $\mathcal{N} = 8$ supergravity, which retains one charged scalar field and a $U(1)$ gauge field. These hairy solutions can be uplifted to solutions of type IIB supergravity with $AdS_5 \times S^5$ asymptotics. I will discuss the full phase space of such solutions, and in particular the approach of the hairy solutions to the BPS bound. This is an extension of the non-rotating case which we presented in arXiv:1602.03893.

Speaker: McGady, David

Title: Temperature-reflections and modularity

Abstract: We put quantum field theories (QFTs) at finite temperature by identifying points along the temporal direction which differ by integer multiples of the inverse temperature, 1/T. Taking the path integral for such a finite-temperature QFT, the only remnant of this identification is in the periodicity conditions along the time-direction. Crucially, both the lattice of identified points in space-time, and the periodicity condition in the path integral, are invariant under changing the sign of temperature. Isomorphic logic inexorably leads to the statement that conformal field theory path integrals on the two-torus are invariant under modular transformations; the modular group is the group of automorphisms of points identified by the toroidal compactification. Pursuing this parallel suggests new identities and theorems about modular forms, and more powerfully, possible new consistency conditions for generic QFTs at finite-temperature.

Speaker: Min, Vincent

Title: Counting microstates of AdS4 black holes in mass deformed ABJM

Abstract: It has been a longstanding problem to account for the entropy of black holes. Famously, the entropy of a particular class of asymptotically flat black holes can be reproduced by counting BPS states. We consider the analogous problem for asymptotically AdS black holes. We construct and study a class of new supersymmetric dyonic AdS4 black holes who's holographic dual is given by a mass deformation of ABJM. We compute explicitly an appropriate partition function for these theories and show that it accounts for the black hole entropy.

Speaker: Nosaka, Tomoki

Title: Spontaneous supersymmetry breaking in a Large N gauge theory

Abstract: We consider the mass deformed ABJM theory compactified on S^3. In the same theory realized on the flat spacetime, it is known that the trivial vacuum does not preserve the supersymmetry at quantum level if the rank N is greater than the Chern-Simons level k. We argue that in the S^3 case the supersymmetry is spontaneously broken in the large N limit if the mass parameter is larger than some critical value. We computed the partition function of this theory for finite N and found it vanishes at some finite mass parameters, which supports the large N supersymmetry breaking. The poster is based on the collaboration with Masazumi Honda, Kazuma Shimizu and Seiji Terashima.

Speaker: Pan, Yiwen

Title: Intersecting 3d N=2 mirror symmetry from fiber-base duality

Abstract: In the poster we present work in progress on 3d mirror symmetry on intersecting S^3's. 5d N=1 unitary gauge theories often enjoy fiber-base duality, whose partition functions on Omega-deformed R4xS1 can be written down using refined topologcal vertex formalism. We show that, at the level of partition functions, such 5d duality can be reduced to 3d N=2 mirror symmetry of unitary gauge theories, in particular, on two intersecting three spheres.

Speaker: Pettit, Michaella

Title: An E11 invariant gauge-fixing

Abstract: We calculate the non-linear realisation of the semi-direct product of E11 with its vector representation and show how to gauge fix this theory in an E11 manner.

Speaker: Piatek, Marcin

Title: On Classical Conformal Blocks with Applications

Abstract: In the large central charge limit and under certain additional assumptions the Virasoro conformal blocks of a two-dimensional conformal field theory (CFT2) exponentiate to the

functions known as the classical conformal blocks. An interest in the classical conformal blocks has recently dramatically increased due to their lately discoverd fascinating applications. For instance, N=2 gauge theories, "non-perturbative" quantum mechanics, black holes' physics, entanglement entropy in CFT2 and AdS3/CFT2 holography are just some of contexts in which the classical Virasoro blocks emerge. In our poster, after a short introduction of basic notions, some of our contributions to a list of the applications of the classical blocks will be spelled out.

Speaker: Pope, Giacomo

Title: From Nernst Branes to Negative Branes

Abstract:Recently a class of single-charged planar black hole solutions in D=4, N=2 vector multiplet theories were studied. These solutions had vanishing entropy in the zero temperature limit and thus obeyed the strict third law of thermodynamics, inspiring the name "Nernst Brane". These solutions have been extended by allowing the branes to be multi-charged. For branes supported by 3 or 4 charges the solutions contain a static patch with a time-like singularity — interpreted as a negative brane. By analytic continuation these are related to cosmological solutions whose asymptotics are vacuum Kasner. Despite dynamic asymptotics, these multi-charged planar solutions seem to obey formal thermodynamic relations.

Speaker: Raviv-Moshe, Avia

Title: Supersymmetric Lifshitz Field Theories

Abstract: Lifshitz scaling is an anisotropic scaling where time and space scale differently. Quantum field theories that exhibit Lifshitz scale symmetry provide a framework for studying low energy systems with an emergent dynamic scaling such as quantum critical points. Introducing supersymmetry to the Lifshitz algebra leads to a rich structure that is less constrained compared to that of relativistic supersymmetry. We construct supersymmetric Lifshitz quantum field theories and study their renormalization properties, RG flows and spontaneous symmetry breaking. The presented results are based on three papers.

Speaker: Shukla, Ashish

Title: On the dynamics of near-extremal black holes

Abstract: In my poster, I present a recent study of the dynamics of near-extremal Reissner-Nordstrom black holes in asymptotically four-dimensional AdS spacetime. Working in the spherically symmetric approximation, I present results for the thermodynamics and the response of the system to a probe scalar field. The behaviour of the system, at low energies and to leading order in the relevant approximations, is well described by the Jackiw-Teitelboim (JT) model of gravity. In fact, this behaviour can be understood from symmetry considerations and arises due to the breaking of time reparametrization invariance. The JT model has been analyzed in considerable detail recently and related to the behaviour of the SYK model. The results indicate that features in these models which arise from symmetry considerations alone are more general and present quite universally in near-extremal black holes. The poster is based on arXiv:1802.09547.

Speaker: Truijen, Brecht

Title: Axion Wormholes are Unstable

Abstract: We perform a thorough study of the stability of Euclidean axion wormholes in order to understand their contribution to the path integral. The proper interpretation of axionic instantons as contributing to amplitudes between axion momentum eigenstates allows us to show that these wormholes are unstable. We conclude that they should not contribute to the path integral.

Speaker: van der Schee, Wilke

Title: Holographic Jets in a Flowing Plasma

Abstract: We present new results on the energy loss of light partons traversing a highly dynamical strongly coupled quark-gluon plasma. As QGP has large gradients in both temperature and the fluid velocity, it is crucial to study energy loss without assuming a homogeneous plasma, especially as it is known that energy loss depends on the plasma evolution in a non-local way. In a holographic description, we consider several subsequent improvements of the hydrodynamic background by keeping increasing orders in the gradient expansion. Already for varying temperature and velocity profiles and ideal hydrodynamics, the energy loss is considerably modified. However, this description is limited to very small gradients and it is hence necessary to include viscous corrections. We present a numerical analysis of jet energy loss in a boost-invariant and transversely-expanding droplet of QGP. We find that depending on the direction of the fluid flow, the flow can change the distance a parton can travel by a factor of two, which would correspond to changing the coupling constant by a factor of more than fifty.

Speaker: van Gorsel, Jeroen

Title: Non-Integrability in 6d N = (1,0) SCFTs

Abstract: We study various aspects of six-dimensional N = (1,0) SCFTs by analysing properties of their holographic duals (with an AdS7 factor) in Type IIA supergravity. We study the dynamics of string solitons, wrapping around an isometry direction of these supergravity backgrounds, and show that the associated Hamiltonian system is both non-integrable and chaotic. To prove the non-integrability of this Hamiltonian we use analytic techniques, based on Kovacic's algorithm. We then further support our findings, using numerical techniques to calculate the power spectra, Lyapunov coefficients and Poincaré sections for this Hamiltonian system. This analysis for a classical string soliton gives us information about operators with large quantum numbers of different quivers in the dual N = (1, 0) SCFTs. In turn, this implies non-integrability in these N = (1, 0) SCFTs.

Speaker: van Muiden, Jesse

Title: Precision Holography for N=2* on S^4 from type IIB Supergravity

Abstract: We find a new supersymmetric solution of type IIB supergravity which is holographically dual to the planar limit of the four-dimensional N=2* supersymmetric Yang-Mills theory on S^4. We study a probe fundamental string in this background which is dual to a supersymmetric Wilson loop in the N=2* theory. Using holography we calculate the expectation value of this line operator to leading order in the 't Hooft coupling. The result is a non-trivial function of the mass parameter of the N=2* theory that precisely matches the result from supersymmetric localization. This presentation is based on work in collaboration with Nikolay Bobev and Friðrik Gautason, see arXiv:1802.09539.

Speaker: Venken, Gerben

Title: Supersymmetric dS/CFT

Abstract: There is a nogo theorem stating that de Sitter space cannot be supersymmetric, unless the theory violates unitarity. We point out that Vasiliev gravity evades the assumptions of the nogo theorem and provide evidence that dS space can be consistently supersymmetrized. This relates to the fact that the supersymmetric AdS-Vasiliev/U(N) model duality can be consistently Wickrotated into a supersymmetric dS-Vasiliev/U(-N) duality, providing a concrete supersymmetric dS/CFT duality. Using dS/CFT, we compute the dS Hartle-Hawking wavefunction for a range of deformations. We show that the wavefunction is peaked at undeformed dS space and large deformations are supressed, indicating an absence of ghosts. We speculate on the possibility of a stringy interpetation of dS/CFT in terms of exotic string theories. Based on arXiv:1709.06024 [hep-th].

Speaker: Yokoyama, Shuichi

Title: Flow equation, conformal symmetry and AdS geometries

Abstract: The mechanism how AdS geometry is emergent from CFT via flow equation is investigated. A flow equation is to smear operators so as to resolve the contact singularity, which can be used to construct a one higher dimensional geometry associated with a QFT. Our main results are the following.

1. An induced metric for any QFT becomes the quantum information metric.
2. For an arbitrary CFT, the induced metric becomes the (Poincare) AdS.
3. We clarified the mechanism how conformal transformaation converts to the AdS isometry.
4. We generalized [2] and [3] in the case of any CFT defined on a general conformally flat manifold.
5. The resulting AdS metric whose boundary is the conformally flat manifold turns out to connect to the usual Poincare AdS by a simple finite diffeomorphism, reminiscent of PBH transformation.

Speaker: Zhao, Wenli

Title: A One-loop Test of Quantum Black Holes in Anti de Sitter Space

Abstract: The topologically twisted index for ABJM theory has been shown, in the large-N limit, to reproduce the Bekenstein-Hawking entropy of certain families of magnetically charged asymptotically AdS4 black holes with arbitrary horizon topology. We numerically study the index beyond the large-N limit and provide evidence that it contains a subleading logarithmic term of the form $-(1-g)/2\ \log N$, where g is genus of the horizon. Within eleven dimensional supergravity we compute the logarithmic correction to the entropy, and we find perfect agreement with the index.