

Otto Akseli Hannuksela

BIOGRAPHY

I am an Assistant Professor at CUHK, Hong Kong, and a senior member of the LIGO Scientific Collaboration. Besides my primary work in detecting, analyzing, and building models for gravitational waves as a part of the LSC and KSC, I have an interest in applying gravitational waves to different branches of Physics, including the dark matter problem, modified gravity, beyond-standard-model physics, cosmology, and gravitational lensing. I have been an LVK member since 2016.

EDUCATION

PhD (Physics)

AUG 2017 - AUG 2019, CHINESE UNIVERSITY OF HONG KONG (HONG KONG)

- Thesis topic: Gravitational waves
- Postgraduate Research Output Award 2019

MPhil (Physics; Research Degree)

AUG 2015 - SEP 2017, CHINESE UNIVERSITY OF HONG KONG (HONG KONG)

BSc (Physics)

SEP 2011 - FEB 2015, UNIVERSITY OF HELSINKI (FINLAND)

EMPLOYMENT

Assistant Professor

JUL 2023 - CURRENT, CHINESE UNIVERSITY OF HONG KONG (HONG KONG)

Research Assistant Professor

SEP 2021 - JUN 2023, CHINESE UNIVERSITY OF HONG KONG (HONG KONG)

- Co-chair, LVK lensing sub-group
- Supervision: H. Phurailatpam (PhD), A. Liu (PhD), J. Poon (PhD), Amit-Jit Singh (MPhil), E. Seo (MPhil), K. Chan (BSc), D. Cheung (BSc), W.L. Chan (BSc), J. Kwok (BSc)
- Teaching/mentoring: J. Janquart (PhD), N. Harsh (PhD), Mesut Caliskan (BSc)

Postdoctoral Researcher

SEP 2019 - AUG 2021, NIKHEF/UTRECHT UNIVERSITY (THE NETHERLANDS)

- Chair, LVK lensing sub-group under testing general relativity
- Manager & chair, [LVC O3a lensing paper](#)
- Teaching/mentoring: Justin Janquart (PhD), Renske Wierda (BSc), Mesut Caliskan (BSc)

Research Assistant

MAY 2013 - AUG 2015, FINNISH METEOROLOGICAL INSTITUTE (FINLAND)

GRANTS

Gravitational-wave microlensing with strong lensing (GRF 117,000 USD)

JAN 2025 - DEC 2028

Gravitational-wave strong lensing follow-up applications (GRF 149,000 USD)

JAN 2024 - DEC 2027

Start-up fund (230,000 USD)

2023 - DEC 2027

Towards the first observations of gravitational-wave lensing (GRF 112,000 USD)

JAN 2023 - DEC 2026


Probing subhalos with gravitational-wave millilensing (Direct Grant 19,000 USD)

JUN 2022 - JUN 2023

MEMBERSHIPS AND RESPONSIBILITIES

2023 - current	PI, CUHK LIGO group (LIGO)
2022 - current	PI, CUHK KAGRA group (KAGRA)
2022 - current	KAGRA Scientific Congress Member (KAGRA)
2022 - current	Co-Chair, LVK lensing sub-group
2021 - current	Senior Council Member, LIGO Collaboration
2021 - current	Member, LIGO Collaboration
2019 - 2022	Chair, LVK lensing sub-group (under Testing General Relativity analysis group)
2019 - 2021	Member, Virgo Collaboration
2020 - 2021	Manager and chair, O3a LVC lensing paper
2016 - 2019	Member, LIGO Scientific Collaboration

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FEATURED PUBLICATIONS

- **Hannuksela, Otto A.**, et al. “Localizing merging black holes with sub-arcsecond precision using gravitational-wave lensing”, [MNRAS \(2020\)](#).
- **Hannuksela, Otto A.**, et al. “Extreme Dark Matter Tests with Extreme Mass Ratio Inspirals”, [PHYS. REV. D \(2020\)](#).
- **Hannuksela, Otto A.**, et al. “Probing the existence of ultralight bosons with a single gravitational-wave measurement”, [NATURE ASTRONOMY LETTERS \(2019\)](#).
- **Hannuksela, Otto A.**, et al. “Search for gravitational lensing signatures in LIGO-Virgo binary black hole events”, [ASTROPHYSICAL JOURNAL LETTERS \(2019\)](#).
- [All publications \[inspire\]](#)

FELLOWSHIPS/AWARDS

2022 IOP Publishing Top Cited Paper Award
2019 CIERA Postdoc Fellowship, Northwestern University (declined)
2019 Postgraduate Research Output Award
AUG 2017 - SEP 2019 Hong Kong PhD Fellowship

REVIEW

Reviewer for:

- Astrophysical Journal Letters
- European Physical Journal C
- Physical Review D
- Physical Review Letters
- Monthly Notices of the Royal Astronomical Society
- Nature Astronomy
- Astroparticle Physics

References available upon request

ATTACHMENTS:

BIBLIOGRAPHY OF PUBLICATIONS

2024

1. J Janquart, D Keitel, RK Lo, JC Chan, JM Ezquiaga, **OA Hannuksela**, AK Li, A More, HP Phurailatpam, N Singh, LE Uronen, M Wright, N Adhikari, S Biscoveanu, T Bulik, AM Farah, A Heffernan, P Joshi, V Juste, A Kedia, SA Nichols, G Pratten, C Rawcliffe, S Roy, EM Sanger, H Tong, M Trevor, L Vujeva, M Zevin. *What is the nature of GW230529? An exploration of the gravitational lensing hypothesis.* [ArXiv:2409.07298](#)
2. SHW Leong, J Janquart, AK Sharma, P Martens, PA Ajith, **OA Hannuksela**. *Constraining binary mergers in AGN disks using the non-observation of lensed gravitational waves.* [ArXiv:2408.13144](#)
3. H Phurailatpam, A More, H Narola, LCY Ng, J Janquart, C Van Den Broeck, **OA Hannuksela**, N Singh, D Keitel. *ler : LVK (LIGO-Virgo-KAGRA collaboration) event (compact-binary mergers) rate calculator and simulator.* [ArXiv:2407.07526](#)
4. LE Uronen, TL Li, J Janquart, HP Phurailatpam, JSC Poon, EW Wempe, LVE Koopmans, **OA Hannuksela**. *Finding Black Holes: an Unconventional Multi-messenger.* [ArXiv:2406.14257](#)
5. JSC Poon, S Rinaldi, J Janquart, H Narola, **OA Hannuksela**. *Galaxy lens reconstruction based on strongly lensed gravitational waves: similarity transformation degeneracy and mass-sheet degeneracy.* [ArXiv:2406.06463](#)
6. S Rinaldi, G Demasi, W Del Pozzo, **OA Hannuksela**. *Hierarchical inference of evidence using posterior samples.* [ArXiv:2405.07504](#)
7. LCY Ng, J Janquart, H Phurailatpam, H Narola, JSC Poon, C Van Den Broeck, **OA Hannuksela**. *Uncovering faint lensed gravitational-wave signals and reprioritizing their follow-up analysis using galaxy lensing forecasts with detected counterparts.* [ArXiv:2403.16532](#)
8. H Narola, J Janquart, L Haegel, K Haris, **OA Hannuksela**, C Van Den Broeck. *How well can modified gravitational wave propagation be constrained with strong lensing?* [Physical Review D \(2024\)](#)
9. EW Wempe, LVE Koopmans, ARAC Wierda, **OA Hannuksela**, C Van Den Broeck. *On the detection and precise localization of merging black holes events through strong gravitational lensing.* [MNRAS \(2024\)](#)
10. KHM Chan, **OA Hannuksela**. *Extracting ultralight boson properties from boson clouds around postmerger remnants.* [Physical Review D \(2024\)](#)

2023

11. IA Gupta, C Afle, KG Arun, A Bandopadhyay, M Baryakhtar, S Biscoveanu, S Borhanian, F Broekgaarden, A Corsi, A Dhani, M Evans, ED Hall, **OA Hannuksela**, K Kacanja, R Kashyap, S Khadkikar, K Kuns, TGF Li, AL Miller, AH Nitz, BJ Owen, C Palomba, A Pearce, H Phurailatpam, B Rajbhandari, J Read, JD Romano, BS Sathyaprakash, DH Shoemaker, D Singh, S Vitale, L Barsotti, E Berti, C Cahillane, HY Chen, P Fritschel, CJ Haster, P Landry, G Lovelace, D McClelland, BJJ Slagmolen, J Smith, MS Santos, L Sun, D Tanner, H Yamamoto, M Zucker. *Characterizing Gravitational Wave Detector Networks: From A## to Cosmic Explorer.* [ArXiv:2307.10421](#)
12. M Evans, A Corsi, C Afle, A Ananyeva, KG Arun, S Ballmer, A Bandopadhyay, L Barsotti, M Baryakhtar, E Berger, E Berti, S Biscoveanu, S Borhanian, F Broekgaarden, DA Brown, C Cahillane, L Campbell, HY Chen, KJ Daniel, A Dhani, JC Driggers, A Effler, R Eisenstein, S Fairhurst, J Feicht, P Fritschel, P Fulda, IA Gupta, ED Hall, G Hammond, **OA Hannuksela**, H Hansen, CJ Haster, K Kacanja, B Kamai, R Kashyap, JS Key, S Khadkikar, A Kontos, K Kuns, M Landry, P Landry, B Lantz, TGF Li, G Lovelace, V Mandic, GL Mansell, D Martynov, L McCuller, AL Miller, AH Nitz, BJ Owen, C Palomba, J Read, H Phurailatpam, S Reddy, J Richardson, J Rollins, JD Romano, BS Sathyaprakash, R Schofield, DH Shoemaker, D Sigg, D Singh, B Slagmolen, P Sledge, J Smith, MS Santos, A Strunk, L Sun, D Tanner, LAC van Son, S Vitale, B Willke, H Yamamoto, M Zucker. *Cosmic Explorer: A Submission to the NSF MPSAC ngGW Subcommittee.* [ArXiv:2306.13745](#)
13. Janquart J, Wright M, Goyal S, Chan JCL, Ganguly A, Garr3n , Keitel D, Li AKY, Liu A, Lo RKL, Mishra A, More A, Phurailatpam H, Pankunni P, Biscoveanu S, Cremonese P, Cudell JR, Ezquiaga JM, Garcia-Bellido J, **Hannuksela OA**, Haris K, Harry I, Hendry M, Husa S, Kapadia S, Li TGF, Hernandez IM, Mukherjee S, Seo E, Van Den Broeck C, Veitch J. *Follow-up analyses to the O3 LIGO-Virgo-KAGRA lensing searches.* [MNRAS \(2023\)](#)
14. Janquart J, Haris K, **Hannuksela OA**, Van Den Broeck C. *The Return of GOLUM: Improving Distributed Joint Parameter Estimation for Strongly-Lensed Gravitational Waves.* [MNRAS \(2023\)](#)
15. Liu A, Wong ICR, Leong SHW, More A, **Hannuksela OA**, Li TGF. *Exploring the hidden Universe: A novel phenomenological approach for recovering arbitrary gravitational-wave millilensing configurations* [MNRAS \(2023\)](#)
16. LIGO-Virgo-Kagra Collaboration. *Search for gravitational-lensing signatures in the full third observing run of the LIGO-Virgo network.* [ArXiv:2304.08393](#)
17. Wu, ZF, Chan WL, Hendry M, **Hannuksela OA**. *Reducing the Impact of Weak-lensing Errors on Gravitational-wave Standard Sirens.* [MNRAS \(2023\)](#)
18. Yeung SMC, Cheung MHY, Gais JAJ, **Hannuksela OA**, Li TGF. *Detectability of microlensed gravitational waves.* [MNRAS \(2023\)](#)

2022

19. alıřkan M, Ezquiaga JM, **Hannuksela O**, Holz DE. *Lensing or luck? False alarm probabilities for gravitational lensing of gravitational waves.* [Physical Review D \(2023\)](#)
20. Kim K, Lee J, **Hannuksela OA**, Li TGF. *Deep Learning-based Search for Microlensing Signature from Binary Black Hole Events in GWTC-1 and -2.* [Astrophysical Journal \(2022\)](#)
21. Seo E, **Hannuksela OA**, Li TGF. *Improving Detection of Gravitational-wave Microlensing Using Repeated Signals Induced by Strong Lensing.* [Astrophysical Journal \(2022\)](#)
22. Cheung DHT, Wong KWK, **Hannuksela OA**, TGF Li, Ho S. *Testing the robustness of simulation-based gravitational-wave population inference.* [Physical Review D \(2022\)](#)

2021

23. Kim K, Lee J, Yuen RSH., **Hannuksela OA**, Li TGF. *Identification of Lensed Gravitational Waves with Deep Learning.* [Astrophys.Journal \(2021\)](#).
24. The LIGO Scientific Collaboration, the Virgo Collaboration. *Tests of General Relativity with Binary Black Holes from the second*

- LIGO-Virgo Gravitational-Wave Transient Catalog*. [Physical Review D \(2021\)](#).
25. Seo E, **Hannuksela OA**, Li TGF. Strong lensing: *A magnifying glass to detect gravitational-wave microlensing*. [ArXiv:2110.03308](#)
 26. Janquart J, Seo E, **Hannuksela OA**, Li TGF, Van Den Broeck C. *On the identification of individual gravitational wave image types of a lensed system using higher-order modes*. [Astrophysical Journal Letters \(2021\)](#).
 27. The LIGO Scientific Collaboration, the Virgo Collaboration. *Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run*. [Astrophysical Journal \(2021\)](#).
 - Editorial team lead
 - Analysis lead for the high-mass event section
 - Reviewer for the lensing statistics and
 28. Wierda ARAC, Wempe E, **Hannuksela OA**, Koopmans LVE, Van Den Broeck C. *Beyond the detector horizon: Forecasting gravitational-wave strong lensing*. [Astrophysical Journal \(2021\)](#)
 29. Janquart J, **Hannuksela OA**, Haris K, Van Den Broeck C. A fast and precise methodology to search for and analyse strongly lensed gravitational-wave events. [Monthly Notices of the Royal Astronomical Society 506.4: 5430–5438 \(2021\)](#)
 30. Ng KKY, **Hannuksela OA**, Vitale S, Li TGFL. *Searching for ultralight bosons within spin measurements of a population of binary black hole mergers*. [Phys. Rev. D 103, 063010 \(2021\)](#).
 31. Ng KKY, Vitale S, **Hannuksela OA**, Li TGFL. *Constraints on ultralight scalar bosons within black hole spin measurements from LIGO-Virgo's GWTC-2*. [Physical Review Letters 126.15 \(2021\)](#).
 32. The LIGO Scientific Collaboration, The Virgo Collaboration. *Observation of Gravitational Waves from Two Neutron Star–Black Hole Coalescences*. [Astrophysical Journal Letters \(2021\)](#).
 33. Cheung MHY, Gais J, **Hannuksela OA**, Li TGF. *Stellar-mass microlensing of gravitational waves*. [Monthly Notices of the Royal Astronomical Society 503.3: 3326–3336 \(2021\)](#).
- 2020**
34. The LIGO Scientific Collaboration, the Virgo Collaboration. *Properties and astrophysical implications of the 150 Msun binary black hole merger GW190521*. [Astrophysical Journal Letters \(2020\)](#).
 35. **Hannuksela OA**, Ng CYK, Li TGFL. *Extreme Dark Matter Tests with Extreme Mass Ratio Inspirals*. [Phys. Rev. D 102, 103022 \(2020\)](#)
 36. Pagano G, **Hannuksela OA**, Li TGF. *lensingGW: a Python package for lensing of gravitational waves*. [Astronomy & Astrophysics \(2020\)](#)
 37. **Hannuksela OA**, Collett TE, Çalışkan M, Li TGF. *Localizing merging black holes with sub-arcsecond precision using gravitational-wave lensing*. [Monthly Notices of the Royal Astronomical Society 498.3: 3395–3402 \(2020\)](#)
 38. Pang PTH, **Hannuksela OA**, Dietrich T, Pagano G, Harry IW. *Lensed or not lensed: Determining lensing magnifications for binary neutron star mergers from a single detection*. [Monthly Notices of the Royal Astronomical Society \(2020\)](#)
 39. The LIGO Scientific Collaboration, the Virgo Collaboration. *GW190425: Observation of a Compact Binary Coalescence with Total Mass $\sim 3.4M_{\odot}$* . [Astrophysical Journal Letters \(2020\)](#).
- 2019**
40. **Hannuksela OA**, Wong KWK, Brito R, Berti E, Li TG. *Probing the existence of ultralight bosons with a single gravitational-wave measurement*. [Nature Astronomy Letters \(2019\)](#)
 41. **Hannuksela OA**, Haris K, Ng KKY, Kumar S, Mehta AK, Keitel D, Li TGFL, Ajith P. *Search for gravitational lensing signatures in LIGO-Virgo binary black hole events*. [Astrophysical Journal Letters \(2019\)](#)
 - Featured in the top 1% most cited papers in the Astronomy and Astrophysical
 - Won the IOP Publishing Top Cited Paper Award
 42. Diego JM, **Hannuksela OA**, Kelly PL, Pagano G, Broadhurst T, Kim K, Li TGF, Smoot GF. *Observational signatures of microlensing in gravitational waves at LIGO/Virgo frequencies*. [Astronomy & Astrophysics \(2019\)](#)
- 2018**
43. Carullo G, van der Schaaf L, London L, Pang PT, Tsang KW, **Hannuksela OA**, Meidam J, Agathos M, Samajdar A, Ghosh A, Li TGFL. *On the empirical verification of the black hole no-hair conjecture from gravitational-wave observations*. [Phys. Rev. D 98, 104020 \(2018\)](#)
 44. Lai KH, **Hannuksela OA**, Herrera-Martín A, Diego JM, Broadhurst T, Li TGFL. *Discovering intermediate-mass black hole lenses through gravitational wave lensing*. [Phys. Rev. D 98, 083005 \(2018\)](#)
 - (sole corresponding author)
- 2016**
45. Hoilijoki S, Palmroth M, Walsh BM, Pfau-Kempf Y, von Althaus S, Ganse U, **Hannuksela OA**, Vainio R. *Mirror modes in the Earth's magnetosheath: Results from a global hybrid-Vlasov simulation*. [Journal of Geophysical Research: Space Physics 121.5: 4191–4204 \(2016\)](#)
- 2015**
46. Palmroth M, Archer M, Vainio R, Hietala H, Pfau-Kempf Y, Hoilijoki S, **Hannuksela OA**, Ganse U, Sandroos A, Althaus SV, Eastwood JP. *ULF foreshock under radial IMF: THEMIS observations and global kinetic simulation Vlasiator results compared*. [Journal of Geophysical Research: Space Physics 120.10 \(2015\): 8782–8798 \(2015\)](#)
 47. Kempf Y, Pokhotelov D, Gutynska O, Wilson III LB, Walsh BM, von Althaus S, **Hannuksela OA**, Sibeck DG, Palmroth M. *Ion distributions in the Earth's foreshock: Hybrid-Vlasov simulation and THEMIS observations*. [Journal of Geophysical Research: Space Physics 120.5 \(2015\): 3684–3701 \(2015\)](#)
- 2014**
48. Kempf Y, Pokhotelov D, von Althaus S, **Hannuksela OA**, Palmroth M. *Hybrid-Vlasov simulations of the Earth's collisionless bow shock and foreshock region*. [General Assembly and Scientific Symposium \(URSI GASS\), 2014 XXXIth URSI 2014 Aug 16 \(pp. 1-1\). IEEE \(2014\)](#)
 - Conference publication

TEACHING

SUMMARY

CUHK (2021 - current): I currently co-supervise Kailib Doney (PhD), Laura Uronen (PhD), Jason Poon (PhD), Hemantakumar Phurailatpam (PhD), Anna Liu (PhD), Samson Leong (PhD), Thomas Ng (MPhil), Charmaine Wong (MPhil), Elwin Li (MPhil). They work on projects related to binary black hole formation channels, gravitational-wave lensing, statistical modeling of binary populations, waveform modelling, alternative theories of gravity, and data analysis. Beyond the graduate student supervision, I also currently work with several undergraduate students, including LeoNg, Ben

On, Timothy Chan, Thomas Ng, Aidan Chong, and Zhaofeng Wu, on topics relating to gravitational-wave Doppler effects, sub-threshold search pipelines, and modeling weak lensing biases on cosmological measurements. Beyond current CUHK students, I also actively work with CUHK alumni and students from my postdoc institute, including Damon Cheung, who is now a graduate student at Michigan and collaborates with graduate students from Italy on modeling systematic biases in strong lensing, Kelvin Chan, who is at the McGill University and works on detecting continuous waves from ultralight boson clouds, Justin Janquart, who works on gravitational-wave lensing and leads a group-wide LVK study alongside leading the lensing development calls and effort in that direction, and Mark Cheung together with Simon Yeung, who work on gravitational-wave wave optics modeling efforts, as well as Zhaofeng Wu, who is a PhD at Purdue University.

Nikhef/Utrecht (2019 - 2021): I mentored a PhD student (Justin Janquart) at Nikhef/Utrecht on a project to detect multiply imaged, lensed gravitational-wave events using a likelihood-based methodology that is both faster than the current joint parameter-estimation methods (e.g., Liu et al 2020) and more accurate than the current posterior overlap based methodologies (e.g. Haris et al. 2018). Moreover, I currently supervised two BSc students: One student at Nikhef/Utrecht (Renske Wierda) on a statistical study to determine the strongly lensed gravitational-wave forecasts (which won the best thesis award in 2021), one student in Chicago (Mesut Caliskan; partial supervision) on a topic to investigate potential false alarms in lensed gravitational-wave detections. I also mentored two students in Hong Kong (Mark Cheung, BSc, Joseph Gais, PhD) on a topic to investigate stellar microlensing of gravitational waves.

CUHK (2015-2019): I have been a teaching assistant at CUHK from 2015 to 2019. I had requested additional teaching involving crafting course exercises, holding interactive tutorials, and lecturing for the “gravitational waves” and “guided studies” courses. Moreover, I had made a proposal to craft a workshop series dedicated to help PG students in research. Besides my official teaching duties, I mentored students within our research group.

STUDENT MENTORING

PhD students

- **2024-** *Kailib Doney, CUHK (supervisor)*
 - Co-supervisor: Prof. Tjonnje Li
- **2023-** *Ramon Luichies, Groningen University (supervisor)*
 - Supervisor(s): Leon Koopmans, Chris Van Den Broeck
- **2023-** *Laura Uronen, CUHK (supervisor)*
 - Co-supervisor: Justin Janquart (Leuven)
- **2023-** *Samson, Hin Wai Leong, CUHK (supervisor) - [[link to published research works](#)]*
- **2022-** *Jason, Poon Cheung Chi, CUHK (supervisor)*
- **2022-** *Hemantakumar Phurailatpam, CUHK (supervisor) - [[link to published research works](#)]*
 - Co-supervisor: Tjonnje Li (KU Leuven)
- **2021-** *Anna Liu, CUHK, (supervisor) - [[link to published research works](#)]*
 - Co-supervisor: Tjonnje Li (KU Leuven)
- **2021-2022** *Mesut Çalışkan, Johns Hopkins University, (research project mentor) - [[link to published research works](#)]*
 - *Continued work post-graduation*
- **2021-2022** *Narola Harsh, Utrecht University, (mentor)*
- **2020-2022** *Justin Janquart, Utrecht University, (mentor) - [[link to published research works](#)]*
 - *Lead of the gravitational-wave lensing software development effort, O4 tutorials, and workflow planning as of 2021*
 - *History of supervising CUHK undergraduate students*
- **2019-2020** *Giulia Pagano, University of PISA, (research project mentoring) [[link to published research work](#)]*

MPhil students

- **2024-** *Elwin Li, CUHK (supervisor)*
- **2024-** *Charmaine Wong, CUHK (supervisor)*
 - Daily mentor: Thomas Ng
- **2023-** *Thomas Ng, CUHK (co-supervisor) - [[link to published research work](#)]*
 - Co-supervisor: Stefano Rinaldi
- **2021-2024** *Amit Jit Singh, CUHK (co-supervisor)*
- **2021-2022** *Eungwang Seo, CUHK, (co-supervisor) - [[link to published research work](#)]*
- **2019-2021** *Joseph Gais, CUHK, (research project mentoring) - [[link to published research work](#)]*

Bachelor's students

CUHK

- **2024-2025** *Martes Wong, CUHK (supervisor)*
 - OPUS student
 - Co-supervisor: Alvin Li
- **2023-2025** *On, Xu Yu Ben, CUHK (supervisor)*
 - SURE student (destination: Flatiron Institute, US)
 - Co-supervisor: Kaze Wong
 - Daily mentor: Thomas Ng
- **2024 Summer-** *Ryan Zhang, Johns' Hopkins (supervisor)*
 - Co-supervisor: Paul Martens, Samson Leong (daily mentor)
- **2024 Summer-** *Helen Xu, CUHK (supervisor)*
 - Co-supervisors: Paul Martens, Thomas Ng (daily mentor)
- **2024 Summer-** *Peony Lai, CUHK (supervisor)*
 - Co-supervisors: Paul Martens, Thomas Ng (daily mentor)
- **2024 Summer** *Lisa Li, CUHK (supervisor)*
 - Co-supervisors: Hemantakumar Phurailatpam (daily mentor)
- **2023-2025** *Cheung, Brian, CUHK (supervisor)*
 - SURE student (destination: Portsmouth University)
 - Co-supervisor: T. Collett, Laura Uronen & Hemantakumar Phurailatpam (daily mentors)
- **2024 Summer-** *Louis Chiu, CUHK (supervisor)*
- **2023-2024** *Ng, Chung Yin Leo, CUHK (supervisor) - [[link to published research work](#)]*

- SURE student (destination: Utrecht University, Netherlands)
- Co-supervisor: Justin Janquart, Hemantakumar Phurailatpam
- **2023-2024** *Wong, Charmaine, CUHK* (supervisor)
 - SURE student (destination: Flatiron Institute, US)
 - Co-supervisor: Kaze Wong
- **2022-2024** *Aidan, Chong Hang Yan, CUHK* (supervisor) - [[link to published research work](#)]
 - SURE student (destination: Caltech, US)
 - Co-supervisor: Alvin Li
- **2022-2023** *Timothy, Chan Hoi Man, CUHK*, (supervisor)
- **2022-2023** *Thomas, Ng Chi Kit, CUHK* (supervisor) - [[link to published research work](#)]
- **2021-2023** *Zhaofeng Wu (CUHK)* (supervisor) - [[link to published research work](#)]
 - Co-supervisor: Martin Hendry
- **2021-2022** *Kelvin, Chan Hoi Man, CUHK*, (supervisor) - [[link to published research work](#)]
- **2021-2022** *Simon, Yeung Manchun, CUHK*, (supervisor) - [[link to published research work](#)]
 - Moved to UWM, Milwaukee
- **2021-2022** *Damon, Cheung Hoi Tim, CUHK*, (supervisor) - [[link to published research work](#)]
 - Co-supervisor: Stefano Rinaldi
- **2021-2022** *Chan Wing Lok, CUHK*, (supervisor) - [[link to published research work](#)]
 - Co-supervisor: Martin Hendry
- **2021-2022** *Chad, Chong Cheuk Nam, CUHK*, (SURE daily mentor)
 - Co-supervisor: Michalis Agathos
- **2021-2022** *Aidan, Chong Hang Yan, CUHK*, (SURE daily mentor)
 - Co-supervisor: Alvin Li
- **2020-2021** *Renske Wierda, Utrecht University*, (co-supervisor) - [[link to published research works](#), [link to news article](#)]
- **2019-2021** *Mesut Çaltışkan, University of Chicago*, (mentor) - [[link to published research work](#)]
- **2019-2021** *Mark Cheung Ho Yeuk, CUHK*, (research project mentor) - [[link to published research work](#)]
- **2018** *Amit Jit Singh, CUHK* (summer research project student mentor) - [[link to published research work](#)]
 - Later joined as an MPhil student
- **2018** Ivan S.C. Li, Imperial College London, (summer research project student mentor) - [[link to published research work](#)]
- **2017** Kaye Li, CUHK, (research project student mentor)
- **2016** Ignacio Magana, UC Santa Barbara, (summer research project student mentor)
- **2016** Gladys Poon, Cambridge University, (summer research project student mentor)

COURSES

(UG=undergraduate; PG=postgraduate)

RESEARCH ASSISTANT PROFESSOR, CHINESE UNIVERSITY OF HONG KONG (HONG KONG)

- UG Course: UGEB2401D Astronomy
- UG Course: STAR4050 Seminar III
- UG Course: STAR3050 Seminar II
- UG Course: PHYS4610/PHYS4620 Senior Project I
 - On, Xu Yu Ben
 - Topic: Gravitational waves and machine learning
 - SURE program at Flatiron Institute - *Summer 2023*
 - Supervisors: Kaze Wong
 - Ng, Chung Yin Leo
 - Topic: Search for gravitational-wave strong lensing
 - SURE program at Utrecht University - *Summer 2023*
 - Supervisors: Justin Janquart, Chris Van Den Broeck
 - Chan, Yan-Mong Timothy
 - Topic Gravitational-wave doppler lensing
 - To continue graduate studies at Stony Brook University, New York, US
 - Ng, Chi Kit Thomas
 - Topic 1: Gravitational-wave millilensing
 - Topic 2: Tests of general relativity
 - SURE program at Flatiron Institute - *Summer 2022*
 - Supervisors: Kaze Wong, Max Isi, Will Farr
 - To continue graduate studies at CUHK
 - Kelvin, Chan Hoi Man
 - Topic: Probing ultralight bosons with binary merger remnants [[link](#)]
 - To continue graduate studies at the McGill University, Montreal, Canada
 - Simon, Yeung Manchun
 - Topic: Modeling microlensing wave optics effects [[link](#)]
 - To continue graduate studies at the University of Milwaukee, Wisconsin, United States
 - Damon, Cheung Hoi Tim
 - First topic: Gravitational-wave population inference with machine learning [[link](#)]
 - Second topic: Bayesian analysis of strongly lensed gravitational waves
 - Project supervised by Stefano Rinaldi (Pisa University)
 - To continue graduate studies at the University of Michigan, Washington, United States
 - Chan Wing Lok
 - Topic: Studying the effect of weak lensing on gravitational-wave inferences of cosmology [[link](#)]

- One term
 - *Jack Kwok: Primary supervision by Tjonnie Li*
 - UG Course: STAR4000 Undergraduate Research in Science III
 - Chan Wing Lok
 - Topic: Using electromagnetic lensing observations to debias LISA/TianQin standard siren measurements
 - One term

POSTDOCTORAL RESEARCHER, NIKHEF/UTRECHT UNIVERSITY (THE NETHERLANDS)

- UG Course: BONZ Honor's 1-year Bachelor course [supervised Renske Wierda]
 - Thesis Topic: A population of galaxy-lensed gravitational waves [[link to thesis](#)]
 - Won the EMMEPH best thesis award and the work featured in Utrecht News [[link](#), [link](#)]
 - Research published in the Astrophysical Journal [[link](#)]
 - Continues graduate studies at the Amsterdam University

TEACHING ASSISTANT, CHINESE UNIVERSITY OF HONG KONG (HONG KONG)

- UG Course: Student Centred Learning I
- UG Course: Guided Studies II
- Custom workshops to help PG students with PG studies
- PG Course: *Gravitational Waves*
- PG Course: Guided Studies (General Relativity)
- UG Course: Perspectives in Materials Science
- UG Course: Electromagnetic Theory I

PRESENTATIONS/WORKSHOPS/ORGANIZATION

2024

- Organiser, IAS Program on Fundamental Physics 2025
- Gravitational lensing of gravitational waves [CosPA24](#) (Ningbo) June 15-17
- Towards the first detection: the gravitational wave perspective [Multimessenger Gravitational Lensing](#) (UK) March 11-12
- High-school student workshop: Gravitational-wave data analysis CUHK (HK) November - [post](#)

2023

- Multimessenger Astronomy: Bridging Transients, Lensing, and Dark Matter ([Cosmic Frontiers](#)) November 8-9
 - Main organiser
- Gravitational-wave lensing sub-group organization. [LVK F2f @ Toyama](#) (Japan) September 11-15, 2023
- Recent work in gravitational-wave lensing. [YITP Seminar](#) (Japan) September 4, 2023
- Gravitational-wave lensing [YGA2023](#), 1-3 Aug
- Localizing merging black holes using gravitational-wave lensing [Amaldi15](#) 19 July
- Gravitational-wave astronomy. [Helsinki University Seminar](#) 13 June
- Exploring gravitational-wave lensing. PISA University Seminar 9 June
- Future prospects of gravitational-wave lensing. [GRASP Opening Workshop](#) 23-25 May (joint talk with Tjonnie Li)
- Gravitational-wave lensing sub-group organization. [LVK March 2023](#) Mar 11-16

2022

- Gravitational-wave lensing talk, [AAPPs-DACG Workshop 2022 on Astrophysics, Cosmology, and Gravitation](#) Nov 14-17, 2022
 - Invited talk
- “Story of Gravity” St. Francis of Assisi’s English Primary school Oct 13
 - Outreach talk for Hong Kong primary school
- Focus Group for Young Scientists (Astronomy) [HKLFF Focus group @ Masterminds, Masterclasses 2.]
 - Moderator
- Gravitational-wave lensing, Boom! [An LLSTC workshop \(2002\)](#), July 25-29, 2022, University of Illinois at Urbana-Champaign, Urbana
 - Invited talk
- Lecture on gravitational lensing of gravitational waves, 65th Workshop on Gravitational Waves and Numerical Relativity, APCTP, Korea
- AI for GW inference, [Applications of Artificial Intelligence to Gravitational Wave Science](#) (2022), 18.3.2022
 - Panel member
- What are gravitational waves? CUHK Postgraduate Physics Seminar (2022), 9-10.2.2022

2021

- Gravitational-wave lensing with ground-based gravitational-wave detectors, [TAUP \(2021\)](#), 02.09.2021
- Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run, [Amaldi14](#), 22.07.2021
- Gravitational-wave lensing in the O3a, [IGFAE Seminar](#), 02.06.2021
- LIGO-Virgo gravitational-wave lensing [webinar](#), 05.27.2021
 - Moderator
- Gravitational-wave lensing seminar, [UIB Online Seminar](#), 19.03.2021
- Talk on gravitational-wave lensing at the [GdR Gravitational Waves, Cosmology meeting](#), 28.01.2021

2020

Talk on *Gravitational-wave lensing within ground-based gravitational-wave detectors* at:

- Space Science @ Drop Tower Seminar - Konstantinos Dialektopoulos - 22.09.2020
- [theory seminar in Paris at the Institut d'astrophysique de Paris \(IAP\)](#)
- [THC meeting, Leiden](#)

2019

- Talk on *Gravitational Wave Lensing in LIGO/Virgo* [Institute of Cosmology and Gravitational \(ICG\) colloquium, Portsmouth](#)
- Talk on *Extreme Dark Matter Tests with Extreme Mass Ratio Inspirals* [GW Probes of Fundamental Physics Workshop, Amsterdam, 11-13 Nov](#)
- Talk on *Probing the existence of ultralight bosons with a single gravitational-wave measurement*. [22nd International Conference on General Relativity and Gravitation/13th Edoardo Amaldi Conference on Gravitational Waves](#)

2018

- Talk on ultralight bosons and their detection at:
 - MIT LIGO Labs on 31.7. (Boston, USA)
 - Johns Hopkins University on 18.7. (Baltimore, USA)
 - University of Wisconsin-Milwaukee on 16.7. (Milwaukee, USA)
- Poster on probing the existence of ultralight bosons with gravitational waves at the “[12th International LISA Symposium](#)” 9. - 13.7. (Chicago, USA)
- Talk on discovering binary environments with gravitational waves at the “[Gravity and Cosmology 2018](#)” workshop, 29.1. - 9.3. (Kyoto, Japan)

2017

- Invited lecture at the Summer School on gravitational waves at “NCU 2017 Summer Astro Camp” organized by the National Central University (Taiwan, Taoyuan)
<http://lidodo.astro.ncu.edu.tw/PIRE2017SCamp/index.php>
The three-day summer school (28 - 30 June 2017) consisted of undergraduate lectures on gravitational waves and recent progress in the field.

BLOGS, NEWS, AND PRESS RELEASES

2023

- HK Astronomical Society Article on gravitational waves [HKAS \(2023\)](#)

2022

- IOPScience Paper Interview [youtube link](#)
- IOPScience Top Cited Paper Award [IOPScience \(2022\)](#)
- CUHK scholars receive China Top Cited Paper Awards from IOP Publishing [CUHK Press \(2022\)](#)
- Hong Kong Laureate Forum Interview [youtube link](#)

2021

- One Idea to Explain Dark Matter – Ultralight Bosons – Fails the Test. [Universe Today \(2021\)](#)
- Reanalyzing LIGO-Virgo gravitational wave events under the new lens of... lensing! [Astrobites \(2021\)](#)
- No hints yet of gravitational-wave lensing. [Nikhef news \(2021\)](#)
- New publication by the LIGO-Virgo collaboration: Search for gravitational-wave lensing [Utrecht news \(2021\)](#)
- Scientists hunt for evidence of 'lensed' gravitational waves. [Birmingham University Press release \(2021\)](#)
- When gravity bends gravity: Did gravitational-wave astronomers catch “Gravitational Lenses” at work? [LIGO India Press Release \(2021\)](#)
- Gravity bending gravity: are any of the O3a LIGO-Virgo detections gravitationally lensed? [LVC Science Summaries \(2021\)](#)

2019

- Searching For Ultralight Bosons With Gravitational Waves [Asian Scientist \(9 May 2019\)](#).
- CUHK Probes the Existence of Ultralight Bosons with a Single Gravitational Wave Measurement. [CUHK Press \(23 April 2019\)](#).
- Researchers suggest LISA should be able to see ultralight bosons near supermassive black holes. [Phys Org \(6 March 2019\)](#).
- Gravitational waves could reveal ultralight bosons lurking near black holes. [Physics World \(5 March 2019\)](#).
- Probing the Existence of Ultralight Bosons with a Single Gravitational Wave Measurement. [Nature Blog \(4 March 2019\)](#).

AWARDS, CERTIFICATES AND FELLOWSHIPS

- **2022** IOPScience Top Cited Paper Award
- **2019** CIERA Postdoctoral Fellowship, Northwestern University (awarded but declined)
- **2019** Postgraduate Research Output Award (one member nominated)
- **2017** CUHK Teaching Award
- **2017** Exchange Scholarship (Hong Kong University)
- **2017** Hong Kong PhD Fellowship (full coverage, 2017 - 2019; ~2% of PHY students)
- **2014** CSC Cray XC workshop certificate
- **2013** CSC Advanced Parallel Programming certificate
- **2013** CSC Introduction to Parallel Programming certificate
- **2011** ABB Physics and Maths Stipend
- **2011** Pro Mathematica Medal

MEMBERSHIPS AND RESPONSIBILITIES

- **2023 - current** PI, CUHK LIGO group
- **2022 - current** PI, CUHK KAGRA group (KAGRA)
- **2022 - current** KAGRA Scientific Congress Member (KAGRA)
- **2022 - current** Co-Chair, LVK lensing sub-group
- **2021 - current** Senior Council Member, LIGO Collaboration
- **2021 - current** Member, LIGO Collaboration
- **2019 - 2022** Chair, LVK lensing sub-group (under Testing General Relativity analysis group)

- **2019 - 2021** Member, Virgo Collaboration
- **2020 - 2021** Manager and chair, O3a LVC lensing paper
- **2016 - 2019** Member, LIGO Scientific Collaboration
- **2015 - 2019** Member, Physics Postgraduate Society

REFERENCES

References available upon request.