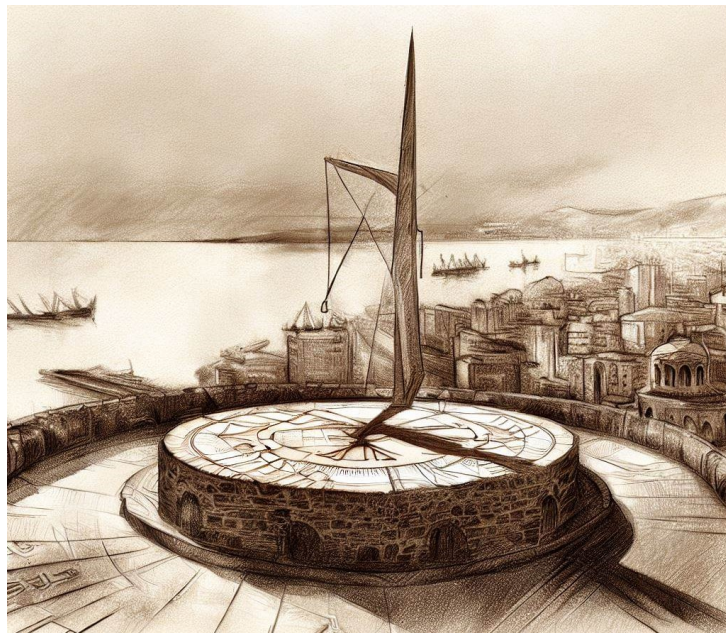


CARROLL WORKSHOP

THIRD EDITION • THESSALONIKI • 02-06 OCTOBER 2023

Aristotle University of Thessaloniki (AUTH)

Research Dissemination Center (KEDEA) – Amphitheatre III



ORGANISING COMMITTEE

Adrien **FIORUCCI** (TU Wien)

Songyuan **LI** (AUTH)

Anastasios **PETKOU** (AUTH)

Konstantinos **SIAMPOS** (National & Kapodistrian U. of Athens)

Matthieu **VILATTE** (École polytechnique Paris & AUTH)



ARISTOTLE
UNIVERSITY
OF THESSALONIKI

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Ideas in Holography and Conformal Field Theories")



H.F.R.I.
Hellenic Foundation for
Research & Innovation

Carroll goes to Thessaloniki!

The intriguing zero speed of light limit of the Poincaré group, discovered in 1965 by Jean-Marc Lévy-Leblond, has recently attracted a lot of attention. This arises as a ripe consequence of research in directions such as fluid/gravity correspondence, flat space holography, the study of asymptotic symmetries in gravity at null infinity, and the general study of null hypersurfaces such as black hole horizons.

The scientific community interested in the consequences and implications of Carroll symmetries in gravity and other physical systems is growing and already two **Carroll Workshops** have been organised. The first meeting was held in Vienna (Technische Universität Wien) in February 2022. A second workshop took place in Mons (Université de Mons) in September 2022. The resounding success of the first two editions has encouraged us to organise a novel iteration of the **Carroll Workshop** on the shores of the Aegean Sea. Our aim is unchanged: bring together researchers who are currently involved into this endeavour around the world, and share common interests in Carrollian physics as well in all closely related matters.

From the very beginning, the series of **Carroll Workshops** has been appreciated for the convivial atmosphere during and around the scientific talks and devotes a lot of time for additional discussions as an indispensable hallmark. Furthermore, we make a point of encouraging young researchers to share their results and schedule short talks for PhD students. We hope that this third edition of the **Carroll Workshop** will meet your expectations and be remembered as a exciting scientific event.

We are very happy to welcome you in Thessaloniki and wish you a nice stay with us!

The Organisers.

Adrien, Songyuan, Tassos, Kostas & Matthieu

SCIENTIFIC ADVISORY COMMITTEE

Andrea **CAMPOLEONI** (UMONS)

Laura **DONNAY** (SISSA)

Marc **HENNEAUX** (Université Libre de Bruxelles/Collège de France)

Laurent **FREIDEL** (Perimeter Institute)

Lionel **MASON** (University of Oxford)

Niels **OBERS** (Nordita/Bohr Institute)

Anastasios **PETKOU** (AUTH)

Marios **PETROPOULOS** (École polytechnique Paris).

List of Participants

Shreyansh Agrawal (<i>SISSA</i>)	Kevin Nguyen (<i>King's College London</i>)
Martin Ammon (<i>FSU Jena</i>)	Niels Obers (<i>Nordita/Niels Bohr Institute</i>)
Glenn Barnich (<i>Université Libre de Bruxelles</i>)	Blagoje Oblak (<i>Université Libre de Bruxelles</i>)
Mathieu Beauvillain (<i>École polytechnique Paris</i>)	Rodrigo Olea (<i>U. Andrés Bello, Chile</i>)
Jibril Ben Achour (<i>ENS Lyon/A. Sommerfeld Center Munich</i>)	Mehmet Ozkan (<i>Istanbul Technical University</i>)
Rajesh Biswas (<i>Wroclaw University of Science and Technology</i>)	Sanhita Parihar (<i>IMSC Chennai</i>)
Andrea Campoleoni (<i>UMONS</i>)	Noémie Parrini (<i>UMONS</i>)
Federico Capone (<i>FSU Jena</i>)	Simon Pekar (<i>École polytechnique Paris</i>)
Panagiotis Charalambous (<i>SISSA/New York University</i>)	Anastasios Petkou (<i>AUTH</i>)
Sangmin Choi (<i>École polytechnique Paris</i>)	Marios Petropoulos (<i>École polytechnique Paris</i>)
Luca Ciambelli (<i>Perimeter Institute</i>)	Daniele Pranzetti (<i>University of Udine</i>)
Geoffrey Compère (<i>Université Libre de Bruxelles</i>)	Stefan Prohazka (<i>Universität Wien</i>)
Arnaud Delfante (<i>UMONS</i>)	Lucrezia Ravera (<i>Politecnico di Torino</i>)
Laura Donnay (<i>SISSA</i>)	Jaime Redondo Yuste (<i>Niels Bohr Institute</i>)
Florian Ecker (<i>TU Wien</i>)	David Rivera Betancour (<i>École polytechnique Paris</i>)
Adrien Fiorucci (<i>TU Wien</i>)	Jan Rosseel (<i>Institut R. Boskovic, Zagreb</i>)
Jordan François (<i>Masaryk University/Universität Graz/UMONS</i>)	Shuvayu Roy (<i>NISER, Bhubaneswar</i>)
Marc Geiller (<i>ENS Lyon</i>)	Romain Ruzziconi (<i>University of Oxford</i>)
Aleksander Glodkowski (<i>Wroclaw University of Science and Technology/IMPRS</i>)	Amartya Saha (<i>Indian Institute of Technology Kanpur</i>)
Daniel Grumiller (<i>TU Wien</i>)	Ali Seraj (<i>Queen Mary University London</i>)
Emil Have (<i>Niels Bohr Institute</i>)	Ashish Shukla (<i>École polytechnique Paris</i>)
Yannick Herfray (<i>Université de Tours/Institut D. Poisson</i>)	Konstantinos Siampos (<i>NKU Athens</i>)
Rob Leigh (<i>University of Illinois</i>)	Watse Sybesma (<i>U. of Cambridge/U. of Iceland</i>)
Songyuan Li (<i>AUTH</i>)	Poula Tadros (<i>Charles University Prague</i>)
Iva Lovrekovic (<i>TU Wien</i>)	Ricardo Troncoso (<i>CECs/Universidad San Sebastian</i>)
Sucheta Majumdar (<i>ENS Lyon</i>)	Lazaros Tsaloukidis (<i>Dresden, Max Planck Institute</i>)
Ana Maria Raclariu (<i>University of Amsterdam</i>)	Beniamino Valsesia (<i>SISSA</i>)
Lionel Mason (<i>University of Oxford</i>)	Stefan Vandoren (<i>University of Utrecht</i>)
Saikat Mondal (<i>Indian Institute of Technology Kanpur</i>)	Matthieu Vilatte (<i>École polytechnique Paris/AUTH</i>)
Mojtaba Najafizadeh (<i>IPM Tehran</i>)	Peter West (<i>King's College London/University of Oxford</i>)
	Katharina Woelfl (<i>FSU Jena</i>)
	Yu-fan Zheng (<i>Peking University</i>)
	Céline Zwikel (<i>Perimeter Institute</i>)

Scientific program

MONDAY 02/10/2023

1. Daniel **GRUMILLER** (Technische Universität Wien) [Chair: A. Petkou]
Carroll black holes.
2. Glenn **BARNICH** (Université Libre de Bruxelles)
Lessons from discrete light-cone quantization for physics at null infinity.
3. David **RIVERA-BETANCOUR** (École polytechnique Paris)
Ehlers, Carroll and gravitational charges.
4. Panagiotis **CHARALAMBOUS** (SISSA/New York University)
Magic zeroes in the black hole response problem and a Love symmetry resolution.
5. Arnaud **DELFANTE** (Université de Mons)
Weyl-Fefferman-Graham and covariant Bondi gauges.
6. Daniele **PRANZETTI** (University of Udine) [Chair: A. Fiorucci]
Definition of spin charge in asymptotically-flat spacetimes.
7. Simon **PEKAR** (École polytechnique Paris)
Einstein's equations in the covariant Newman-Unti gauge: flat from AdS.
8. Blagoje **OBLAK** (Université Libre de Bruxelles)
Gyroscopic Memory Effects in Gravity and Electrodynamics.

TUESDAY 03/10/2023

1. Rob **LEIGH** (University of Illinois Urbana-Champaign) [Chair: N. Obers]
Carroll Structures and Null Quantization.
2. Luca **CIAMBELLI** (Perimeter Institute)
From Carrollian conservation laws to Poisson brackets.
3. Emil **HAVE** (Niels Bohr Institute)
Carrollian fluids and spontaneous breaking of boost symmetry.
4. Poula **TADROS** (Charles University Prague)
Carrollian limit of quadratic gravity.
5. Jaime **REDONDO-YUSTE** (Niels Bohr Institute)
Carrollian insights for gravitational wave physics.
6. Lucrezia **RAVERA** (Politecnico di Torino) [Chair: K. Siampos]
A geometric perspective on flat supergravity with boundary and its asymptotic symmetries.
7. Watse **SYBESMA** (University of Cambridge/University of Iceland)
Dynamics of Carroll Strings with an algebra extension.
8. Stefan **VANDOREN** (University of Utrecht)
Carroll Stories.

Scientific program

WEDNESDAY 04/10/2023

1. Ana Maria **RACLARIU** (University of Amsterdam) [Chair: M. Petropoulos]
Entanglement, soft modes and celestial CFT.
2. Romain **RUZZICONI** (University of Oxford)
Logarithmic Celestial Conformal Field Theory.

THURSDAY 05/10/2023

1. Céline **ZWIKEL** (Perimeter Institute) [Chair: L. Donnay]
Leaky Carrollian boundaries.
2. Marc **GEILLER** (École Normale Supérieure Lyon)
Radiative asymptotic symmetries of 3d Einstein-Maxwell.
3. Sucheta **MAJUMDAR** (École Normale Supérieure Lyon) [Chair: L. Mason]
Higher spin "superrotations" from the BBB action.
4. Kévin **NGUYEN** (King's College London)
On the road to the Carrollian conformal bootstrap.
5. Geoffrey **COMPÈRE** (Université Libre de Bruxelles)
Memory effects in de Sitter and the cosmological BMS group.

FRIDAY 06/10/2023

1. Ricardo **TRONCOSO** (CECS Valdivia) [Chair: A. Campoleoni]
BMS₃ (Carrollian) field theories from a bound in the coupling of current-current deformations of CFT₂.
2. Peter **WEST** (King's College London/University of Oxford)
Irreducible representations of the Poincare group on Carrollian fields as well as irreducible representations and E₁₁.
3. Lazaros **TSALOUKIDIS** (Dresden, Max Planck Institute)
Fractonic Liénard-Wiechert potentials from higher rank gauge theories.
4. Noémie **PARRINI** (Université de Mons)
Super null infinity and the super good cuts.
5. Ashish **SHUKLA** (École polytechnique Paris) [Chair: A. Petkou]
Models of heavy-ion collisions and Carroll hydrodynamics.
6. Sangmin **CHOI** (École polytechnique Paris)
Singular supertranslations and boundary Chern-Simons theory.
7. Jan **ROSSEEL** (Institut R. Boskovic Zagreb)
Carroll fermions and supersymmetry.

Schedule

		Monday	Tuesday	Wednesday	Thursday	Friday			
		02-oct	03-oct	04-oct	05-oct	06-oct			
08	30	Registration							
	45								
09	00	D. Grumiller	R. Leigh	A. Raclariu		R. Troncoso			
	15								
	30								
	45								
10	00	Discussion	Discussion	Discussion	C. Zwickel	Discussion			
	15								
	30	Coffee break	Coffee break	Coffee break	Coffee break				
	45								
11	00	G. Barnich	L. Ciambelli	R. Ruzziconi	Discussion	P. West			
	15								
	30			Discussion	Coffee break				
	45								
12	00	Discussion	Discussion	Excursion	M. Geiller	Discussion			
	15								
	30	D. Rivera-Betancour	E. Have			L. Tsaloukidis			
	45	P. Charalambous	P. Tadros			N. Parrini			
13	00	A. Delfante	J. Redondo-Yuste			Discussion	Lunch		
	15								
	30	Lunch	Lunch		Lunch				
	45								
14	00	D. Pranzetti	L. Ravera			Excursion	Lunch	A. Shukla	
	15								
	30								
	45								
15	00	S. Pekar	W. Sybesma	Excursion	S. Majumdar		S. Choi		
	15								
	30	Discussion	Discussion		K. Nguyen		Discussion		
	45								
16	00	Coffee break	Coffee break		Excursion		Discussion	Coffee break	
	15								
	30	B. Oblak	S. Vandoren				Coffee break	J. Rosseel	
	45								
17	00	G. Compère	Discussion			Excursion	Discussion		Discussion
	15								
	30								
	45								
18	00	Reception		Excursion			Discussion	Closing	
	15								

Organisation of the workshop

In the continuity of previous editions, the **Carroll Workshop** has been thought as a friendly meeting gathering a moderate number of participants in order to favour active discussions, share innovative ideas in the field of Carrollian physics and consolidate or create new collaborations.

Talks will be accompanied with discussion sessions involving all the participants. The opportunity has been given to young researchers to present their results thanks to a flexible talk format.

VENUE

The talks will take place in the **Conference Hall III** of the **KEDEA** (AUTH's Research Dissemination Center, 3rd September University Campus, Thessaloniki 546 36). The KEDEA building is adjacent to the campus of Aristotle University of Thessaloniki and in a walking distance from the city center. It is connected with several bus lines:

- ▷ Lines 2,7,14,58: Bus Stop "University of Macedonia";
- ▷ Lines 17,24,37: Bus Stop "Fititiki Leschi";
- ▷ Lines 10,31: Bus Stop "Agia Foteini-U. of Macedonia";
- ▷ Lines 27,28,83: Bus Stop "Terma Grammis".



KEDEA – Conference Hall III

SOCIAL AND CULTURAL ACTIVITIES

A reception will be organised on **Monday 02 October** after the scientific programme.

An **excursion** will take place on **Wednesday 04 October**: we will visit the Archaeological Museum of **Pella** (capital city of the ancient kingdom of Macedon and birthplace of Alexander the Great). The journey will be completed by the **conference dinner** in Katarraktes Restaurant-Cafe, located in **Edessa**, a charming city with famous waterfall landscapes.



Thessaloniki's White Tower



Pella's Archaeological Museum



Edessa's famous waterfalls

Enjoy your stay in Thessaloniki!

If you have any question, please contact the organisers:

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As Carrollian physics has never been more attractive, the next Carrollian event is already planned to take place in **Vienna** at the **Erwin Schrödinger Institute** in **April 2024**, in the form of a one-month scientific programme entitled
"Carrollian Physics and Holography."

Please visit

<http://quark.itp.tuwien.ac.at/~grumil/ESI2024/>

for more information!