PROCEEDINGS OF SCIENCE

Foreword to the Proceedings of the Corfu Summer Institute "School and Workshops on Elementary Particle Physics and Gravity" (CORFU2019)

Dedicated to the memory of Nikos Antoniou

1. Foreword

These are the Proceedings of the scientific activities of CORFU2019, the 19th Hellenic School and Workshops on Elementary Particle Physics and Gravity, which took place from August 31st to September 25th, 2019. The Workshops were hosted by the European Institute for Sciences and their Applications (EISA) in the conference center of the former Royal Palace garden of Mon Repos in Corfu, Greece. The scientific activities consisted of a series of four events, *the Workshop on Connecting Insights in Fundamental Physics: Standard Model and Beyond* *the Conference on Recent Developments in Strings and Gravity*, *the Humboldt Kolleg Frontiers in Physics: From the Electroweak to the Planck Scales* *and the Workshop on Quantum Geometry, Field theory and Gravity* and a rich set of outreach activities (TV and radio interviews – see e.g. here - , Master Classes, a series of lectures to High School teachers and talks for the public). A dedicated cultural event by the Mantzaros Philarmonic Orchestra took place at the Grand Hall of the Ionian Academy. Several other social events were organized for all CORFU2019 activities.

We refer to the website:

http://www.physics.ntua.gr/corfu2019

for the various organizational and practical details.

These Proceedings are dedicated to our colleague Nikos Antoniou, who passed away on Feb 13, 2020. Nikos Antoniou was a beloved friend, a colleague and a teacher of many members of the Particle Physics Community of Greece. He was a unique personality, a dedicated academic, well known for his academic ethos, an excellent teacher and a brilliant "public lecturer".

Nikos shared all these qualities and experience with great generosity to all the academic institutions that he has served: the NCSR Demokritos, the University of Athens and the University of Cyprus. He was an important contributor to the scientific activities in Corfu since their beginning in 1981. Besides his scientific contributions, he was the one who, as the Scientific Director of NCSR Demokritos, managed to secure critical funding that made those meetings possible. For all that, all the scientists of the EISA wish to express our deepest gratitude. In addition, Nikos Antoniou contributed the outmost to the Greek Particle Physics Community during his terms as the Scientific Director of the NCSR Demokritos, as the President of the Greek Physical Society and as the representative of Greece to the CERN Council.

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Nikos Antoniou did pioneering work in Quantum Chromodynamics at finite temperature and density. He was the first who suggested to look for imprints of fractal geometry in momentum space as a signature of the chiral critical point and connected it with finite size scaling. His ideas influenced the search for the QCD critical point in NA49 and NA61 experiments at CERN significantly. Our colleagues Fotis Diakonos and Kostas Papadopoulos will add more details on Nikos Antoniou scientific achievements in a separate memorial contribution.

We shall always remember Nikos Antoniou as a wise and dedicated academic, with a very broad and deep knowledge extending far beyond his research interests, and as a sweet person ready to share generously his knowledge and experience with everyone close to him, especially with the young scientists. We express our deepest sympathy to the members of his family.

Nikos Antoniou memory will stay forever in our hearts.

The Corfu Summer Institute has a very long, interesting and successful history. The Corfu Meetings started as a Summer School on EPP mostly for Greek graduate students in 1982, and since then it has developed into a leading international Summer Institute in the field of elementary particle physics (covering both experimental and theoretical advances) and more recently of gravity. In addition, it has launched a very rich outreach program to teachers and school students that has been widely appreciated by the local society and scientific community over the years.

The structure of the "Summer Institute on EPP and Gravity 2019" was based on the general format developed, established and tested in all previous Corfu Meetings. It was hosted by the European Institute for Science and their Applications (EISA), which has been the host of the meetings since its foundation in 2006. EISA aims to serve as a permanent extension of the Corfu Summer Institutes, with the additional target to attract first class scientists who can stay in Corfu for a long period and produce a significant research output. The scientific activities of CORFU2019 were held in the conference hall in the garden of Mon Repos in the town of Corfu, which is the permanent basis of EISA.

Moreover, during the recent years we have had a very exciting development. The Corfu Municipality, responding to a call for proposals by the central Government, submitted a proposal for the renovation of three old buildings in the garden of Mon Repos. The proposal has been approved and the grant will provide the funding for the realization of this project. The constructions started last year and they are expected to be completed by next summer. This means that, hopefully, the dream of having buildings in Mon Repos hosting the participants of the EISA's scientific activities and providing them office space and the necessary infrastructure will be realised next year!

The first event was the ***Workshop on Connecting Insights in Fundamental Physics: Standard Model and Beyond*** (August 31 to September 11, 2019). It was coorganized and

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supported by the COST Actions CA15108 “Connecting insights in fundamental physics” and CA16201 “Unraveling new physics at the LHC through the precision frontier” (supported by the EU Framework Programme Horizon 2020), the National Technical University of Athens, the Municipality of Corfu, the Regional Government of the Ionian Islands (Periphery of the Ionian Islands), Univ. of Valencia and IFIC, Bonn University, CFTP/IST/U. Lisboa, IFIN, University of Warsaw.

The Organizing Committee was:

G. Barenboim (Univ. of Valencia and IFIC), H. Dreiner (Bonn University), G. Perez (Weizmann Inst. of Science), M. Raidal (NICPB, Tallinn)l, M.N. Rebelo (CFTP/IST/U. Lisboa), I. Tamborra (NBI Copenhagen), Z. Trocsanyi (University of Debrecen), A. Weiler (TU Munich).

The Local Organizing Committee was:

D. Ghilencea (IFIN), J. Kalinowski (University of Warsaw), S. Maltezos (NTUA), G. Manolakos (NTUA), G. Patellis(NTUA), N. Tracas (NTUA), D. Varouchas, G. Zoupanos(NTUA).

The Advisory Committee was:

F. del Aguila (Granada U.), J. J.A. Aguilar Saavedra (U. Granada), I. Antoniadis (U. Bern - LPTHE), R. Barbieri (SNS, Pisa), M. B. Gavela (Autonoma U., Madrid), D. Ghilencea (IFIN), N. Glover (Durham U., IPPP), W. Hollik (MPI, Munich), J. Kalinowski (University of Warsaw), G. Koutsoumbas (NTUA), C. Papadopoulos (NCSR Demokritos), R. Pittau (U. Granada), M. N. Rebelo (T. U. Lisbon), A. Ringwald (DESY), G. Rodrigo (IFIC Valencia), S. Sarkar (Oxford U.), E. Tsesmelis (CERN), D. Varouchas (LAL-Orsay), A. Weiler (TU Munich), G. Zanderighi (CERN & Oxford U.).

The second event was the ***Conference on Recent Developments in Strings and Gravity*** (September 10 - 16, 2019). It was coorganized and supported by the National Technical University of Athens, the Municipality of Corfu, the Regional Government of the Ionian Islands (Periphery of the Ionian Islands), the Bošković Inst. Zagreb, LMU & Max Planck Inst. Munich, CPHT Ecole Polytechnique, Turin U.

The Scientific Organizers were:

C. Angelantonj (U Turin)
A. Chatzistavrakidis (Bošković Inst., Zagreb)
A. Kehagias (NTUA)
D. Lüst (LMU & Max Planck Inst., Munich)

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H. Partouche (CPHT, Ecole Polytechnique)
M. Petropoulos (CPHT, Ecole Polytechnique)

The third event was ***the Humboldt Kolleg Frontiers in Physics: From the Electroweak to the Planck Scales*** (September 15 - 19, 2019). It was supported mostly by the Alexander von Humboldt-Stiftung/Foundation and it was coorganized by the National Technical University of Athens, the Municipality of Corfu, the Regional Government of the Ionian Islands (Periphery of the Ionian Islands), the Ephorate of Antiquities of Corfu, ENS Paris, Ecole Polytechnique, LPT Orsay, U Paris-VI, LMU & Max Planck Inst. Munich, INFN - Napoli, U. Napoli Federico II.

The Scientific Organizers were:

C. Bachas (ENS, Paris)
E. Dudas (Ecole Polyt & Orsay, LPT)
N. Irges (NTUA)
V. Kazakov (ENS, Paris & U Paris-VI)
D. Lüst (LMU & Max Planck Inst., Munich)
P. Vitale (INFN, Napoli and University of Napoli Federico II)
G. Zoupanos (NTUA)

The fourth event was the ***Workshop on Quantum Geometry, Field Theory and Gravity***, (September 18 – 25, 2019). It was coorganized and supported by the National Technical University of Athens, the Municipality of Corfu, the Regional Government of the Ionian Islands (Periphery of the Ionian Islands), the Ephorate of Antiquities of Corfu, U. Piemonte Orientale, Kyoto U, KEK, SOKENDAI Tsukuba, INFN Napoli, Dublin Institute Adv Studies, Vienna U., Heriot-Watt U., Tokohu U.

The Scientific Organizers were:
K.N. Anagnostopoulos (NTUA)
P. Aschieri (U. Piemonte Orientale)
H. Kawai (Kyoto U.)
F. Lizzi (INFN, Napoli and University of Napoli Federico II)
J. Nishimura (KEK & SOKENDAI, Tsukuba)
D. O'Connor (Dublin Institute Adv Studies)
H. Steinacker (Vienna U.)
R. Szabo (Heriot-Watt)
S. Watamura (Tokohu U.)
G. Zoupanos (NTUA)

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The outcome was very impressive indeed, given that the four sessions gathered 400 participants. More impressive was the participation of young scientists: 144 participants were young researchers, and we were able to fully or partially cover the local expenses of 43 of them. We were also able to fully or partially cover the local expenses of several senior researchers.

In short, internationally leading scientists have gathered to participate to the School and Workshops, giving lectures and creating a unique and stimulating scientific environment for the senior as well as the young scientists.

More specifically, the ***Workshop on Connecting Insights in Fundamental Physics: Standard Model and Beyond*** attracted 110 senior and young scientists in total; 99 of them presented their current research project as workshop speakers.

The workshop speakers were the following:

S. Abel (University of Durham), C.Anastasiou (ETH Zurich), I. Antoniadis (University of Bern - LPTHE), N.s Antoniou (Athens University), E. Barberio (University of Melbourne), G.Barenboim (University of Valencia & IFIC (UV-CSIC)), P.Bellos, (NKUA), H. Belusca-Maito (University of Zagreb), J. Bersini (Ruđer Bošković Institute, Zagreb), S. Biondini (Universita e INFN), F.J. Botella Olcina (Univ. of Valencia and CSIC), G. Branco (Instituto Superior Tecnico), F. Buccella (Napoli U.), A. Chatrabhuti (Chulalongkorn University), C. Chen (U. of Science and Technology of China), K. Y. Choi (Chonnam National University), C. Coriano (University of Salento), Y.Dalianis (NTU Athens), D.Das (Lund U.), S.De (NISER), A. De Roeck (CERN), A. Dedes (University of Ioannina), A. Djouadi (Unite Reseaux du CNRS), I. Dorsner (University of Split Faculty of Science), M. Dracos (Centre National de la Recherche Scientifique), H. Dreiner (Bonn University), L. Fayard (Centre National de la Recherche Scientifique), R. Fleischer (Vrije U. Amsterdam), P. Frampton (University of Salento), M.Gerbino (Argonne National Lab.), D.Ghilencea (IFIN-HH), A. Ghoshal (University Roma Tre & L.N.F. - I.N.F.N.), B. Grzadkowski (University of Warsaw), D. Guadagnoli (LAPTh Annecy), T. Hahn (MPI f. Physik), N. Harnew (University of Oxford (GB)), A. Held (Heidelberg University), A. Ilakovac (Univ. of Zagreb), F. Joaquim (CFTP-IST), S. Jung (Seoul National University), S. K. Kang (Seoul-Tech), P. Kanti (University of Ioannina), A. Karam (NICPB), D. Karamitros (NCBJ), V. Keus (University of Helsinki), J. E. Kim (Kyung Hee University), S. F. King (University of Southampton), M. Krasny (U. Sorbonne Nouvelle Paris), T. Kugo (YITP, Kyoto University), K. Kutak (IFJ PAN), A. K. Kvam (Univ. of Washington), Z. Lalak (University of Warsaw), G. Lazarides (AUTH), S. J. Lee (Korea University), G. Leontaris (University of Ioannina), K. L. (Tsung-Dao Lee Inst. & Shanghai Jiao Tong U.), D. Locke (University of Southampton), G. Luciano (U. of Salerno & INFN-Naples), E.t Ma (U. of California, Riverside), E. Malami (Nikhef), P. Marquard (DESY), N. Mavromatos (University of London), A.

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Mazumdar (University of Groningen), A. Mitov (University of Cambridge), V. Mitsou (U. of Valencia and CSIC), M. Nemevsek, H. Nielsen (U. of Copenhagen), I. Oda (University of the Ryukyus), M. Olechowski (University of Warsaw), G. Papathanasiou (DESY Hamburg), G. Patellis (NTU Athens), M. Pepe-Altarelli (CERN), A. Perez Martinez (University of Zaragoza), A. Pilaftsis (University of Manchester), M. Raidal (National Institute of Chemical Physics and Biophysics), S. Consuegra Rodriguez (DESY), G. G. Ross (University of Oxford), J. Rubio (Helsinki Inst. of Physics), I. Saha (INFN Rome1), K. Sakurai (University of Warsaw), R. Santos (ISEL), E. Saridakis (NTU Athens & Baylor U.), H. R. Sfar (University of Antwerp), F. Shuichiro (Central China Normal University), S. Simsek (Istanbul Bilgi University(TR)), A. Tokareva (Inst. for Nuclear Research), E. Tsesmelis (CERN), J. W. (Chinese Academy of Sciences (CN)), A. Wulzer (CERN and EPFL), M. Yamada (Heidelberg University), Li Yuan (Beihang University), A. Zarnecki (University of Warsaw), H. Zhu (U. of Science and Technology of China & Brookhaven Nat. Lab.).

The full programme of the Workshop was the following:

Saturday 31st September 2019
Arrival Day

Sunday Sept 1st September 2019

16:00 – 17:00	Krzysztof Kutak (IFJ PAN)	QCD theory review
17:00 – 17:30	Nikos Antoniou (Athens University)	Effective Description of Critical QCD
17:30 – 18.00	Georgios Papathanasiou (DESY Hamburg)	The Steinman Cluster Bootstrap for N=4 Super Yang-Mills Amplitudes

19.00 Concert of Philharmonic Orchestra "Mantzaros" at Ionian Academy

20.00 Welcome Reception at AKTAION

Monday Sept. 2rd September 2019

9:00 – 10:00	Louis Fayard (Centre National de la Recherche Scientifique)	Highlights from ATLAS
10:00 – 11:00	Andrea Wulzer (CERN and EPFL)	Electroweak Precision at Current and Future Colliders
11:00 - 11:30	Coffee break	

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11:30 - 12:00	Kun Liu (Tsung-Dao Lee Inst. & Shanghai Jiao Tong U.)	Higgs studies in ATLAS and CMS
12:00 - 12:30	Nikolaos Mavromatos (University of London)	Quantum Anomalies in the Running Vacuum Universe and Matter-Antimatter Asymmetry
12:30 – 13:00	Vasiliki Mitsou (U. of Valencia and CSIC)	MoEDAL physics results and future plans
13:00 – 13:30	Mieczyslaw Krasny (U. Sorbonne Nouvelle Paris)	The Gamma Factory project for CERN
13:30 - 16:00	Lunch break	
16:00 – 16:30	Dipankar Das (Lund U.)	Evasive maneuvers for a sequential fourth generation to circumvent the Higgs data
16:30 – 17:30	Sudipan De (NISER)	ALICE results
17:30 – 17:50	Heling Zhu (U. of Science and Technology of China & Brookhaven Nat. Lab.)	Measurement of inclusive 4l (llvv) + 2-jet cross section and search for EWK component in 13 TeV proton-proton collisions with the ATLAS detector
17:50 - 18:20	Coffee break	
18:20 – 18:40	Cheng Chen (U. of Science and Technology of China)	Observation of H to bb decays and VH production with the ATLAS detector
18:40 - 19:00	Panagiotis Bellos (NKUA)	Event selection and differential cross section measurements in H->4l decays

Tuesday Sept. 3rd September 2019

9:00 – 9:30	Stephen F. King (U. of Southampton)	B anomalies linked to the problem of the origin of Yukawa couplings.
9:30 – 10:15	Monica Pepe-Altarelli (CERN)	Rare decays at LHCb
10:15 – 11:00	Neville Harnew (U. of Oxford)	CP violation and spectroscopy at LHCb
11:00 - 11:30	Coffee break	
11:30 - 12:30	Gustavo Branco (Instituto Superior Tecnico)	Selected topics on flavour physics

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12:30 – 13:00	Peter Marquard (DESY)	Heavy-quark form factors
13:00 – 13:30	Robert Fleischer (Vrije U. Amsterdam)	Probing New Physics with Leptonic Rare B Decays
13:30 - 16:00	Lunch break	
16:00 – 16:30	Diego Guadagnoli (LAPTh Annecy)	Where we are on B-physics discrepancies
16:30-17:00	Jin Wang (Chinese Academy of Sciences (CN))	Top Physics in ATLAS and CMS
17:00 - 17:30	Franco Buccella (Napoli U.)	On the mass of the sexaquark
17:30 – 17:50	Eleftheria Malami (Nikhef)	Exploring New Physics in B to pi K Decays
17:50 - 18:20	Coffee break	
18:20 - 18:40	Eleftheria Malami (Nikhef)	Bs to Ds+- K-+ decays: Can they reveal New Physics?
18:40 - 19:00	Sinem Simsek (Istanbul Bilgi University (TR))	Measurement of the weak mixing phase phi_s through time-dependent CP violation in Bs0->J/psi phi decay in ATLAS
19:00 – 20:00	OST CA15108 Core Group meeting	

Wednesday 4th September 2019

9:00 – 9:30	Gabriela Barenboim (University of Valencia & IFIC (UV-CSIC))	Inflation meets neutrinos
9:30 – 10:00	Martina Gerbino (Argonne National Lab.)	Cosmological constraints on neutrino physics
10:00 – 11:00	Stephen F. King (University of Southampton)	Neutrino physics - a review
12.00	Excursion – Boat trip	

Thursday Sept. 5th September 2019

9:00 – 11:.30	COST CA15108 Management Committee meeting

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11:30 - 12:00	Miha Nemevsek (Jožef Stefan Institute)	Polygonal bounces and false vacuum decay
12:00 – 12:30	Marcos Dracos (Centre National de la Recherche Scientifique)	Long baseline neutrino experiments and the European Spallation Source neutrino Super Beam
12:30 – 13:00	Gaetano Luciano (U. of Salerno & INFN-Naples)	Neutrino oscillations in Unruh radiation: the proton's testimony
13:00 – 13:30	Sin Kyu Kang (Seoul-Tech)	Leptogenesis
13:30 - 16:00	Lunch break	
16:00 – 16:30	Monica Pepe-Altarelli (CERN)	Determination of the Number of Neutrinos at LEP (30 years later)
16:30-17:00	Dimitrios Karamitros (NCBJ)	Forbidden Freeze-In
17:00 - 18:00	Aleksander Zarnecki (University of Warsaw)	ILC and CLIC
18:00 - 18:30	Coffee break	
18:30 - 19:00	Francisco Jose Botella Olcina (U. of Valencia & CSIC)	(g-2) in the General Flavour Conserving 2HDM
19:00 - 19:30	Herbi Dreiner (Bonn University)	Searching for long-lived neutralinos
19:30 – 19:50	Haifa Rejeb Sfar (University of Antwerp)	Searches for long-lived particles with CMS detector

Friday Sept. 6th September 2019

9:00 – 10:00	Emmanuel Tsesmelis (CERN)	FCC
10:00 – 10:30	Martti Raidal (National Inst. of Chemical Physics and Biophysics)	Primordial black holes as a possible candidate for dark matter

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10:30 – 11:00	Abdelhak Djouadi (Unite Reseaux du CNRS)	Dark Matter and the Higgs
11:00 - 11:30	Coffee break	
11:30 - 12:30	Albert De Roeck (CERN)	CMS results
12:30 – 13:00	Bohdan Grzadkowski (University of Warsaw)	Testing Pseudo-Goldstone Dark Matter
13:00 – 13:30	Rui Santos (ISEL)	One-loop contributions to dark matter-nucleon scattering in scalar and vector DM models
13:30 - 16:00	Lunch break	
16:00 – 16:30	Aleksander Zarnecki (University of Warsaw)	Inert Doublet Model signatures at Future e+e- Colliders
16:30-17:00	Ipsita Saha (INFN Rome1)	Can measurements of 2HDM parameters provide hints for high scale supersymmetry?
17:00 - 17:30	Holger Nielsen (U. of Copenhagen)	Status of our dark matter pearl model fittng extremely well the 3.5 keV X-ray radition intensity and frequency as good as dimensiona
17:30 – 18:00	Vasiliki Mitsou (Univ. of Valencia and CSIC)	SUSY searches in ATLAS and CMS
18:00 - 18:30	Coffee break	
18:30 - 19:00	Li Yuan (Beihang University)	Exotics and BSM in ATLAS and CMS (Non DM searches)
19:00 - 19:20	Sandra Consuegra Rodriguez (DESY)	Search for a pair of pseudoscalars in decays of the Higgs boson in CMS
19:20 – 19:40	Aaron Held (Heidelberg University)	The predictive power of the asymptotic safety paradigm for gravity and matter

Saturday 7th September 2019

9:00 – 9:30	Thomas Hahn (MPI f. Physik)	New Features in FeynArts & Friends, and how they got used in FeynHiggs

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10:00 – 10:30	Alexander Mitov (U. of Cambridge)	Precision physics applications for 2->2 and 2->3 NNLO LHC calculations
10:00 – 10:30	Athanasios Dedes (U. of Ioannina)	Effective Field Theory insight to Physics Beyond the Standard Model
10:30 – 11:00	Simone Biondini (Universita e INFN)	Perturbative unitarity bounds for effective composite models
11:00 - 11:30	Coffee break	
11:30 - 12:30	Graham Garland Ross (U. of Oxford)	Beyond the Standard Model
12:30 – 13:00	Venus Keus (U. of Helsinki)	CP-violation in extended Higgs sectors
13:00 – 13:30	Panagiota Kanti (U. of Ioannina)	Black Holes and Wormholes in Einstein-scalar-Gauss-Bonnet Theories
13:30 - 16:00	Lunch break	
16:00 – 16:30	Ilja Dorsner (U. of Split Faculty of Science)	On the viable two leptoquark model for the B-physics anomalies
16:30-17:00	Kazuki Sakurai (University of Warsaw)	A fresh look at the gauge coupling unification and proton decay
17:00 - 17:30	Charalampos Anastasiou (ETH Zurich)	Local singular structure of gauge theory amplitudes
17:30 – 18:00	Apostolos Pilaftsis (Uv. of Manchester)	Quartic Coupling Unification in multi-Higgs Doublet Models
18:00 - 18:30	Coffee break	
18:30 - 19:00	Anupam Mazumdar (U. of Groningen)	Towards large entropic conformal window of gravity
19:00 - 19:20	Grigorios Patellis (NTU Athens)	Updates in Reduction of Couplings in Finite Unified Theories
19:20 – 19:40	Adriana Perez Martinez (U. of Zaragoza)	Higgs Potential with S3 symmetry

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Sunday 8th September 2019

9:00 – 9:30	Dumitru Ghilencea (IFIN-HH)	Stueckelberg breaking of Weyl conformal geometry
9:30 – 10:00	Graham Ross (U. of Oxford)	Quantum scale invariance, hierarchy generation and inflation
10:00 – 10:30	Ichiro Oda (U. of the Ryukyus)	Planck scale from broken local conformal invariance in Weyl geometry
10:00 – 11:00	Taichiro Kugo (YITP, Kyoto U.)	Necessity and Insufficiency of Scale Invariance for solving Cosmological Constant Problem
11:00 - 11:30	Coffee break	
11:30 - 12:00	Zygmunt Lalak (University of Warsaw)	Stability of electroweak vacuum in a scale invariant extension of the SM
12:00 – 12:30	Alexandros Karam (NICPB)	Single-field inflation in models with an R^2 term
12:30 – 13:00	Javier Rubio (Helsinki Inst. of Physics)	Scale symmetry, the Higgs and the Cosmos
13:00 – 13:30	Anna Tokareva (Inst. for Nuclear Research)	Beyond positivity bounds on Higgs-dilaton model
13:30 - 16:00	Lunch break	
16:00 – 16:30	Seung J. Lee (Korea U.)	Continuum Naturalness
16:30-17:00	Masatoshi Yamada (Heidelberg U.)	Gauge hierarchy problem and scalegenesis
17:00 - 17:30	Elisabetta Barberio (U. of Melbourne)	DM in ATLAS and CMS
17:30 – 18:00	Sunghoon Jung (Seoul National U.)	Gravitational Waves and DM

20:00 Conference Dinner – Tripas Restaurant

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Monday 9th September 2019

9:30 – 10:00	Claudio Coriano (U. of Salento)	Dark Matter as Ultralight Axion-Like particle
10:00 – 10:30	Ignatios Antoniadis (U. of Bern - LPTHE)	Challenges in supersymmetric cosmology
10:30 – 11:00	Steven Adam Abel (U. of Durham)	UV Completion in the Worldline
11:00 - 11:30	Coffee break	
11:30 - 12:00	Marek Olechowski (University of Warsaw)	Axions and clockwork in heterotic M-theory
12:00 – 12:30	Ernest Ma (U. of California, Riverside)	Leptonic Scalars versus Scalar Leptons
12:30 – 13:00	Auttakit Chatrabhuti (Chulalongkorn U.)	A microscopic model for inflation from supersymmetry breaking
13:00 – 13:30	Filipe Joaquim (CFTP-IST)	Dirac neutrinos in the 2HDM with abelian symmetries
13:30 - 16:00	Lunch break	
16:00 – 16:30	Jihn E. Kim (Kyung Hee U.)	Gauge hierarchy problem and SUSY: Think again
16:30-17:00	Funatsu Shuichiro (Central China Normal U.)	Forward-backward asymmetry in the gauge-Higgs unification at the International Linear Collider
17:00 - 17:30	Amon Ilakovac (Univ. of Zagreb)	Bonneau identities in the model gauge bosons fermions and scalars
17:30 – 18:00	Hermes Belusca-Maito (U. of Zagreb)	Treatment of gamma_5 in Dimensionally-Regularized Chiral Yang-Mills Theory with Scalar Fields
18:00 - 18:30	Coffee break	
18:30 – 18:50	Daniel Locke (U. of Southampton)	Minimal Consistent Fermion Dark Matter
18:50 - 19:10	Jahmall Bersini (Ruđer Bošković Ins.)	Spectrum of anomalous dimensions in hypercubic theories
19:10 – 19:30	Anish Ghoshal (University Roma Tre & L.N.F. - I.N.F.N.)	Inflation, (P)reheating and Neutrino Anomalies Production of Sterile Neutrinos with Secret Interactions

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Tuesday 10th September 2019

9:00 – 9:30	Ki-Young Choi (Chonnam National University)	Dark matter from neutrino observations
09:30 – 10:30	George Lazarides (AUTH)	Particles and the Universe
10:30 – 11:00	Yiannis Dalianis (NTU Athens)	Primordial black holes and remnants of primordial black holes as dark matter: inflationary model building and observational constraints
11:00 - 11:30	Coffee break	
11:30 - 12:00	Emmanuel Saridakis (NTU Athens & Baylor U.)	Theoretical and observational confrontation of cosmology and gravity, and the new era of multi-messenger astronomy
12:00 – 12:30	Paul Frampton (U. of Salento)	Bileptons at the LHC
12:30 – 13:00	Georgios Leontaris (U. of Ioannina)	String loop corrections and de Sitter vacua
13:00 – 13:20	Audrey Katherine Kvam (U. of Washington)	The Lifetime Frontier: Search for displaced hadronic jets in proton-proton collisions at sqrt(s)=13 TeV with the ATLAS detector
13:20	Closing	

The ***Conference on Recent Developments in Strings and Gravity,*** attracted 82 seniors and young scientist in total, and 43 of them have presented their current research project as workshop speakers.

The Workshop speakers were the following:
P. Anastasopoulos, (Vienna U.), D. Anninos (King's College, London), C.Bachas (ENS, Paris), E. Boffo (Jacobs University Bremen), Q. Bonnefoy (DESY), G. Bossard (CNRS Polytechnique), C. Charmousis (LPT Orsay), L. Ciambelli (Ecole Polytechnique, Palaiseau), N. Cribiori (TU Wien), B. De Vaulchier, S. Detournay (ULB), A. Faraggi (Liverpool U.), F. Farakos (KU Leuven), I. Florakis (Ioannina U.), F. Gautason (KU Leuven), D. Giataganas (NKUA), A. Gnecchi, (CERN), G.Karagiannis (Rudjer Boskovic Institute), G. Karananas, (LMU Munich), S.Krippendorf (LMU Munich), G. Linardopoulos (NCSR "Demokritos"), U.Lindstrom, (Uppsala University), D.Lust (LMU-Muenchen/MPI-Muenchen), E. Malek (Albert Einstein Institute Potsdam), H. Nielsen (NBI), Rodrigo Olea (U. Andres Bello),S. Parameswaran (University of Liverpool),H. Partouche (Ecole Polytechnique – CNRS), F. Pezzella (INFN - Naples Section), I.

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Rizos (Ioannina U.), F. Ruehle (CERN), J. Russo (ICREA - U. Barcelona), Y.Sekiguchi (University of Bern), K. Sfetsos, (NKUA), K. Siampos (CERN), S. Nakajima (Osaka City University), S. Reffert (University of Bern), D. Svoboda (Perimeter Institute for Theoretical Physics), C. Toldo (CPHT Ecole Polytechnique), L. Traina (UMONS), D. Tsimpis (U. de Lyon), T. Van Riet (KU Leuven), C. Zwikel (TU Wien),

The full programme of the Workshop was the following:

Thuesday 10th September 2019
Arrival Day

Wednesday, 11th September 2019

9:30-10:00	Constantin Bachas (ENS, Paris)	Massive AdS Supergravities and String Theory
10:00-10:30	Ioannis Florakis (Ioannina U.)	Heterotic Unification and the GUT Scale
10:30-11:00	Christos Charmousis (LPT Orsay)	Rotating Black Holes in Higher Order Gravity Theories
11:00-11:30	Coffee Break	
11:30-12:00	Jorge Russo (ICREA - U. Barcelona)	Phases of N=2 SQCD
12:00-12:30	Ioannis Rizos (Ioannina U.)	On Non-Supersymmetric String Model Building
12:30-17:00	Lunch Break	
17:00-17:30	Dimitrios Giataganas (NKUA)	Anisotropic RG Flows in Holography
17:30-18:00	Dieter Lust (LMU-Muenchen/MPI-Muenchen)	Higher spin states, AdS distance conjecture and the swampland
18:00-18:30	Coffee Break	
18:30-19:00	Yuta Sekiguchi (University of Bern)	O(d,d) Transformations Preserve Classical Integrability
19:00-19:30	David Svoboda (Perimeter Institute for Theoretical Physics)	Commuting Pairs of Generalized Structures and 2D Sigma Models

20:00 Welcome Drink

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Thursday, 12th September 2019

9:30-10:00	Alon Faraggi (Liverpool U.)	Novel Perspectives in String Phenomenology
10:00-10:30	Guillaume Bossard (CNRS Polytechnique)	Kac-Moody exceptional field theory
10:30-11:00	Dionysios Anninos (King's College, London)	de Sitter Horizons and Sphere Partition Functions
11:00-11:30	Coffee Break	
11:30-12:00	Sven Krippendorf (LMU Munich)	Dualities in and from Machine Learning
12:00-12:30	Fabian Ruehle (CERN)	Machine Learning for String Vacua
12:30-17:00	Lunch Break	
17:00-17:30	Paschal Anastasopoulos (Vienna U.)	Emergent/Composite Axions
17:30-18:00	Alessandra Gnecchi (CERN)	Holographic RG Flows for 6D SCFTs
18:00-18:30	Coffee Break	
18:30-19:00	Georgios Karananas (LMU Munich)	Spontaneous Conformal Symmetry Breaking in Fishnet CFT
19:00-19:30	Quentin Bonnefoy (DESY)	Weak gravity and other conjectures with broken SUSY
19:30-20:00	Balthazar De Vaulchier	Adler's Induced Gravity with Compactified Dimensions

Friday, 13th September 2019

9:30-10:00	Ulf Lindstrom (Uppsala University)	Some Thoughts on a Hamiltonian Formulation of Sigma Models, Their Doubling and Possible Supersymmetry
10:00-10:30	Konstantinos Sfetsos (NKUA)	Lambda-Deformations: Exact Results without Loops
10:30-11:00	Thomas Van Riet (KU Leuven)	Euclidean Instantons and Wormholes Sourced by Axions and AdS/CFT
11:00-11:30	Coffee Break	
11:30-12:00	Dimitrios Tsimpis (U. de Lyon)	Consistent Truncation and de Sitter Space from Gravitational Instantons
12:00-12:30	Susha Parameswaran (University of Liverpool)	Dark Energy in String Theory
12:30-17:00	Lunch Break	
17:00-17:30	Konstantinos Siampos (CERN)	An Exact Symmetry in Lambda-Deformed Sigma-Models
17:30-18:00	Rodrigo Olea (U. Andres Bello)	Renormalized Volume and Kounterterms in AdS gravity

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18:00-18:30	Coffee Beak	
18:30-19:00	Luca Ciambelli (Ecole Polytechnique, Palaiseau)	Role of Weyl Connections in Holography
19:00-19:30	Sota Nakajima (Osaka City University)	Exponentially Suppressed Cosmological Constant with Enhanced Gauge Symmetry in Heterotic Interpolating Models
19:30-20:00	Celine Zwikel (TU Wien)	Near Horizon Soft Hair of non-Extremal Black Holes

21.00 Conference Dinner at Tripas Restaurant

Saturday, 14th September 2019

9:30-10:00	Susanne Reffert (U. of Bern)	Compensating Strong Coupling with Large Charge
10:00-10:30	Chiara Toldo (CPHT Ecole Polytechnique)	Rotating Black Holes in Gauged Supergravity
10:30-11:00	Stephane Detournay (ULB)	Warped Symmetries of the Kerr Black Hole
11:30-12:00	Fridrik Gautason (KU Leuven)	Janus and J-fold Solutions from Sasaki-Einstein Manifolds
12:00-12:30	Holger Nielsen (NBI)	Status of our dark matter pearl model fittng extremely well the 3.5 keV X-ray radition intensity and frequency as good as dimensional arguments can provide.

Excursion/Boat Trip

Sunday, 15th September 2019

9:30-10:00	Franco Pezzella (INFN - Naples Section)	Principal Chiral Model T-Duality Symmetries and Doubling
10:00-10:30	Fotis Farakos (KU Leuven)	Non-Linear Supersymmetry and TT-bar
10:30-11:00	Herve Partouche (Ecole Polytechnique – CNRS)	Spontaneous Dark-Matter Mass Generation in Field and String Theory
11:00-11:30	Coffee Beak	
11:30-12:00	Niccolo Cribiori (TU Wien)	The Supersymmetric Anti-D3-Brane Action in KKLT

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12:00-12:30	Georgios Karagiannis (Rudjer Boskovic Institute)	A Graded Geometric Approach to Duality
12:30-17:00	Lunch Break	
17:00-17:30	Emanuel Malek (Albert Einstein Institute Potsdam)	Consistent truncations and Kaluza-Klein spectra from Exceptional Field Theory
17:30-18:00	Eugenia Boffo (Jacobs U. Bremen)	An Action for Dual Gravity and Graded Poisson Algebras
18:00-18:30	Coffee Beak	
18:30-19:00	Georgios Linardopoulos (NCSR "Demokritos")	Solving Holographic Defects
19:00-19:30	Lucas Traina (UMONS)	An Interacting Theory for Multiple Partially Massless Spin-2 Fields

Monday, 16th September 2019
Departure Date

The "***Humboldt Kolleg Frontiers in Physics:From the Electroweak to the Planck Scales",*** *attracted* 117 senior and young scientists in total and 35 of them presented their current research project as workshop speakers

The invited Speakers were:
C. Angelantonj (U Torino), G. Barnich (U Libre Bruxelles), D. Benedetti (LPT Orsay), J. Bengeloun (Paris XIII), E. Bergshoeff (U Groningen), R. Blumenhagen (LMU Munich), T. Coudarchet (Ecole Polyt, CPHT), B. De Wit (Utrecht U), A. Hanany (Imperial College London), L. Jonke (Rudjer Boskovic Inst), H. Kawai (Kyoto U), A. Kehagias (NTUA), J. Kim (Seoul U), V. Kupriyanov (U ABC Sao Paulo), R. Loll (Nijemegen U), D. Lust (LMU & MPI Munich), S. Myungbo (Kyung Hee U), D. Oriti (), B. Ovrut (U Pennsylvania), S. Penati (Milano Bicocca), M. Petropoulos (Ecole Polyt, Palaiseau), A. Platania (U Heidelberg), E. Plauschinn (LMU Munich), G. Savvidy (NCSR Demokritos), P. Schupp (Jacobs U), G. Semenoff (U British Columbia), A. Sitarz (Jagellonian U), E. Skvortsov (Albert Einstein Inst), D. Sorokin (Padova U), H. Steinacker (U Wien), K. Stelle (Imperial College), I. Todorov (INRNE Sofia), J. Vergados (Ioannina U), C. Wetterich (U Heidelberg), R. Zhu (Dublin IAS),

The full programme of the event was:

Sunday Sept. 15th September 2019
Arrival day

Monday Sept. 16th September 2019

09:00-09:15	George Zoupanos (NTUA)	Opening

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09:10-10:00	*Greetings form local authorities* *Welcome of the President of the Greek AvH association, Prof. N. Klamaris*	
10:00-10:30	Dieter Lust (LMU & MPI Munich)	Higher spin states, AdS distance conjecture and the swampland
10:35-11:05	Amihay Hanany (Imperial College London)	Magnetic Quivers
11:05-11:30	Coffee Break	
11:35-12:05	Bernard De Wit (Utrecht U)	Exact results for an STU-model
12:05-12:35	Eric Bergshoeff (U Groningen)	Non-relativistic String theory
12:40-13:10	Burt Ovrut (U Pennsylvania)	R-Parity Violating Decays of Wino Chargino and Bino Neutralino LSPs of the B-L MSSM
13:15-16:00	Lunch break	
16:00-16:30	Erik Plauschinn (LMU Munich)	Type IIB flux vacua and tadpole cancellation
16:35-17:05	John Vergados (Ioannina U)	Beyond the Standard Model- The still elusive neutrinos
17:10-17:40	Carlos Angelantonj (U Torino)	The String Geometry Behind the Topological Amplitudes
17:40-18:10	Coffee break	
18:10-18:40	Jihn Kim (Seoul U)	Gauge hierarchy and SUSY: Think again
18:45-19:15	Alex Kehagias (NTUA)	The Selfish Higgs
19:20-19:50	Evgeny Skvortsov (Albert Einstein Inst)	Quantum Higher Spin Gravity and three-dimensional Bosonization Duality
21:00	**Welcome Dinner at Aegli Restaurant**	

Tuesday Sept. 17th September 2019

09:15-09:45	Marios Petropoulos (Ecole Polyt, Palaiseau)	Relativistic fluids, gravity and the fate of hydrodynamic frames
09:50-10:20	Dmitri Sorokin (Padova U)	Membranes and domain walls in N=1, D=4 SYM
10:25-10:55	Larisa Jonke (Rudjer Boskovic Inst)	Gauge symmetry of doubled membrane sigma model and L∞ algebra
11:00-11:30	Coffee Break	

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11:30-12:00	Peter Schupp (Jacobs U)	Interaction via deformation: From monopoles to supergravity
12:05-12:35	Ralf Blumenhagen (LMU Munich)	On Swampland Conjectures in String Theory
12:40-13:10	Vladislav Kupriyanov (U ABC Sao Paulo)	Non-commutative deformation of Chern-Simons theory
13:15-16:00	Lunch break	
16:00-16:30	Kellogg Stelle (Imperial Coll., London)	Braneworld gravity in a hyperbolic transverse space with a mass gap
16:35-17:05	Silvia Penati (Milano Bicocca)	Exact results in AdS4/CFT3
17:10-17:40	George Savvidy (NCSR Demokritos)	From Heisenberg-Euler Lagrangian to the discovery of the Chromomagnetic Gluon Condensation
17:45-18:15	Coffee break	
18:15-18:45	Ivan Todorov (INRNE Sofia)	Exceptional quantum algebra for the standard model of particle physics
18:50-19:10	Thibaut Coudarchet (Ecole Polyt, CPHT)	Stability and vacuum energy in Gimon-Polchinski model with broken supersymmetry
19:15-19:35	Shim Myungbo (Kyung Hee U)	Wrapped Branes in Romans F(4) Gauged Supergravity

Wednesday Sept. 18th September 2019

09:15-09:45	Hikaru Kawai (Kyoto U)	Quantum Gravity and Naturalness
09:50-10:20	Renate Loll (Nijemegen U)	Lattice gravity, diffeomorphisms and quantum curvature
10:25-10:55	Dario Benedetti (LPT Orsay)	Melonic CFTs
11:00-11:30	Coffee Break	
11:30-12:00	Andrzej Sitarz (Jagellonian U)	Spectral action and bimetric gravity
12:05-12:35	Daniel Oriti (LMU Munich)	Toward emergent spacetime in quantum gravity: Quantum Black Holes from scratch
12:40-13:10	Glen Barnich (U Libre Bruxelles)	Charged black body radiation
13:15-16:00	Lunch break	
16:00-16:30	Gordon Semenoff (U British Columbia)	Entanglement and the Infrared

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16:35-17:05	Harold Steinacker (U Wien)	Gravity and the Schwarzschild solution on a quantum FLRW space-time in Yang-Mills matrix models
17:10-17:40	Alessia Platania (U Heidelberg)	From renormalization group flows to quantum spacetimes in Asymptotically Safe Gravity
17:45-18:15	Coffee break	
18:15-18:45	Joseph Bengeloun (Paris XIII)	On the counting tensor model observables as U(N) and O(N) classical invariants
18:50-19:10	Ruidong Zhu (Dublin IAS)	Web construction of ABCDEFG quiver gauge theories
19:15-19:35	Christof Wetterich (U Heidelberg)	Quantum gravity prediction for the mass of the Higgs boson
20:00	Closure	
21:00	**Conference Dinner/Greek Night at Tripas Restaurant**	

Thursday Sept. 19th September 2019

Departure day

*The **Workshop on Quantum Geometry, Field Theory and Gravity*** has attracted 91 seniors and young scientist in total, and 59 of them have presented their current research project as workshop speakers.

The invited Speakers were:
D. Anselmi (Pisa U & INFN Pisa), J. Arnlind (Linköpings U), M. Arzano (Naples U), Y. Asano (KEK), U. Aydemir (IHEP, Beijing), Á. Ballesteros (U Burgos), F. Bascone (Naples U Federico II & INFN), G. Bergner (Jena), F. Besnard (Paris), F. Bonechi (INFN Firenze), A. Borowiec (Wroclaw), L. Castellani (U Piemonte Orientale), M. d'Arcangelo (U Nottingham), R. de Mello Koch (U Witwatersrand), A. Deser (Charles U), V. Dobrev (INRNE Bulgarian Acad Sci), A. Doikou (Herriot-Watt U), B. Dolan (Maynooth U), V. Filev (IMI BAS), G. Fiore (U Napoli Federico II), M. Fukuma (Kyoto U), G. Giotopoulos (Heriot-Watt U), D. Gocanin (U Belgrade), J. Gohara (Tokyo U Science), G. Gubitosi (U Burgos), M. Hanada (U Southampton), C. Iazeolla (G. Marconi U), N. Ikeda (Ritsumeikan U), A. Iorio (Charles U), B. Jurco (Charles U), M. Katanaev (Steklov Math Inst), N. Konjik (U Belgrade), S. Kovacik (Dublin IAS), T. Krajewski (U Marseilles), M. Kurkov (Napoli), M. Manfredonia (U Napoli Federico II), G. Manolakos (NTUA), P. Martinetti (U Genova), C. Martin (U Complutense Madrid), T. Matsumoto (Tsukuba U), F. Mercati (Napoli), S. Mignemi (U Cagliari), J. Narozny (Charles U), J. Nishimura (KEK), A. Pachol (Queen Mary), S. Papadoudis (NTUA), T. Radenkovic (Inst Phys Belgrade), S. Ramgoolam (Queen Mary U), V. Rivasseau (U Paris-Sud XI), C. Saemann (Herriot-Watt U), M. Saridakis (NTU Athens), N. Sasakura (Kyoto U), F. Scholtz (Stellenbosch U), M. Subjakova

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(Comenius U), J. Tekel (Comenius U), A. Tsuchiya (Shizuoka U), F. Valach (Charles U), J. Vysoky (NSPE, Praha), H. Yang (Sogang U), L.H.S. Yu (UC Irvine),

The full programme of the event was:

Wednesday 18th
Arrival day

Thursday 19th September 2019

9:15 – 9:50	Jun Nishimura (KEK)	New perspectives on the emergence of (3+1)D expanding space-time in the Lorentzian type IIB matrix model
9:50 – 10:25	Asato Tsuchiya (Shizuoka U.)	How information geometry is encoded in bulk geometry
10:25 – 11:00	Masafumi Fukuma (Kyoto U.)	A new mechanism for the emergence of geometry from matrix models
11:00 - 11:30	Coffee break	
11:30 - 12:05	Carlo Iazeolla (G. Marconi U., Rome)	Title: Singularity-resolution mechanisms in Vasiliev's higher spin gravity
12:05 – 12:40	Brian Dolan (Maynooth U.)	Conserved quantities in general relativity and anomalies
12:40 – 13:10	Stratos Papadoudis (NTUA)	Dynamical Spacetime in the Euclidean IKKT Matrix Model: Compactification of Extra Dimensions via Spontaneous Symmetry Breaking
13:10 - 16:00	Lunch break	
16:00 – 16:35	Georg Bergner (TPI U. of Jena)	Supersymmetry on the lattice and numerical simulations of supersymmetric gauge theories in four dimensions
16:35-17:05	Francesco Bonechi (INFN, Firenze)	The equivariant Batalin-Vilkovisky formalism
17:05 - 17:40	Coffee break	
17:40 – 18:00	Francesco Bascone (Naples U Federico II & INFN)	Symmetries and Dualities in sigma models with Wess-Zumino term
18:05 - 18:35	Fridrich Valach (Charles U., Prague)	Higher Poisson-Lie T-duality

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18:40 – 19:10	Manos Saridakis (NTUA)	The effective field theory approach to torsional geometrical modified gravities

Friday 20th September 2019

9:15 – 9:50	Juraj Tekel (Comenius U., Bratislava)	Fuzzy field theories and related matrix models
9:50 – 10:25	Giulia Gubitosi (U. of Burgos)	Generalized noncommutative Snyder spaces and projective geometry
10:25 – 11:00	Ángel Ballesteros (U. de Burgos)	The kappa-(A)dS non-commutative spacetime
11:00 - 11:30	Coffee break	
11:30 - 12:05	Naoki Sasakura (Yukawa Institute for Theoretical Physics, Kyoto U.)	Numerical and analytical studies of a matrix model with non-pairwise contracted indices
12:05 – 12:40	Takaki Matsumoto (Dublin Institute for Advanced Studies)	Diffeomorphisms and approximate invariants on fuzzy sphere
12:40 – 13:10	Mauro D'Arcangelo (U. of Nottingham)	Random fuzzy spaces in the spectral triple formalism
13:10 - 16:00	Lunch break	
16:00 – 16:35	Robert de Mello Koch (South China Normal U.& U. of the Witwatersand)	Primary fields in free CFT4
16:35-17:05	Sanjaye Ramgoolam (Queen Mary U., London)	4D conformal quantum fields from 2D topological field theories and polynomial rings.
17:05 - 17:40	Coffee break	
17:40 – 18:00	Francesco Bascone (Naples University Federico II & INFN)	Symmetries and Dualities in sigma models with Wess-Zumino term
18:05-18:35	Fridrich Valach (Charles University, Prague)	Higher Poisson-Lie T-duality

18:40-19:10	Manos Saridakis (NTUA)	The effective field theory approach to torsional geometrical modified gravities

Saturday 20th September 2019

9:15 – 9:50	Mikhail Katanaev (Steklov Mathematical Institute)	Global properties of warped solutions in General Relativity with an electromagnetic field and a cosmological constant
9:50 – 10:25	Yuhma Asano (KEK)	Emergent Geometries from the BMN Matrix Model
10:25 – 11:00	Alfredo Iorio (Charles U.)	Analog hep-th, on Dirac materials and in general
11:00 - 11:30	Coffee break	
11:30 - 12:05	Anna Pachol (Queen Mary U., London)	Digital Quantum Geometries
12:05 – 12:40	Flavio Mercati (U. of Naples Federico II)	kappa-deformed special relativity
12:40 – 13:10	Mattia Manfredonia (U. degli Studi di Napoli Federico II)	Localization and Reference Frames in κ-Minkowski Spacetime
13:10-13:40	Vincent Rivasseau (U. Paris-Sud)	Field Theory and Random Geometry
13:10 - 16:00	Lunch break	13:10 - 16:00
16:00-16:30	Robert de Mello Koch (South China Normal University and University of the Witwatersand)	Primary fields in free CFT4
16:35-17:05	Sanjaye Ramgoolam (Queen Mary U. of London)	4D conformal quantum fields from 2D topological field theories and polynomial rings.
17:10-17:30	Coffee Break	
17:30-18:00	Damiano Anselmi (U. of Pisa)	Quantum gravity from fakeons

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18:10-18:30	Grigorios Giotopoulos (Heriot-Watt U.)	L-infinity algebra of Einstein-Cartan-Palatini Gravity and its braided non-commutative deformation
18:30-19:00	Christian Saemann (Heriot-Watt U.)	Strong Homotopy Lie Algebras and Field Theories
19:10-19:30	Jumpei Gohara (Tokyo U. of Science)	Formulation of Category Including Several Noncommutative Geometries

Sunday 22th September 2019

9:15 – 9:50	Gaetano Fiore (U. di Napoli Federico II, and INFN Napoli)	Energy cutoff, noncommutativity and fuzzyness: the case of O(D)-covariant fuzzy spheres
9:50 – 10:25	Andrzej Borowiec (Wroclaw U.)	Hopf-algebraic structure of quantum phase space
10:25 – 11:00	Anastasia Doikou (Heriot-Watt U.)	Discrete quantum systems & stochastics
11:00 - 11:30	Coffee break	
11:30 - 12:05	Andreas Deser (Charles U. Prague)	On Torsion and Curvature in Courant Algebroids
12:05 – 12:40	Jan Vysoky (Czech Technical U.)	Courant algebroid morphisms revisited
12:40 – 13:10	Tijana Radenkovic (Institute of Physics Belgrade)	Higher Gauge Theories Based on 3-groups
13:10 - 16:00	Lunch break	
16:00 – 16:35	Carmelo Perez Martin (U. Complutense de Madrid)	Quantum noncommutative ABJM theory
16:35-17:05	Noriaki Ikeda (Ritsumeikan U.)	Gauged sigma model with Lie algebroid symmetry and moment map
17:10 - 17:35	Coffee break	
17:35 – 18:05	Fabien Besnard (EPF)	Noncommutative Geometry, background independence, and B-L extension of the Standard Model

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18:10-18:35	Jiri Narozny (Charles U., Prague)	Simplicial principal bundles and higher connections
18:35-19:10	Veselin Filev (IMI BAS)	One Dimensional Flavoured Theories and Their Gravity Duals
19:10-19:40	Lu Heng Sunny Yu (U. of California)	Gravitational Fluctuation as an Alternative to Inflation

Monday 23th September 2019

9:15 – 9:50	Masanori Hanada (U. of Southampton & Keio U.)	Black Hole from Colors
9:50 – 10:25	Samuel Kovacik (Dublin Institute for Advanced Studies)	The non-perturbative phase diagram of the bosonic BMN matrix model
10:25 – 11:00	Thomas Krajewski (CPT Marseille)	The SYK model and random tensors
11:00 - 11:30	Coffee break	
11:30 - 12:05	Ufuk Aydemir (IHEP, Beijing)	Black Hole Mimickers in Quadratic Gravity
12:05 – 12:40	Frederik Scholtz (Stellenbosch U.)	Classical dynamics on fuzzy space
12:40 – 13:10	Dragoljub Gocanin (U. of Belgrade)	Matter Fields in AdS Model of Noncommutative Gravity
13:10 - 16:00	Lunch break	

Boat trip

Tuesday 24th September 2019

9:15 – 9:50	Salvatore Mignemi (U. di Cagliari)	Progress in Snyder model
9:50 – 10:25	Michele Arzano (U. of Naples "FedericoII")	Horizon temperature without space-time
10:25 – 11:00	Hyun Seok Yang (CQUeST)	Generalization of AdS/CFT correspondence
11:00 - 11:30	Coffee break	

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11:30 - 12:05	Leonardo Castellani (U. del Piemonte Orientale and INFN Torino)	Covariant hamiltonian formalism for gravity coupled to p-forms
12:05 – 12:40	Joakim Arnlind (Linköping U.)	Homomorphisms of pseudo-Riemannian calculi and noncommutative minimial submanifolds
12:40 – 13:10	Nikola Konjik (U. of Belgrade)	Noncommutative field theory from an angular twist
13:10 - 16:00	Lunch break	
16:00 – 16:35	Maxim Kurkov (U. di Napoli Federico II, INFN)	Parity anomaly in four dimensions
16:35-17:05	Vladimir Dobrev (INRNE, Bulgarian Academy of Sciences)	Multiparameter Quantum Minkowski Space-Time and Quantum Maxwell Hierarchy
17:05 - 17:40	Coffee break	
17:30 – 18:10	Maria Subjakova (Comenius U., Bratislava)	Multitrace matrix models of fuzzy field theories
18:10-18:35	Branislav Jurco (Charles U. Prague)	Connections, Torsion and Curvature in Generalized Geometry
18:35-19:10	George Manolakos (NTUA)	Non-Commutative Gravity

Wednesday 25th September 2019
Departure Day

Most of the presentations appeared on line in the CORFU2019 homepage just after they were delivered: http://www.physics.ntua.gr/corfu2019/lectures.html

We sincerely thank everybody who contributed to the success of CORFU2019, in particular the young students that came long ways from many different countries. Special thanks are due to all speakers and the organizers, the Local Organizing Committee K.N. Anagnostopoulos (NTU Athens), P. Anastasopoulos (TU Wien), M. Avlonitis (Ionian U), A. Chatzistavrakidis (Bošković Inst), I. Dalianis (NTU Athens), D. Ghilencea (Bucharest, IFIN-HH), D. Giataganas (Athens U.) F. Farakos (KU Leuven), I. Florakis (U Ioannina), N. Irges (NTU Athens), A. Kehagias (NTU Athens) , J. Kalinowski (University of Warsaw), S. Maltezos (NTU Athens), G. Manolakos (NTU Athens), K. Ntrekis (NTU Athens), S. Papadoudis (NTU Athens), G. Patellis (NTU Athens), M.

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Saridakis (NTU Athens), D. Skliros (MPI, Munich), J. Tekel (Comenius U), N. Tracas (NTU Athens), D. Varouchas (LPNHE-CNRS/IN2P3, Paris), G. Zoupanos (NTU Athens), the conference secretary Mrs. Ifigenia Moraiti and the group of our graduate students who helped in various ways and contributed in a very significant manner to the success of the meeting. Finally, we wish to express our gratitude to our sponsors whose financial contribution made it all possible.

They were:

1. COST Action CA15108, Connecting insights in fundamental physics
2. COST Action CA16201 Unraveling new physics at the LHC through the precision frontier
3. Alexander von Humboldt-Stiftung
4. National Technical University of Athens
5. School of Applied Mathematical and Physical Sciences (SAMPS), National Technical Municipality of Corfu
6. Municipality of Central Corfu and Diapontia Islands
7. Region of Ionian Islands
8. OTE: National Telecommunication Company
9. CERN
10. Deutsches Elektronen-Synchrotron (DESY)
11. Max Planck Institute for Physics
12. Max Planck Institute for Gravitational Physics (Albert Einstein Institute)
13. Sommerfeld Center for Theoretical Physics
14. National Center of Scientific Research “Demokritos”
15. SISSA: Scuola Internazionale Superiore di Studi Avanzati
16. ICTP: The Abdus Salam International Centre for Theoretical Physics
17. IPPP Durham: Institute for Particle Physics Phenomenology
18. LAPP: Laboratoire d'Annecy – le - Vieux de Physique des Particules
19. LAPTH: Laboratoire d'Annecy – le - Vieux de Physique Theorique
20. LPTENS: Laboratoire de physique théorique ENS
21. Universidad Autonoma de Madrid
22. Instituto de Fisica Teorica UAM/CSIC
23. Uppsala University
24. University of Warsaw
25. NCN Poland, HARMONIA project UMO-2015/18/M/ST2/00518
26. University of Granada
27. Technical University of Lisbon
28. IFIC Valencia
29. Oxford University
30. Universidad Autonoma de Madrid,

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31. Scuola Normale Superiore, Pisa
32. NCSR "Demokritos"
33. ITP Heidelberg
34. CPHT, Ecole Polytechnique
35. Queen Mary University of London
36. Rudjer Bošković Institute Zagreb
37. Swansea University
38. Turin University
39. Ephorate of Antiquities of Corfu
40. KEK
41. SOKENDAI Tsukuba
42. Dublin Instit Adv Studies
43. Vienna U.
44. Heriot-Watt U.
45. Tokohu U.

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