Calvin Yi-Ren Chen

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Education

- **Imperial College London** — London, UK
  PhD Theoretical Physics — Oct 2020 - Aug 2024
  - Funded by the President's PhD Scholarship.
  - Supervisor: 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)
  - Focus on theoretical physics: quantum field theory, relativity, string theory, geometry
  - 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, average mark: 83.1%
  - 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, E. Joung, K. Mkrtchyan, and J. Yoon, *in preparation*,

[5] C. Y.-R. Chen, C. de Rham, and A. J. Tolley, *in preparation*,

[4] C. Y.-R. Chen and A. J. Tolley, *in preparation*,

[3] C. Y.-R. Chen, C. de Rham, A. Margalit, and A. J. Tolley, "Surfin' pp-waves with Good Vibrations: Causality in the presence of stacked shockwaves," Sep. 2023. arXiv: 2309.04534 [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

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-

Teaching Experience

Lecturer for "JT Gravity" Special Topics Classes	2022
Teaching assistant for Advanced Classical Physics	2022
Teaching assistant for Advanced Quantum Field Theory	2020-2022
Teaching assistant for Quantum Mechanics	2020-2021

Conferences, Workshops, Schools, and Seminars

Conferences and Workshops

Gravitational waves meet effective field theories (attendee), Benasque	Aug 2023
FPUK Meeting 2023 (**poster**: "Causality and the EFT of Gravity"), Durham	Aug 2023
Gravity 2023 (**poster**: "Causality and the EFT of Gravity"), Benasque	Jul 2023
Gravitational Memory Effects (attendee), Queen Mary University London	Jun 2023
Kings and Queens of Gravity (attendee), London	Mar 2023
Intersections of String Theory and QFT II (attendee), University of Cambridge	Dec 2022
Annual Theory Meeting (attendee), Durham University	Dec 2022
FPUK and the City (**poster**: "Causality and the EFT of Gravity"), City University London	Dec 2022
London Strong Gravity meeting (attendee), Royal Society London	Nov 2022
Fundamental aspects of gravity (attendee), Imperial College London	Aug 2022
Gravity (**talk**: "A cautionary case of casual causality"), YITP Kyoto University	Jun 2022
73^{rd} British Mathematical Colloquium (attendee), Kings College London	Jun 2022
SCGSC 2022 (**talk**: "A cautionary case of casual causality"), University of Amsterdam	May 2022
UK Cosmo Meeting (attendee), University of Newcastle	May 2022
London Strong Gravity meeting (attendee), Royal Society	Apr 2022
Intersections of String Theory and QFT (attendee), Kings College London	Apr 2022
UK-QFT XI (attendee), Kings College London	Mar 2022
London Strong Gravity meeting (attendee), Royal Society London	Nov 2021

Schools

Gravity (**poster**: "Diagnosing (a)causality in the EFT of gravity), Charles University Prague	Sep 2022
BUSSTEPP (attendee), Imperial College London	Aug 2022
STAG School (attendee), University of Southampton	Jun 2022
Higgs School (attendee), University of Edinburgh	May 2022

Seminars

Astrophysics Seminar, YITP Kyoto University	Nov 2023
Group Seminar, Kindai University	Nov 2023
Research seminar, 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
GR seminar, 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

Language Skills

German	native
Mandarin	fluent
English	fluent, professional proficiency

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

Miscellaneous/Outreach

- **Imperial College London Maths School** London, UK
  Volunteer 2023
  - Set a project exploring ideas in topology using Morse index and the Poincaré-Hopf theorem accessible to A-Level students.
  - Mentored students Year 12 students doing the project, providing guidance and mathematical support.
- **Mexican Caribbean Manta Project** Isla Mujeres, Mexico
  Volunteer 2019
  - Performed statistical data analysis of manta ray sightings and water profiles using data over past three years.
  - Implemented convolutional neural network to identify individual manta rays by ventral surface pattern.
  - Designed and built materials for outreach events.

References

Prof. Andrew J. Tolley
Professor of Theoretical Physics
Imperial College London

Dr. Karapet Mkrtchyan
Research Fellow
Imperial College London

Prof. Akihiro Ishibashi
Associate Professor of Physics
Kinki University

Prof. Claudia de Rham
Professor of Theoretical Physics
Imperial College London

Prof. Arkady Tseytlin
Professor of Theoretical Physics
Imperial College London