

# CALVIN YI-REN CHEN

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## Positions

- **LeCosPA, National Taiwan University** Taipei, Taiwan  
*Postdoctoral Fellow* Oct 2024 -

## Education

- **Imperial College London** London, UK  
*PhD Theoretical Physics* Oct 2020 - Oct 2024
  - Funded by the President’s PhD Scholarship.
  - Thesis: “Causality, Extremality and All That” with Prof. Andrew J. Tolley
- **Corpus Christi College, University of Cambridge** Cambridge, UK  
*MASt Applied Mathematics (Part III)* Oct 2019 - July 2020
  - Pass, average mark: 90.5/100 (Pass/Fail only due to COVID-19 pandemic)
  - Essay: “Lessons from the S-Matrix Programme” with Dr. Scott Melville
- **Imperial College London** London, UK  
*BSc Physics with Theoretical Physics* Oct 2016 - Jun 2019
  - First-class, Faculty of Natural Sciences Dean’s List 2017, 2018, and 2019
  - BSc project: “Gravitational Wave Constraints on Horndeski’s Theory in Cosmology” with Prof. Claudia de Rham

## Publications

- [6] C. Y.-R. Chen and Á. D. Kovács, “You’ve got a Freund–Rubin in Me: The Aretakis Instability of Extremal Black Branes,” Jul. 2025. arXiv: [2507.12529 \[hep-th\]](#).
- [5] C. Y.-R. Chen, A. Margalit, C. de Rham, and A. J. Tolley, “Causality in the presence of stacked shockwaves,” *Phys. Rev. D*, vol. 111, no. 2, p. 024066, 2025. DOI: [10.1103/PhysRevD.111.024066](#). arXiv: [2309.04534 \[hep-th\]](#).
- [4] C. Y.-R. Chen, C. de Rham, and A. J. Tolley, “Deformations of extremal black holes and the UV,” *Phys. Rev. D*, vol. 111, no. 2, p. 024056, 2025. DOI: [10.1103/PhysRevD.111.024056](#). arXiv: [2408.05549 \[hep-th\]](#).
- [3] C. Y.-R. Chen, E. Joung, K. Mkrtchyan, and J. Yoon, “Higher-order chiral scalar from boundary reduction of 3d higher-spin gravity,” *JHEP*, vol. 05, p. 186, 2025. DOI: [10.1007/JHEP05\(2025\)186](#). arXiv: [2501.16463 \[hep-th\]](#).
- [2] C. Y.-R. Chen, C. de Rham, A. Margalit, and A. J. Tolley, “A cautionary case of casual causality,” *JHEP*, vol. 03, p. 025, 2022. DOI: [10.1007/JHEP03\(2022\)025](#). arXiv: [2112.05031 \[hep-th\]](#).
- [1] Z. Holmes, E. H. Mingo, C. Y.-R. Chen, and F. Mintert, “Quantifying athermality and quantum induced deviations from classical fluctuation relations,” Jan. 2020. DOI: [10.3390/e22010111](#). arXiv: [2001.04926 \[quant-ph\]](#).

## Professional Experience

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| Intersections of String Theory and QFT III (co-organiser), Imperial College London | Apr 2023  |
| UK-QFT XI (co-organiser), University of Cambridge                                  | Jan 2023  |
| Theory Group Journal Club (co-organiser), Imperial College London                  | 2022-2024 |

## Teaching and Outreach

### Teaching

Lecturer, “AdS <sub>2</sub> Holography” Special Topics Classes (MSc QFFF)	Jun 2024
Lecturer, “JT Gravity” Special Topics Classes (MSc QFFF)	Jun 2023
Teaching assistant, Advanced Classical Physics (Y3 UG)	2022
Teaching assistant, Advanced Quantum Field Theory (MSc QFFF)	2021-2023
Teaching assistant, Quantum Mechanics (Y2 UG)	2020-2021

### Outreach

Volunteer, Year-12 Visit	Jul 2024
Volunteer, Great Exhibition Road Festival	Jun 2024
Volunteer, Abdus Salam Celebration (“Faculty Natural Sciences Prize for Excellence”)	Jan 2024
<a href="#">Mentor, Imperial College London Maths School</a>	2023
Volunteer, Mexican Caribbean Manta Project	2019

## Conferences, Workshops, Schools, and Seminars

### Conferences, Schools and Workshops (invited)

GR24/Amaldi16 (talk: “Extremal Black Branes from the Near-Horizon ”), Glasgow	Jul 2025
GbRP25 (talk: “Extremal Black Holes and UV Sensitivity”), Sogang University	Jun 2025
Black Holes Inside and Out (poster: “Causality and the EFT of Gravity”), Copenhagen	Aug 2024
UKCosmo (talk: “Extremal Black Holes and Quantum Gravity”), King’s College London	May 2024
BritGrav24 (talk: “Extremal Black Holes and Quantum Gravity”), Queen Mary U London	Apr 2024
FPUK Meeting 2023 (poster: “Causality and the EFT of Gravity”), Durham University	Aug 2023
Gravity 2023 (poster: “Causality and the EFT of Gravity”), Benasque	Jul 2023
FPUK and the City (poster: “Causality and the EFT of Gravity”), City University London	Dec 2022
Gravity, Charles University Prague	Sep 2022
Gravity (talk: “A cautionary case of casual causality”), YITP Kyoto University	Jun 2022
SCGSC 2022 (talk: “A cautionary case of casual causality”), University of Amsterdam	May 2022

### Seminars (invited)

<a href="#">GANg seminar</a> , Queen Mary University London	Mar 2025
<a href="#">Research seminar</a> , ITMP Moscow State University	Dec 2024
Colloquium, Imperial College London: “Extremal Black Holes and Quantum Gravity”	Jul 2024
Cosmo Donuts, Internal: “Extremal Black Holes”	Feb 2024
String Phenomenology (Online Seminar Series): “Consistency Conditions from Causality”	Feb 2024
Theory group PhD student seminar, Internal: “Extremal Black Holes”	Dec 2023
Astrophysics seminar, YITP Kyoto University	Nov 2023
Group seminar, Kindai University	Nov 2023
<a href="#">Research seminar</a> , ITMP Moscow State University	Oct 2023
Theory seminar, Carnegie Mellon University	Oct 2023
Particle theory seminar, Case Western Reserve University	Sep 2023
Group seminar, National Taiwan University: “A cautionary case of casual causality”	Aug 2023
<a href="#">GR seminar</a> , University of Cambridge: “A cautionary case of casual causality”	May 2023
Theory group PhD student seminar, Internal: “Non-commutative Geometry”	Nov 2022
Copernicus Webinar series: “A cautionary case of casual causality”	Oct 2022
Theory group PhD student seminar, Internal: “A cautionary case of casual causality”	May 2022
EFT journal club, Internal: “JT Gravity and the SYK Model”	Mar 2022
Theory group PhD student seminar, Internal: “The SYK Model”	Feb 2022
Theory group PhD student seminar, Internal: “Dynamical RG and Perturbation Theory”	Nov 2021

EFT journal club, Internal: “Scale and Conformal Invariance, and Linearised Gravity”	Nov 2021
Theory group PhD student seminar, Internal: “ $T\bar{T}$ -Deformations”	Dec 2020
Non-equilibrium systems, Imperial College London: “Field Theory in Curved Spacetime”	Nov 2020

## Languages

German	native
Mandarin	fluent
English	fluent

## Honours and Awards

Best poster at Gravity@Prague	2022
Dean’s Fund	2022
Imperial College London President’s PhD Scholarship	2020
German Physical Society Abitur Prize	2016
German Mathematical Society Abitur Prize	2016

## References

<b>Prof. Andrew J. Tolley</b> Professor of Theoretical Physics Imperial College London	<b>Dr. Karapet Mkrtchyan</b> Research Fellow Imperial College London	<b>Prof. Akihiro Ishibashi</b> Associate Professor of Physics Kinki University
<b>Prof. Claudia de Rham</b> Professor of Theoretical Physics Imperial College London	<b>Prof. Arkady Tseytlin</b> Professor of Theoretical Physics Imperial College London	