

## Unit Name

Quantum Gravity Unit  
Associate Professor Yasha Neiman

## Collaborations

Igor Bandos, Basque University, Bilbao, Spain, Quantization and spinor-helicity variables in 10 dimensions

## Research Personnel

Mirian Tsulaia, Staff Scientist  
Subhajit Mazumdar, Postdoctoral Scholar  
Keith Glennon, Postdoctoral Scholar  
Sebastian Murk, Postdoctoral Scholar  
Tom Wetzstein, Postdoctoral Scholar  
Jin Kozaki, PhD Student  
Julian Lang, PhD Student  
David Thomas O'Connell, PhD Student

## Scholarly Contributions and Creative Productions (by Faculty)

### Journal Article

1. Lang, J.; Neiman, Y.  
Theories of the Gravity+gauge Type in de Sitter Space. Physical Review D 2025.

### Presentation at Conference

1. Neiman, Y.  
Causality of Higher-Spin Interactions, on the Lightcone and in de Sitter Space. iTHEMS-NCTS workshop 2025 2025.

### Seminars

1. Neiman, Y.  
Causality of Higher-Spin Interactions, on the Lightcone and in de Sitter Space. 2025.
2. Neiman, Y.  
Causality of Higher-Spin Interactions, on the Lightcone and in de Sitter Space. 2025.

## Scholarly Contributions (by Unit Members)

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
Julian Lang, Mirian Tsulaia	Conference Proceedings	Massive higher spins and black hole interactions	Bulgarian Journal of Physics		2025

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
Sebastian Murk	Journal Article	Gravity-induced birefringence in spherically symmetric spacetimes	Physical Review D		2025
Sebastian Murk	Journal Article	Thermodynamics of regular black holes in anti-de Sitter space	Journal of High Energy Physics		2025
Mirian Tsulaia	Journal Article	Quantum state spectrum and field theory of D0-brane	Journal of High Energy Physics		2025
Keith Glennon, Mirian Tsulaia	Journal Article	Diagonalization procedure for reducible massless N=1 supermultiplets	Journal of Physics A		2025
Tom Wetzstein	Journal Article	BV-BRST Noether theorem	Journal of High Energy Physics		2026
Keith Glennon	Journal Article	K27 as a symmetry of closed bosonic strings and branes	International Journal of Modern Physics A		2025
Keith Glennon	Poster Presentation at Conference	K27 Symmetry of the Closed Bosonic String and Branes	Strings 2025, Abu Dhabi		2025
Keith Glennon	Poster Presentation at Conference	Current Algebras in M Theory via E Theory	East Asia Workshop on Fields and Strings 2025, OIST		2025
Sebastian Murk	Poster Presentation at Conference	Kinematic and energy properties of dynamical regular black holes	15th annual conference on Relativistic Quantum Information (North)		2025
Sebastian Murk	Poster Presentation at Conference	Gravity-induced birefringence in spherically symmetric spacetimes	24th International Conference on General Relativity and Gravitation (GR24) and the 16th Edoardo Amaldi Conference on Gravitational Waves (Amaldi16)		2025
Julian Lang	Poster Presentation at Conference	A Lightcone Formalism for Bulk Lightcones	Conformal higher spins, twistors and boundary calculus workshop 2025 in UMONS		2025
Julian Lang	Presentation at Conference	A new Lagrangian for GR + YM as a tool for understanding quantum gravity in de Sitter	XVI International Workshop Lie Theory and Its Applications, Varna		2025
Keith Glennon	Presentation at Conference	K27 as a symmetry of closed strings and branes	Iberian Strings 2025, Bilbao, Spain		2025
Keith Glennon	Presentation at Conference		Gravity beyond Riemannian Paradigm 2025, CQUeST, Sogang University, Korea		2025
Keith Glennon	Presentation at Conference	E11, current algebras, and the swampland	13th Bangkok workshop on High-Energy Theory, Chulalongkorn University, Thailand		2026

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
David O'Connell	Presentation at Conference	Quantum Fields on non-Hausdorff Backgrounds	Causal Worlds	Perimeter Institute	2024
Mirian Tsulaia	Presentation at Conference	Massive Higher Spins and Black Hole Interactions: Cubic and Beyond	Taiwan String Workshop, National Tsing Hua University		2025
Sebastian Murk	Presentation at Conference	Light rings of nonsingular ultracompact objects sourced by nonlinear electrodynamics	Quantum Gravity 2025 (Penn State University)		2025
Sebastian Murk	Presentation at Conference	Gravity-induced birefringence in spherically symmetric spacetimes	15th annual conference on Relativistic Quantum Information (North)		2025
Mirian Tsulaia	Presentation at Conference	On D0 Brane: Classical and Quantum	East Asia Workshop on Fields and Strings 2025, OIST		2025
Mirian Tsulaia	Presentation at Conference	Massive Higher Spins and Black Hole Interactions	13th International Symposium on Quantum Theory and Symmetries, Yerevan State University		2025
David O'Connell	Seminars	The Topology, Geometry and Physics of non-Hausdorff Manifolds		iTHEMS, RIKEN	
David O'Connell	Seminars	Colimits of $C^*$ algebras in Quantum Field Theory		University of Tokyo	
David O'Connell	Seminars	Quantum Fields on non-Hausdorff Backgrounds		University of Pavia	
Keith Glennon	Seminars	E11 Symmetries in M Theory	Simons Center for Geometry and Physics, Stony Brook		2025
Tom Wetzstein	Seminars	The holographic BMS anomalies	National Tsing Hua University, Taiwan		2025
Julian Lang	Seminars	A Lightcone Formalism for Bulk Lightcones in de Sitter	KIAS quantum gravity seminar series		2025
Julian Lang	Seminars	A Lightcone Formalism for Bulk Lightcones in de Sitter	KHU quantum gravity seminar series		2025
Tom Wetzstein	Seminars	The holographic BMS anomalies	National Taiwan University		2025

**Other Institutional Service**

Term 3 2017 - Ongoing      Internal Seminar, (University) [Fiscal Year: 2024]

**Workshops and Seminars [Organized and Hosted by Faculty/Units]**

Speaker Name(s)	Title	Location	Co-Organizers	Date
Max Velasquez Cotini Hutt	Non-invertible Symmetries of 2d Non-Linear Sigma Models	OIST (via Zoom)		2025
Nicolas Cresto	sw1+infinity asymptotic symmetries:	OIST (via Zoom)		2025

Speaker Name(s)	Title	Location	Co-Organizers	Date
	Carrollian & Celestial lessons			
Hassaan Saleem	Non-supersymmetric strings on AdS3	OIST (via Zoom)		2025
Martin Cederwall	Review of Extended Geometry	OIST		2025
Franz Ciceri	Holography for the IKKT matrix model	OIST (via Zoom)		2025
Dongmin Gang, Shaun D. Hampton, Sangmin Lee, Seung-Joo Lee, Sungjay Lee, Sangjin Sin, Piljin Yi, Jeong-Hyuck Park, Wei Li, Wei Gu, Xin Wang, Chi-Ming Chang, Yi Pang, Yi-Nan Wang, Bin Chen, Heng-Yu Chen, Chong-Sun Chu, Dimitrios Giataganas, Pei-Ming Ho, Yutin Huang, Norihiro Iizuka, Hikaru Kawai, Osamu Fukushima, Masazumi Honda, Mirian Tsulaia, Francesco Sartini, Taishi Kawamoto, Yuichi Koga, Masamichi Miyaji, Akinori Tanaka	East Asia Joint Workshop on Fields and Strings 2025	OIST	Masazumi Honda (RIKEN iTHEMS), Satoshi Iso (RIKEN iTHEMS, KEK), Hiroshi Itoyama (Osaka Metropolitan U.), Kentaroh Yoshida (Saitama U.), Bin Chen (NingBo U.), Chong-Sun Chu (National Tsing Hua U.), Dimitrios Giataganas (National Sun Yat-sen U.), Kimyeong Lee (Korea Institute for Advanced Study, KIAS and BIMSA), Sangmin Lee (Korea Institute for Advanced Study, KIAS), Jian-Xin Lu (U. of Science and Technology of China), Piljin Yi (Korea Institute for Advanced Study, KIAS)	2025
Fedor Popov	Defect Anomalies, a Spin-Flux Duality, and Boson-Kondo Problems	OIST		2025
David Osten	Exceptional Generalised Geometry as a Symmetry Principle for Sigma Models	OIST (via Zoom)		2025
Subhobrata Chatterjee	Contact geometry and quantization	OIST (via Zoom)		2025
Arundhati Goldar	Bulk Reconstruction in De Sitter Spacetime	OIST		2025
Matilda Delgado	Dualities and the Compactifiability of Moduli Space	OIST (via Zoom)		2025
Beatrice Bonga	Quasi-normal modes: an introduction to ringing black holes	OIST		2025
Kentaroh Yoshida	Chaotic Instability in the BFSS matrix model	OIST		2024
Rennan Barkana	Cosmology with radio waves: from dark matter to the dark ages	OIST		2024

Speaker Name(s)	Title	Location	Co-Organizers	Date
Yair Mulian	Scattering amplitudes for entangled states	OIST		2024