Corfu2026: Workshop on Quantum Gravity and Strings

SEPTEMBER 6 - SEPTEMBER 13, 2026

physics.ntua.gr/corfu2026/st.html

Scientific Programme

1 Program Summary

Monday, September 7, 2026

9:00	9:30	Skenderis, Kostas	Loops in AdS and renormalisation
9:30	10:00	Bobev, Nikolay	TBA
10:00	10:30	Volovich, Anastasia	Cluster Algebras, Symbology and Amplitudes+
10:30	11:00	**Coffee Break**	
11:00	11:30	Spradlin, Marcus	Cluster Bootstrap & Quadrangular Polylogarithms for dS Cosmology
11:30	12:00	Haack, Michael	Scattering 3 closed strings off a Dp-brane in the pure spinor formalism
12:00	12:30	Boulanger, Nicolas Paul	Conformal renormalisation of 8D Einstein gravity
12:30	13:00	Savvidy, George	Absorption of Gravitons by Hydrogen Atoms. Indirect Detection of Gravitons
13:00	16:30	**Lunch**	
16:30	16:55	Lovrekovic, Iva	Conformally colored gravity
16:55	17:20	Kosmopoulos, Dimitrios	Dynamical Love Numbers for Black Holes and Beyond from Shell Effective Field Theory
17:20	17:50	**Coffee Break**	
17:50	18:10	Hammoud, Jamal	Third-way extensions of massive gravity theories and nonrelativistic limits of higher spin theories
18:10	18:30	Becker, Konrad	Determining masses of hadronic bound states using a holographic ansatz
18:30	18:55	Pallis, Constantinos	Split SUSY From Induced-Gravity Palatini-Like Higgs Inflation
18:55	19:15	Nikolaev, Alexander	Holography for Heavy Ions Collisions
20:30	23:00	**Welcome Reception**	

Tuesday, September 8, 2026

9:00	9:30	Kostov, Ivan	A new solvable holographic dual for sine-Liouville gravity
9:30	10:00	Guarino, Adolfo	Scale-separated AdS3 in Type IIB: From flux vacua to domain-walls
10:00	10:30	Macpherson, Niall	TBA
11:00	11:30	**Coffee Break**	
11:30	12:00	Passias, Achilleas	AdS_2 from D_0-branes
12:00	12:30	Kazakov, Vladimir	Critical Lin-Lunin-Maldacena geometries
12:30	13:00	Marchesano, Fernando	New Lessons on Gravity Decoupling
13:00	13:30	Brustein, Ramy	The fate of a collapsing star
13:30	16:30	**Lunch**	
16:30	17:00	Chattopadhyaya, Aradhita	Vafa Witten Theory and Mock Modularity
17:00	17:20	Vyros, Makarios	Dynamical System Analysis of GW Condensation Inflation in String-Inspired Chern-Simons Gravity
17:20	17:50	**Coffee Break**	
17:50	18:10	Conti, Andrea	Defect entanglement entropy for super (conformal) monodromy defects
18:10	18:30	Tadros, Poula	New rotating black holes in string theory
18:30	18:55	Weissman, Dorin	Quantum chaos and string theory scattering amplitudes
18:55	19:20	O'Connor, Josh	Duality-covariant particles and exotic branes

Wednesday, September 9, 2026

9:00	9:30	Dudas, Emilian	TBA
9:30	10:00	Hassler, Falk	TBA
10:00	10:30	Trigiante, Mario	TBA
10:30	11:00	**Coffee Break**	
11:00	11:30	Porfyriadis, Achilleas	Dynamical extreme black hole horizons
11:30	12:00	Corral, Cristobal	Gravitational instantons with weakened AdS boundary conditions in conformal gravity
12:00	12:30	Reffert, Susanne	Intro to the large-charge expansion
12:30	13:00	Orlando, Domenico	NRCFT and broken translations
13:00	18:00	**Excursion**	Free Afternoon

Thursday, September 10, 2026

9:00	9:30	Obers, Niels	Carrollian Corners in String Theory
9:30	10:00	Hartong, Jelle	TBA
10:00	10:30	Petropoulos, Marios	TBA
10:30	11:00	**Coffee Break**	
11:00	11:30	Harmark, Troels	Twisted BPS decoupling limits and AdS/CFT
11:30	12:00	Romano, Luca	Higher-Order Newton-Cartan Gravity
12:00	12:30	Yan, Ziqi	TBA
12:30	13:00	Ghilencea, Dumitru	Weyl-Dirac-Born-Infeld action for quantum gravity
13:00	16:30	**Lunch**	
16:30	17:00	Kim, Keun-young	Deep Learning Bulk Spacetime from Boundary Quantum Data
17:00	17:25	Osten, David	An integrable decouling limit for the membrane
17:25	17:55	**Coffee Break**	
17:55	18:15	Zeko, Sara	From Galilei to (Euclidean) Carroll and the Alice particle: The Times They Are a-Changin'
18:15	18:35	Christodoulou, Stavros	Wavefunction of the universe from a Lorentzian path integral in three-dimensional gravity
18:35	19:00	Pekar, Simon Alexandre	TBA
19:00	19:25	Radkovski, Jury	Quantizing Horava Gravity
19:30	0:30	**Greek Night**	

Friday, September 11, 2026

9:00	9:30	Sagnotti, Augusto	Highlights on non-supersymmetric strings
9:30	10:00	Antoniadis, Ignatios	TBA
10:00	10:30	Angelantonj, Carlo	TBA
10:30	11:00	**Coffee Break**	
11:00	11:30	Kokorelis, Christos	Sterile neutrinos from intersecting D-brane string compactifications
11:30	12:00	Cubrovic, Mihailo	Precision holography, chaos and averaging in bubbling geometries
12:00	12:30	Baggioli, Matteo	Realizing Strange Metal Magnetotransport via Holographic Duality
12:30	12:55	Shao, Wei-hsiang	Standard Model from IIB Matrix Model
13:00	16:30	**Lunch**	
16:30	16:55	Paraskevopoulou, Antonia	TBA
16:55	17:20	Cesaro, Mattia	Integrable auxiliary-field deformations of the D=2 Breitenlohner-Maison model and their four-dimensional uplifts
17:20	17:50	**Coffee Break**	
17:50	18:10	Aggarwal, Aviral	Scale Separation in 3d
18:10	18:30	Crisafio, Matteo Kevin	Bismut-Hermitian-Einstein manifolds from generalised supergravity
18:30	18:55	Rondeau, Francois	Jackiw-Teitelboim gravity as a testing ground for semiclassical gravity conjectures
18:55	19:20	Glennon, Keith	On the Extended Geometry of Kac-Moody Symmetries of Quantum Gravity

Saturday, September 12, 2026

9:00	9:30	Faraggi, Alon	Standard Model and Beyond with Strings Attached
9:30	10:00	Chatzistavrakidis, Athanasios	Induced geometry of effective dynamics in the adiabatic limit of quantum-classical systems
10:00	10:30	Steinacker, Harold	Spacetime and gravity in 3+1 dimensions from the IKKT model
10:30	11:00	**Coffee Break**	
11:00	11:30	Kowalski-Glikman, Jerzy	RG=GR: A Common Cardinal Resolution of the Cosmological Constant and Higgs Hierarchy Problems
11:30	12:00	Leontaris, George	TBA
12:00	12:30	Wu, Siye	Classical Aspects of Higher-Form Symmetries

2 Detailed Program with Abstracts

2.1 Monday, September 7, 2026

Time: 9:00 – 9:30
Speaker: Skenderis, Kostas (Southampton University)
Title: Loops in AdS and renormalisation
Abstract: I will discuss how to set up renormalisation in AdS, both for IR and UV divergences. IR divergences are dealt by boundary counterterms as in holographic renormalisation, while bulk divergences are removed by introducing counterterms in the bulk action. I will then present new methodology for the computation of (loop-level) Witten-Feynman diagrams that uses the symmetries of AdS to simplify the integrals, and illustrate the discussion with a 2-loop computation in Phi^4 theory in AdS.

Time: 9:30 – 10:00
Speaker: Bobev, Nikolay (KU Leuven)
Title: TBA
Abstract: TBA

Time: 10:00 – 10:30
Speaker: Volovich, Anastasia (Brown University)
Title: Cluster Algebras, Symbology and Amplitudes+

Time: 11:00 – 11:30
Speaker: Spradlin, Marcus (Brown University)
Title: Cluster Bootstrap & Quadrangular Polylogarithms for dS Cosmology
Abstract: TBA

Time: 11:30 – 12:00
Speaker: Haack, Michael (ASC, LMU)
Title: Scattering 3 closed strings off a Dp-brane in the pure spinor formalism
Abstract: We compute the disk amplitude of three closed strings in the pure spinor formalism. Among others, this amplitude probes tree–level gravitational interactions in the presence of Dp-branes. We find a compact expression for the disk amplitude of three closed strings in terms of open superstring six–point amplitudes. We generalise the structure of our result to the disk amplitude of any number n_c of closed strings in terms of pure open string amplitudes involving 2 n_c open strings. We begin the talk with a self-contained introduction to the pure spinor formalism.

Time: 12:00 – 12:30
Speaker: Boulanger, Nicolas Paul (UMONS)
Title: Conformal renormalisation of 8D Einstein gravity
Abstract: We show that Holographic Renormalisation (HR) in eight dimensions is encoded in the unique conformal gravity theory that admits an Einstein sector with constant negative curvature. We explicitly relate HR to Topological Regularisation (TR), where the latter prescribes to add the Euler term to the Einstein-Hilbert Lagrangian density, with a precise coefficient so as to ensure that the resulting density is polynomial in the anti de Sitter (AdS) curvature. The polynomial is still asymptotically divergent. We find that the aforementioned, unique conformal gravity action in 8D, reproduces the polynomial, together with extra boundary terms that cancel the divergent terms in the action. We conjecture that, in arbitrary even dimension, HR is equivalent to conformally completing the Einstein-Hilbert action with negative cosmological constant, plus the Euler term with fixed coupling prescribed by TR.

Time: 12:30 – 13:00
Speaker: Savvidy, George (NCSR Demokritos, INPP)
Title: Absorption of Gravitons by Hydrogen Atoms. Indirect Detection of Gravitons
Abstract: We compute the emission and absorption rates of gravitons by hydrogen atoms. The absorption rate of gravitons is proportional to the number of hydrogen atoms and to the graviton luminosity. The number of hydrogen atoms in interstellar/intergalactic media can be large while the graviton luminosity of Sun, or a typical star, is in the eV to keV range that well overlaps with the resonance frequencies of the hydrogen atoms. Currently, the observational knowledge of the graviton luminosity in different regions of the Universe is limited, and here we will consider its value as unknown quantity

that should be determined by independent astrophysical observations. We suggest measuring the ratio of the photon luminosities from interstellar/intergalactic hydrogen atoms that can pro- vide information concerning the luminosity of gravitons in different regions of space. This ratio maximally exposes the fundamental physical nature of photons and gravitons – their helicity, which is h=1 for the photons and h=2 for the gravi- tons. The ratio is sensitive to any sources of gravitational radiation and provide a possible method for measuring their radiation intensities.

Time: 16:30 – 16:55
Speaker: Lovrekovic, Iva (TU Wien)
Title: Conformally colored gravity
Abstract: We construct a three-dimensional colored conformal gravity theory that consistently couples the metric, so(N) gauge fields, and N symmetric spin-2 fields. The theory is invariant under a novel gauge symmetry that mixes spacetime and internal so(N) symmetries. This symmetry ensures the absence of local propagating degrees of freedom despite the presence of a non-trivial matter sector. The theory can also be formulated from the Chern–Simons perspective as an so(N + 3, 2) gauge theory. For N = 1, the theory reduces to the lowest conformal higher-spin theory in the construction of Pope and Townsend and, at the linearized level, to the depth-two theory in the construction of Grigoriev et al. To illustrate the physical consequences of introducing the matter sector, we present an example: a black hole solution with an infinite number of horizons.

Time: 16:55 – 17:20
Speaker: Kosmopoulos, Dimitrios (CERN)
Title: Dynamical Love Numbers for Black Holes and Beyond from Shell Effective Field Theory
Abstract: A key property that shapes the gravitational waveform of binary systems is the tidal deformability of their constituents, quantified by the Love numbers. In modern treatments of the gravitational two-body problem, the binary dynamics are described within an effective field theory (EFT), where Love numbers enter as Wilson coefficients encoding the finite-size response of each object. In this talk, I will introduce Shell Effective Field Theory, a new framework for computing the classical gravitational dynamics of compact objects, with particular emphasis on extracting Love numbers. By combining techniques from quantum field theory with solutions to black-hole perturbation theory, Shell EFT circumvents the loop integrations that constitute the main bottleneck in conventional approaches. I will present new results for dynamical Love numbers of generic compact objects through order G^9, corresponding to an eight-loop calculation, and conjecture their all-orders structure in the case of a Schwarzschild black hole.

Time: 17:50 – 18:10
Speaker: Hammoud, Jamal (The Department of Physics, Faculty of Science, University of Zagreb)
Title: Third-way extensions of massive gravity theories and nonrelativistic limits of higher spin theories
Abstract: Interacting theories of massive spin-two fields are strongly constrained by consistency requirements. In three dimensions, massive gravity provides a controlled setting in which bulk degrees of freedom can be introduced, while known models such as topologically massive gravity (TMG) and general massive gravity (GMG) exhibit nontrivial bulk–boundary features in AdS. Minimal Massive Gravity (MMG) implements third-way consistency, modifying nonlinear interactions while preserving the linearized spectrum. Building on this mechanism, I investigate third-way consistent extensions of TMG and GMG using the Chern–Simons-like formalism, focusing on viable deformations and analysing their consistency properties to verify their perturbative unitarity. I also study related linearized higher-spin extensions of self-dual massive gravity models and explore their nonrelativistic limits, deriving Schrödinger-type equations with potential applications to planar condensed-matter systems.

Time: 18:10 – 18:30
Speaker: Becker, Konrad (Julius-Maximilians-Universitaet Wuerzburg)
Title: Determining masses of hadronic bound states using a holographic ansatz
Abstract: Holography has been found to be an exceptional tool in particle physics. In this talk I will introduce a holographic bottom-up model based on AdS/CFT which we use to describe a QCD-like theory. In this model one can calculate masses of scalar and vector mesons as well as baryons. I also introduce a way of including an additional global symmetry on the field theory side. This can be used to include flavor symmetry in such a model. Breaking this symmetry by giving different masses to the quarks gives predictions for the lightest QCD baryons which match the measured results surprisingly well.

Time: 18:30 – 18:55
Speaker: Pallis, Constantinos (AUTH)
Title: Split SUSY From Induced-Gravity Palatini-Like Higgs Inflation
Abstract: We focus on models of induced-gravity inflation employing as inflaton the Higgs field which leads to a

spontaneous breaking of a U(1)B-L symmetry at a unification scale. In the non-supersymmetric regime, compatibility with ACT data is achieved only in the kinetically modified version of the model and adopting the Palatini formulation of gravity. The most promising of those models can be also incarnated in the context of standard supergravity with a Kahler potential which includes only quadratic terms. For the last case we also proposed a post-inflationary completion which offers a nice solution to the μ problem of MSSM and allows for baryogenesis via non-thermal leptogenesis in the context of split supersymmetry with gravitino mass in the range (22-60) PeV.

Time: 18:55 – 19:15
Speaker: Nikolaev, Alexander (Lomonosov Moscow State University)
Title: Holography for Heavy Ions Collisions
Abstract: Holography provides a powerful non-perturbative framework for describing strongly coupled matter. One of its applications is AdS/QCD, an approach aimed at constructing a dual gravitational description of quantum chromodynamics. A key goal of this framework is to gain insight into the phase structure of QCD matter, in particular the temperature–chemical potential phase diagram, which remains difficult to study using lattice methods at finite chemical potential. In this talk, I will discuss how AdS/QCD models can be used to reconstruct not only the QCD phase diagram and the running coupling behavior, but also the thermodynamics of anisotropic quark-gluon plasma and the nature of phase transitions.

2.2 Tuesday, September 8, 2026

Time: 9:00 – 9:30
Speaker: Kostov, Ivan (IPhT, CEA-Saclay)
Title: A new solvable holographic dual for sine-Liouville gravity
Abstract: We construct a hermitian matrix model which gives a new non-perturbative realisation of the compactified c=1 string theory perturbed by a sine-Liouville (SL) term. The standard realisation of the c=1 string theory is by Matrix Quantum Mechanics while the model in question involves a single matrix variable. We find explicitly the spectral curve of the matrix model for arbitrary strength of the SL perturbation and find that the strongly perturbed theory is again a c=1 string theory but with smaller compactification radius. The fact that the compactification radius renormalises along the flow suggests that the proposal (KKK) for a matrix model for the Euclidean 2D black hole might need a revision.

Time: 9:30 – 10:00
Speaker: Guarino, Adolfo (University of Oviedo)
Title: Scale-separated AdS3 in Type IIB: From flux vacua to domain-walls
Abstract: I will discuss recent progress in understanding the branes behind scale-separated AdS3 flux vacua in type IIB supergravity.

Time: 10:00 – 10:30
Speaker: Macpherson, Niall (University of Oviedo)
Title: TBA
Abstract: TBA

Time: 11:30 – 12:00
Speaker: Passias, Achilleas (University of Ioannina)
Title: AdS_2 from D_0-branes
Abstract: We present AdS_2 x S^7 solutions which arise as the near-horizon limit of D0-F1-D8 brane intersections, as well as more general AdS_2 solutions from Type IIA supergravity on weak G_2 manifolds.

Time: 12:00 – 12:30
Speaker: Kazakov, Vladimir (Ecole Normale Sup. Paris)
Title: Critical Lin-Lunin-Maldacena geometries
Abstract: We study the critical behavior of the Lin-Lunin-Maldacena (LLM) geometry in the case when a droplet in the LLM base space develops a cusp. This cusp is a generic feature of the density of complex eigenvalues in the dual complex matrix model (CMM) computing the correlation functions of huge 1/2-BPS operators in N = 4 SYM theory. It is also related to the criticality in CMM describing the pure 2D quantum gravity behavior. The supergravity dual – LLM metric in the vicinity of the tip of the cusp – acquires a universal ISO(1, 3) x SO(5) symmetric form, with a naked singularity along a half-infinite line. Both massless and massive particles get trapped by this line singularity for almost any impact

parameter. Generic trajectories ending on the singular line reach it in finite affine time, while the corresponding observer time diverges. An explicit analytic solution for a large class of massless trajectories together with the absence of stochastic behavior in the vicinity of the cusp hint on a certain integrability of the problem.

Time: 12:30 – 13:00
Speaker: Marchesano, Fernando (IFT-Madrid)
Title: New Lessons on Gravity Decoupling
Abstract: TBA

Time: 13:00 – 13:30
Speaker: Brustein, Ramy (Ben-Gurion University)
Title: The fate of a collapsing star
Abstract: TBA

Time: 16:30 – 17:00
Speaker: Chattopadhyaya, Aradhita (CMI Chennai Mathematical Institute)
Title: Vafa Witten Theory and Mock Modularity
Abstract: Based on my recent works with Jan Manschot 2510.10204, 2301.06711

Time: 17:00 – 17:20
Speaker: Vyros, Makarios (NTUA)
Title: Dynamical System Analysis of GW Condensation Inflation in String-Inspired Chern-Simons Gravity
Abstract: In this talk, we will explore the field-theoretic systems of a single axion-like field driven by a linear potential that receives modifications from cosine terms, originating from non-perturbative instanton configurations in an FLRW background. Via the dynamical systems formalism, we classify the various de Sitter-like inflationary vacua according to their stability and systematically explore the parameter space. Our ultimate goal is to apply this framework to a string-inspired scenario, realizing this analysis within the context of a stringy Running Vacuum Model (StyRVM) type of inflation induced by gravitational wave (GW) condensation in Chern-Simons gravity.

Time: 17:50 – 18:10
Speaker: Conti, Andrea (Universidad de Oviedo)
Title: Defect entanglement entropy for super (conformal) monodromy defects
Abstract: Recently, there has been an increasing interest in the study of defects in quantum field theories, with holography providing a powerful framework to explore various aspects thereof. In this talk, I will discuss supergravity solutions dual to codimension-2 superconformal monodromy defects. These are constructed using gauged supergravity theories in 4,5,6 and 7 dimensions. I will present a prescription to compute the defect entanglement entropy, outlining the renormalisation procedure needed to regularise its divergencies. I will relate this quantity to field theory data (free energy/Weyl anomaly and conformal weight) that characterise the defect conformal field theory. I will provide evidence that, unlike in the bulk theories in which the defects reside, the universal part of the defect entanglement entropy does not necessarily decrease along a renormalisation group flow. If time allows, I will also discuss some new results for non-conformal monodromy defects.

Time: 18:10 – 18:30
Speaker: Tadros, Poula (Charles University)
Title: New rotating black holes in string theory
Abstract: In this talk, I will present new rotating black hole solutions of the low-energy effective action of string theory in any dimension. These geometries are locally asymptotically flat with a linear dilaton vacuum and exhibit unusual thermodynamic properties, including a mass-independent Hawking temperature. I will also discuss charged extensions in 3 and 4 dimensions, which lead to closed time-like curves inside their inner horizons. Finally, I will demonstrate that these solutions can be derived via the large-d limit of the Myers-Perry black holes.

Time: 18:30 – 18:55
Speaker: Weissman, Dorin (INFN, Naples)
Title: Quantum chaos and string theory scattering amplitudes
Abstract: I will discuss recent progress in analyzing the chaotic behavior of scattering amplitudes of highly excited string

states, which can be computed at tree level in string theory using the DDF approach for open bosonic strings. We use measures of quantum chaosâ€"namely the distribution of level spacings and the spectral form factorâ€"to analyze the position of peaks in the angular dependence of these amplitudes. The results display good agreement with the circular unitary ensemble (CUE) of random matrix theory. Thus, string theory serves as a laboratory for studying chaotic dynamics in scattering amplitudes. Since general scattering amplitudes are a function of multiple kinematical variables, I will discuss the necessary generalization to a higher-dimensional notion for the level spacings, with the goal of providing a reliable diagnostic for chaos that can be applied directly to scattering amplitudes in various systems, from string theory to QFT.

Time: 18:55 – 19:20
Speaker: O'Connor, Josh (Rudjer Boskovic Institute)
Title: Duality-covariant particles and exotic branes
Abstract: In this talk we will present the results of my recent paper with D. Osten on a duality-covariant particle model with manifest E8 symmetry, i.e. a worldline pulled back from the E8 exceptional field theory target space. I will also discuss our approach to worldline dynamics for exotic branes coupled to arbitrary mixed-symmetry gauge fields.

2.3 Wednesday, September 9, 2026

Time: 9:00 – 9:30
Speaker: Dudas, Emilian (CNRS and Ecole Polytechnique)
Title: TBA
Abstract: TBA

Time: 9:30 – 10:00
Speaker: Hassler, Falk (University of Wroclaw)
Title: TBA
Abstract: TBA

Time: 10:00 – 10:30
Speaker: Trigiante, Mario (Politecnico di Torino)
Title: TBA
Abstract: TBA

Time: 11:00 – 11:30
Speaker: Porfyriadis, Achilleas (University of Crete)
Title: Dynamical extreme black hole horizons
Abstract: There exist dynamical extreme Reissner-Nordstrom (DERN) black holes. These are spherically symmetric dynamical solutions of Einstein-Maxwell theory coupled to a neutral scalar that feature: (i) a spacetime metric which tends to that of a static extreme Reissner-Nordstrom (RN), and (ii) a scalar field which exhibits the linear Aretakis instability ad infinitum in the non-linear theory. We employ the two-dimensional Jackiw-Teitelboim (JT) gravity to give an explicit closed form description of the late-time near-horizon approach to DERN.

Time: 11:30 – 12:00
Speaker: Corral, Cristobal (Adolfo Ibáñez University)
Title: Gravitational instantons with weakened AdS boundary conditions in conformal gravity
Abstract: We present new results on non-Einstein Bach-flat gravitational instantons in conformal gravity. The solutions are asymptotically locally flat or anti-de Sitter, with weakened boundary conditions, exhibiting the typical low-decaying modes of conformal gravity. This allows one to identify the simple Neumann boundary condition that, as in the asymptotically AdS sector, selects the Einstein spaces from the solutions of conformal gravity. We obtain the topological charges as well as the Noether charges, which happen to be finite without introducing boundary counterterms. Using the Dunajski-Tod theorem, we show that the self-dual metric is not conformally Ricci-flat. The holographic stress tensor and the partially massless response are computed analytically, representing a holographic fluid with vorticity as in the Einstein case. We also comment on extensions with nonlinear conformal matter.

Time: 12:00 – 12:30
Speaker: Reffert, Susanne (University of Bern)
Title: Intro to the large-charge expansion
Abstract: I will be introducing the large-charge expansion, a semi-classical method for analytically accessing strongly-coupled models. I will focus on simple relativistic models and discuss recent progress.

Time: 12:30 – 13:00
Speaker: Orlando, Domenico (INFN)
Title: NRCFT and broken translations
Abstract: I will discuss non-relativistic CFTs in the large-charge limit, focusing on systems with broken translational invariance. In this talk, I will discuss non-relativistic CFTs in the large-charge limit. I will focus on the physical applications and the technical challenges associated with systems where translational invariance is broken. By integrating techniques from non-commutative Moyal product and resurgence, we obtain results that are in good agreement with both lattice and experimental data.

2.4 Thursday, September 10, 2026

Time: 9:00 – 9:30
Speaker: Obers, Niels (Niels Bohr Institute and Nordita)
Title: Carrollian Corners in String Theory
Abstract: Non-Lorentzian geometries arise naturally in controlled limits of general relativity and string theory. I will discuss several Carrollian corners of string theory, beginning with Carrollian worldsheet models and strings probing Newton–Cartan and Carrollian target spacetimes. I will then explain how these theories emerge from near-BPS decoupling limits of Type II/M-theory, including matrix-theory and Euclidean-brane constructions. These connections provide a broader geometric perspective on familiar decoupling limits and point towards novel applications of Carrollian geometry in holography. In the concluding 5 minutes, I will present the upcoming activities of the COST action Theory-Challenges, as they may be relevant for the participants of the quantum gravity and strings workshop.

Time: 9:30 – 10:00
Speaker: Hartong, Jelle (University of Edinburgh)
Title: TBA
Abstract: TBA

Time: 10:00 – 10:30
Speaker: Petropoulos, Marios (CNRS - Ecole Polytechnique)
Title: TBA
Abstract: TBA

Time: 11:00 – 11:30
Speaker: Harmark, Troels (Niels Bohr Institute)
Title: Twisted BPS decoupling limits and AdS/CFT
Abstract: DLCQ limits are BPS decoupling limits in string and M-theory of immense importance, related by U-duality to the AdS/CFT correspondence, matrix theories and non-relativistic string theory. In this paper we introduce twisted BPS decoupling limits for BPS states in curved backgrounds such as AdS$_5\times S^5$. Unlike DLCQ limits, they involve a BPS state corresponding to a momentum along a globally twisted fiber in a fiber bundle. Zooming in to string fluctuations above the BPS state reveals a non-relativistic sigma-model for which the target space becomes symplectic. Twisted BPS decoupling limits can be introduced for D-branes as well, revealing they couple to the same symplectic target space. For AdS$_5 \times S^5$ in the global patch, these limits are dual to Spin Matrix theory limits of $\mathcalN=4$ super Yang-Mills theory.

Time: 11:30 – 12:00
Speaker: Romano, Luca (Universidad de Murcia)
Title: Higher-Order Newton-Cartan Gravity
Abstract: We study the non-relativistic Newton-Cartan limit of higher-order gravity theories in arbitrary dimensions. We first study it at the level of the action by introducing an additional 1-form gauge field and coupling it appropriately to

the gravity sector. We extend this procedure to any theory whose Lagrangian is a function of the Ricci scalar, quadratic Ricci tensor and quadratic Riemann tensor. We also study the limit of the equations of motion for two models, Einstein-Gauss-Bonnet gravity and quadratic Ricci scalar theory. We prove that, in the first case, it is possible to obtain the Poisson equation by introducing a scalar field and imposing an appropriate constraint. In the latter case, we show that it is possible to get the Poisson equation from the limit of the equations of motion as long as the on-shell constraint used in the two-derivative theory is supplemented with a further condition; however, the system collapses to the two-derivative theory. For the Gauss-Bonnet case, we give the expression of the higher-order corrected Poisson equation in terms of curvatures of Newton-Cartan geometry. We furthermore derive the full set of non-relativistic equations and study their boost transformations. The set of equations of motion defines zero-torsion Gauss- Bonnet Newton-Cartan gravity.

Time: 12:00 – 12:30
Speaker: Yan, Ziqi (Niels Bohr Institute)
Title: TBA
Abstract: TBA

Time: 12:30 – 13:00
Speaker: Ghilencea, Dumitru (IFIN Bucharest)
Title: Weyl-Dirac-Born-Infeld action for quantum gravity
Abstract: Weyl conformal geometry is the natural underlying geometry of (local) gauge theories of the Weyl group (of dilatations and Poincare symmetry), such as Weyl quadratic gravity (WQG) and its generalisation, Weyl-Dirac-Born-Infeld action (WDBI). The WDBI action is well-defined in arbitrary d dimensions with no need for a UV regulator scale/field. A series expansion of WDBI action (in dimensionless coupling) recovers in the leading order a Weyl gauge invariant (geometrically regularised) version of d=4 SM and WQG. Riemannian geometry, Einstein-Hilbert action and a cc>0 are recovered in the Stueckelberg broken phase of Weyl gauge symmetry. Interestingly, Weyl geometry can also be seen as Riemannian geometry of a (Weyl gauge invariant) non-local dressed metric (by Wilson line of dilatations), at the "cost" of UV non-commutativity in the vector space of observables, (due to Weyl flux). Quantum non-locality and UV non-commutativity are then artefacts of "viewing" Weyl geometry from (our-world of) Riemannian geometry of Weyl gauge invariant fields/observables and are evidence of Weyl gauge symmetry. Based on e-Prints: 2508.10959 and 2606.08080.

Time: 16:30 – 17:00
Speaker: Kim, Keun-young (Gwangju Institute of Science and Tech.)
Title: Deep Learning Bulk Spacetime from Boundary Quantum Data
Abstract: According to the holographic principle—one of the most influential frameworks in contemporary physics—gravitational physics in a bulk spacetime is dual to the quantum physics of a system defined on its boundary. We employ a deep learning approach to reconstruct the bulk spacetime geometry from boundary quantum data, such as conductivity and entanglement entropy. This method offers novel insights into the properties of quantum matter through their dual spacetime interpretation. Because our deep learning approach generalizes to a wide range of problems involving differential equations and integral formulations, it holds broad utility for diverse applications across physics and engineering. We illustrate this generalizability with concrete examples drawn from introductory (freshman-level) physics problems.

Time: 17:00 – 17:25
Speaker: Osten, David (University of Wroclaw)
Title: An integrable decouling limit for the membrane
Abstract: In contrast to string sigma models which are well-known to be (classically) integrable in certain backgrounds, most famously flat space or AdS(5) x S(5), the same is not true for the membrane sigma model. Reasons for this are the non-trivial gravity on the world-volume but also the rarity of three-dimensional integrable field theories in general. Here, I will present the novel observation that a certain double decoupling limit, consisting of target space non-Lorentzian limit and a tensionless less-limit, of the membrane in certain backgrounds will lead to an integrable model, the Manakov-Zakharov-Ward model – a known three-dimensional, but non-relativistic, integrable field theory. As an example of a supergravity background in which this limit is possible I present the 11d uplift of the pure NS-NS AdS(3) x S(3) x T(4) background.

Time: 17:55 – 18:15
Speaker: Zeko, Sara (Ruder Boskovic Institute)
Title: From Galilei to (Euclidean) Carroll and the Alice particle: The Times They Are a-Changin'
Abstract: Recently, non-Lorentzian, i. e., nonrelativistic (Galilean) and ultrarelativistic (Carrollian), limits have attracted attention as decoupling limits of string and M-theory. In this talk, we argue that Galilean and Carrollian limits are, against

common belief, closely related, and can be dealt with in a unifying manner. This allows one to show that properties of Galilean symmetries can be extended to Carrollian symmetries, as we will illustrate by focusing on particle toy models. In particular, we will show that there exist Carrollian counterparts of the facts that the Galilei algebra can be centrally extended to the Bargmann algebra, and that there exists a corresponding particle action. We will interpret our results in the context of decoupling limits of string theory and its timelike T-duals à la Hull.

Time: 18:15 – 18:35
Speaker: Christodoulou, Stavros (University of Cyprus)
Title: Wavefunction of the universe from a Lorentzian path integral in three-dimensional gravity
Abstract: Recent work in quantum cosmology avoids the ambiguities associated with Euclidean analytic continuation for computing the wavefunction of the universe using the path integral formulation by resorting to the Lorentzian signature. In this work, our goal is to evaluate the gravitational path integral directly in Lorentzian signature, focusing on a minisuperspace model that describes a three-dimensional universe with a positive cosmological constant. The high symmetry (spatial homogeneity and isotropy) of this model reduces the wavefunction of the universe to a gravitational path integral over a single scale factor and to one over the lapse function. After applying a specific gauge-fixing procedure to remove the redundancy associated with time reparametrizations, we perform the path integral over the scale factor, thereby reducing the wavefunction of the universe to a one-dimensional ordinary integral that can be evaluated using Picard–Lefschetz theory. Our analysis reveals an infinite set of saddle points, a feature that, to our knowledge, has not been explored in previous work, and also favors a Vilenkin-Linde type of choice for the analytic continuation of time, as oposed to a Hartle-Hawking prescription.

Time: 18:35 – 19:00
Speaker: Pekar, Simon Alexandre (SISSA)
Title: TBA
Abstract: TBA

Time: 19:00 – 19:25
Speaker: Radkovski, Jury ()
Title: Quantizing Horava Gravity
Abstract: Based on arXiv:2512.14864 and work in progress. We formulate the quantum version of non-projectable Hořava gravity as a Lagrangian theory with a path integral in the configuration space with an ultra-local in time, but non-local in space, field-dependent measure. Using auxiliary fields, we cast the measure into a local form satisfying several bosonic and fermionic symmetries. We perform explicit one-loop computations and identify the questions that need to be addressed to prove perturbative renormalizability of the non-projectable Hořava gravity.

2.5 Friday, September 11, 2026

Time: 9:00 – 9:30
Speaker: Sagnotti, Augusto (Scuola Normale Superiore Pisa)
Title: Highlights on non-supersymmetric strings
Abstract: TBA

Time: 9:30 – 10:00
Speaker: Antoniadis, Ignatios (LPTHE Paris and IAS Princeton)
Title: TBA
Abstract: TBA

Time: 10:00 – 10:30
Speaker: Angelantonj, Carlo (University of Torino)
Title: TBA
Abstract: TBA

Time: 11:00 – 11:30
Speaker: Kokorelis, Christos (American University of Iraq-Baghdad)

Title: Sterile neutrinos from intersecting D-brane string compactifications
Abstract: We review recent experimental results have constrained the allowed parameter space of sterile neutrino masses. Using a 4D intersecting D6-brane string model coming from compactifications of IIA theory on 6D toroidal orientifolds, I will describe the sterile neutrino appearance in Standard like models from intersecting branes and present new estimations on the range of allowed sterile neutrino masses.

Time: 11:30 – 12:00
Speaker: Cubrovic, Mihailo (Institute of Physics Belgrade)
Title: Precision holography, chaos and averaging in bubbling geometries
Abstract: We consider the partition functions and correlation functions of bubbling geometries, and show how the quantum fluctuations obtained from the equivalent matrix model or from giant graviton expansion match phenomenological ensemble averaging with appropriate distributions. We also consider the CFT picture and the connection to mixed huge-giant correlators.

Time: 12:00 – 12:30
Speaker: Baggioli, Matteo (Shanghai Jiao Tong University)
Title: Realizing Strange Metal Magnetotransport via Holographic Duality
Abstract: A long-standing puzzle in condensed matter physics is the dual transport scaling of strange metals: a linear-in-temperature resistivity alongside a quadratic-in-temperature Hall angle, a combination that fundamentally defies the standard Fermi liquid paradigm. Applied holography (AdS/CMT) has long been framed as a natural framework to resolve this tension, leveraging gauge-gravity duality to describe strongly correlated systems without well-defined quasiparticles. Yet, despite years of effort, a viable holographic model simultaneously realizing both scalings has remained elusive. In this talk, I will show how this long-standing promise can finally be kept by shifting focus away from zero-temperature ground states. By identifying a novel mechanism operating over an intermediate temperature window, we provide a concrete holographic realization of strange-metal magnetotransport.

Time: 12:30 – 12:55
Speaker: Shao, Wei-hsiang (RIKEN iTHEMS)
Title: Standard Model from IIB Matrix Model
Abstract: In this talk, I will discuss the emergence of the Standard Model sector as a low-energy effective theory of the type IIB matrix model. In particular, I will demonstrate that by compactifying six of the ten dimensions with a nontrivial gauge bundle, the fermion content of the Standard Model can be realized in four dimensions, while a single Higgs doublet appears as a massless mode associated with fluctuations of the internal gauge field. This talk is based on ongoing work with Pei-Ming Ho, Hikaru Kawai, and Worapat Piensuk.

Time: 16:30 – 16:55
Speaker: Paraskevopoulou, Antonia (Max-Planck-Institut fur Physik (Werner-Heisenberg-Institut), Garnich)
Title: TBA
Abstract: TBA

Time: 16:55 – 17:20
Speaker: Cesaro, Mattia (Max Planck Institute for Gravitational Physics (AEI), Golm)
Title: Integrable auxiliary-field deformations of the D=2 Breitenlohner-Maison model and their four-dimensional uplifts
Abstract: The two-dimensional Breitenlohner-Maison (BM) model is a classically integrable subsector of D = 4 general relativity endowed with two commuting Killing isometries, obtained via Kaluza-Klein reduction to D = 2. In this talk, I will explain how to derive an infinite family of deformations thereof, by employing and extending the auxiliary-field framework developed by Ferko and Smith in the context of the Principal Chiral model. I will show how to uplift these deformations back to D = 4, relying on an ansatz inspired by duality-invariant Lagrangian formulations of Einstein theory. Finally, I will comment on the resulting four-dimensional deformed model thus obtained, a higher-derivative theory seemingly lacking manifest diffeomorphism invariance, and try to make sense of its puzzling physical interpretation.

Time: 17:50 – 18:10
Speaker: Aggarwal, Aviral (Masaryk University)
Title: Scale Separation in 3d
Abstract: TBA

Time: 18:10 – 18:30
Speaker: Crisafio, Matteo Kevin (University of Turin)
Title: Bismut-Hermitian-Einstein manifolds from generalised supergravity
Abstract: In this talk, I will discuss a modification of the Hull-Strominger system, a renowned system of equations that arises in the context of heterotic supergravity and yields classes of non-Kaehler geometries. We consider a deformation of the corresponding Killing spinor equations, whose associated geometry is that of Bismut-Hermitian-Einstein (BHE) manifolds, which have recently attracted interest in the mathematical literature. In particular, Apostolov et al. demonstrated that compact 6d BHE manifolds are always torus fibre bundles over 4d Kaehler manifolds obeying a specific non-linear PDE. Interestingly, this PDE also emerges in the context of Gauntlett-Kim (GK) geometries, well-studied in the physics literature; in fact, the latter describe supersymmetric solutions of Type II/11d supergravity on AdS_3 x Y_7 and AdS_2 x Y_9, therefore making them relevant for holography. Inspired by the generalised supergravity developed by Tseytlin and Wulff, which is a modification of Type I/Heterotic supergravity, we find a system of Killing spinor equations that are equivalent to the BHE conditions. This approach clarifies the spinorial origin of BHE and steady generalised Ricci solitons, of which BHE are always an example; moreover, since this procedure does not require compactness, we successfully extend the analysis of Apostolov et al. to the case where the 6d BHE is non-compact. I will conclude by discussing how this approach can be adapted to higher-dimensional manifolds and commenting on the role of equivariant volumes in GK geometry.

Time: 18:30 – 18:55
Speaker: Rondeau, Francois (Ecole Normale Supérieure de Lyon, Lyon, France (until August 2026) - University of Würzburg, Würzburg, Germany (from September 2026))
Title: Jackiw-Teitelboim gravity as a testing ground for semiclassical gravity conjectures
Abstract: The generalized entropy associated with codimension-two surfaces plays a central role in semiclassical gravity. By extending the notion of classical area to incorporate quantum effects, it underlies semiclassical generalizations of the classical covariant entropy bound of Bousso and the classical focusing theorem: the Strominger-Thompson Quantum Bousso Bound (QBB), the Quantum Focusing Conjecture (QFC) and its restricted version (rQFC). After reviewing these conjectures, I will investigate their validity in two-dimensional semiclassical Jackiw–Teitelboim gravity. I will establish the Strominger–Thompson QBB and the rQFC in this setting, while exhibiting explicit violations of the stronger, unrestricted QFC. These results suggest that the unrestricted QFC may not constitute a fundamental statement of semiclassical gravity, a possibility that deserves further investigation in higher-dimensional settings. This talk is based on 2311.17152 [hep-th] and 2510.13961 [hep-th].

Time: 18:55 – 19:20
Speaker: Glennon, Keith (Trinity College Dublin)
Title: On the Extended Geometry of Kac-Moody Symmetries of Quantum Gravity
Abstract: We argue that the low energy sector of various theories of quantum gravity should possess hidden infinite-dimensional Kac-Moody algebra symmetries, and that they become manifest through an infinite collection of duality relations. We discuss how these Kac-Moody symmetries require an extension of space-time to an extended geometry that, in part, allows for solitonic/brane-like degrees of freedom. We then focus on m-theory at low energies and it's hidden E11 Kac-Moody symmetry. We present a linearized analysis which shows the so-called 'section conditions', that would remove the brane-like extended degrees of freedom, including in the sector of E11 that contains double field theory, need not be imposed on the fields of the theory. In part based on arXiv:2607.01999

2.6 Saturday, September 12, 2026

Time: 9:00 – 9:30
Speaker: Faraggi, Alon (University of Liverpool)
Title: Standard Model and Beyond with Strings Attached
Abstract: The SM model provides viable parameterisation of all observable subatomic data up to the TeV scale and possibly up to the Planck scale. Further insight into the SM parameters can be obtained by synthesising it with gravity. A consistent contemporary framework for this synthesis is provided by string theory. String phenomenology provides a predictive framework to confront string theory with observational data. I will discuss three such predictions within the context of string derived GUT models. The first is the prediction that the Higgs is a fundamental scalar particle and enables the derivation of detailed fermion mass matrices. Over the past few years, we advocated the construction of an Upgraded Superconducting Super Collider experiment that will test the Higgs sector of the SM and Beyond. The key of our proposal as compared to other contemporary proposals is the utilisation of available NbTi superconducting alloy technology that will enable USSC operations to start 10 years from decision at 50-60TeV CoM energy scale. The second prediction is a prediction of a string derived Z' model whose properties are fixed in the string model. The third is of

string derived dark matter and UHECR candidates.

Time: 9:30 – 10:00
Speaker: Chatzistavrakidis, Athanasios (Ruđer Bošković Institute)
Title: Induced geometry of effective dynamics in the adiabatic limit of quantum-classical systems
Abstract: TBA

Time: 10:00 – 10:30
Speaker: Steinacker, Harold (University of Vienna)
Title: Spacetime and gravity in 3+1 dimensions from the IKKT model
Abstract: We describe how near-realistic 3+1-dimensional quantum spacetime can arise from the IKKT matrix model in a non-trivial vacuum or background given by a non-commutative matrix configuration. The emergent gravity theory arising on that background is discussed. The interplay between the Einstein-Hilbert term induced at one loop and the matrix action leads to some long distance modifications of gravity. It can be interpreted as a braneworld scenario at weak coupling, distinct from target space gravity.

Time: 11:00 – 11:30
Speaker: Kowalski-Glikman, Jerzy (National Centre for Nuclear Research Warsaw and University of Wroclaw)
Title: RG=GR: A Common Cardinal Resolution of the Cosmological Constant and Higgs Hierarchy Problems
Abstract: I introduce a physical, scale-free, cardinal regularization, which is endowed with a "cardinal" number N that has entropic properties, and which is consistent with the principle of general covariance, and thus calls for a relation between the Renormalization Group (RG) and the Euclidean formulation of General Relativity (GR). Using these new concepts I present a self-consistent calculation of the cosmological constant and demonstrate the radiative stability of both the observed cosmological constant and the Higgs mass.

Time: 11:30 – 12:00
Speaker: Leontaris, George (University of Ioannina)
Title: TBA
Abstract: TBA

Time: 12:00 – 12:30
Speaker: Wu, Siye (NTHU, Hsinchu, Taiwan)
Title: Classical Aspects of Higher-Form Symmetries
Abstract: Higher-form symmetries introduced in the work of Gaiotto-Kapustin-Seiberg-Willet are global symmetries whose action on the quantum Hilbert space depend on extended objects and so are the charged objects. In this talk, we explore the classical origin of higher-form symmetries as actions of certain cohomology groups on fields and some of its consequences.
