

# 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, and I was the founding chair of the LVK gravitational-wave lensing working group.

## EDUCATION

### PhD (Physics)

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

Postgraduate Research Output Award

### MPhil (Physics)

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

### BSc (Physics)

AUG 2011 - JUL 2015, UNIVERSITY OF HELSINKI (FINLAND)

## EMPLOYMENT

### Assistant Professor

JUL 2023 - PRESENT, THE CHINESE UNIVERSITY OF HONG KONG (HONG KONG)

### Research Assistant Professor

SEP 2021 - JUL 2023, THE 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)

## GRANTS

### DIRECT GRANT

MAY 2025 - APR 2026 1,900 USD (PI)

**RGC/GRF Gravitational-wave microlensing in the company of strong lensing**

JAN 2025 - DEC 2028 117,000 USD (PI)

**SSFCRS Connecting cosmological simulations with multimessenger gravitational lensing**

JAN 2025 - DEC 2027 64,300 USD (co-I)

**RESEARCH COMMITTEE (PDFS) Gravitational-wave lensing to probe substructure**

APR 2025 - APR 2028 96,000 USD (PI)

### DIRECT GRANT

JAN 2024 - DEC 2024 1,100 USD (PI)

**RGC/GRF Gravitational-wave strong lensing follow-up applications**

JAN 2024 - DEC 2027 149,000 USD (PI)

### START-UP FUND

JUL 2023 - DEC 2027 230,000 USD (PI)

**RGC/GRF Towards the first observations of gravitational-wave lensing**

JAN 2023 - DEC 2026 112,000 USD (PI)

**DIRECT GRANT Probing subhalos with gravitational-wave millilensing**

JUN 2022 - JUN 2023 19,000 USD (PI)

## MEMBERSHIPS AND RESPONSIBILITIES

2022 - NOW PI, CUHK LIGO Group

2023 - NOW PI, CUHK KAGRA Group

2022 - NOW KAGRA Scientific Congress Member, KAGRA

2021 - NOW Senior Council Member, LIGO Scientific Collaboration

2021 - NOW Member, LIGO Scientific Collaboration

2022 - 2025 Co-chair, LVK Gravitational-wave Lensing Working Group

2019 - 2022 Chair, LVK Gravitational-wave Lensing Sub-group under TGR group

2019 - 2021 Member, Virgo Collaboration

2016 - 2019 Member, LIGO Scientific Collaboration

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## PUBLICATIONS

The LIGO-Virgo-KAGRA Collaboration et al., “GWTC-4.0: Searches for Gravitational-Wave Lensing Signatures”. [arXiv:2512.16347 \(2025\)](#).

R. Abbott et al., “Search for Gravitational-lensing Signatures in the Full Third Observing Run of the LIGO–Virgo Network”. [ApJ 970.2 p. 191 \(2024\)](#).

R. Abbott et al., “Search for Lensing Signatures in the Gravitational-Wave Observations from the First Half of LIGO–Virgo’s Third Observing Run”. [ApJ 923.1 p. 14 \(2021\)](#).

O. A. Hannuksela et al., “Localizing merging black holes with sub-arcsecond precision using gravitational-wave lensing”. [MNRAS 498.3 pp. 3395–3402 \(2020\)](#).

O. A. Hannuksela et al., “Probing the existence of ultralight bosons with a single gravitational-wave measurement”. [Nature Astronomy 3 pp. 447–451 \(2019\)](#).

O. A. Hannuksela et al., “Search for Gravitational Lensing Signatures in LIGO-Virgo Binary Black Hole Events”. [ApJ 874.1 p. L2 \(2019\)](#).

K.-H. Lai et al., “Discovering intermediate-mass black hole lenses through gravitational wave lensing”. [Phys. Rev. D 98.8 p. 083005 \(2018\)](#).

## AWARDS/FELLOWSHIPS

2022 IOP Top (1%) Cited Paper Award

2019 CIERA Postdoctoral Fellowship

Northwestern University (declined)

2019 Postgraduate Research Output Award

2017 Hong Kong PhD Fellowship

## REVIEW

Reviewer for:

*Astrophysical Journal Letters*

*Astrophysical Journal*

*Physical Review D*

*Physical Review Letters*

*Monthly Notices of the Royal Astronomical Society*

*Nature Astronomy*

*Astroparticle Physics*

References available upon request.

## ATTACHMENTS (LAST UPDATED 19 FEB 2026)

### BIBLIOGRAPHY OF PUBLICATIONS

2026

1. Z.-F. Wu, **O. A. Hannuksela**, M. Hendry, and Q. L. Nguyen, “Weak-lensing Approximation of Wave-optics Effects from General Symmetric Lens Profiles”. *ApJ* **996.1** p. **25** (2026).

2025

2. D. H. T. Cheung, S. Rinaldi, M. Toscani, and **O. A. Hannuksela**, “Mitigating the effect of the population model uncertainty on the strong lensing Bayes factor using nonparametric methods”. *Phys. Rev. D* **111.6** p. **063012** (2025).
3. J. Janquart et al., “What is the nature of GW230529? An exploration of the gravitational lensing hypothesis”. *MNRAS* **537.2** pp. **1001–1014** (2025).
4. S. H. W. Leong, J. Janquart, A. K. Sharma, P. Martens, P. Ajith, and **O. A. Hannuksela**, “Constraining Binary Mergers in Active Galactic Nuclei Disks Using the Nonobservation of Lensed Gravitational Waves”. *ApJ* **979.2** p. **L27** (2025).
5. A. Liu, R. S. Chandramouli, **O. A. Hannuksela**, N. Yunes, and T. G. F. Li, “Millilensing induced systematic biases in parametrized tests of general relativity”. *Phys. Rev. D* **112.6** p. **064043** (2025).
6. L. C. Y. Ng, J. Janquart, H. Phurailatpam, H. Narola, J. S. C. Poon, C. Van Den Broeck, and **O. A. Hannuksela**, “Uncovering faint lensed gravitational-wave signals and reprioritizing their follow-up analysis using galaxy lensing forecasts with detected counterparts”. *MNRAS* **540.4** pp. **2937–2951** (2025).
7. **O. A. Hannuksela**, “Gravitational-wave lensing detection”. *Philosophical Transactions of the Royal Society of London Series A* **383.2295** p. **20240129** (2025).
8. **O. A. Hannuksela**, K. Haris, J. Janquart, H. Narola, H. Phurailatpam, J. D. E. Creighton, and C. Van Den Broeck, “Strong gravitational-wave lensing posterior odds”. [arXiv:2510.15463](https://arxiv.org/abs/2510.15463) (2025).
9. J. S. C. Poon, S. Rinaldi, J. Janquart, H. Narola, and **O. A. Hannuksela**, “Galaxy lens reconstruction based on strongly lensed gravitational waves: similarity transformation degeneracy and mass-sheet degeneracy”. *MNRAS* **536.3** pp. **2212–2233** (2025).
10. E. Seo, X. Shan, J. Janquart, **O. A. Hannuksela**, M. Hendry, and B. Hu, “Residual Test to Search for Microlensing Signatures in Strongly Lensed Gravitational Wave Signals”. *ApJ* **988.2** p. **159** (2025).
11. X. Shan, H. Yang, S. Mao, and **O. A. Hannuksela**, “The degeneracy between microlensing wave effect and precession in strongly lensed gravitational wave”. [arXiv:2508.21262](https://arxiv.org/abs/2508.21262) (2025).
12. G. P. Smith et al., “Multi-messenger gravitational lensing”. *Philosophical Transactions of the Royal Society of London Series A* **383.2295** p. **20240134** (2025).
13. The LIGO-Virgo-KAGRA Collaboration et al., “GWTC-4.0: Searches for Gravitational-Wave Lensing Signatures”. [arXiv:2512.16347](https://arxiv.org/abs/2512.16347) (2025).
14. The LIGO-Virgo-KAGRA Collaboration et al., “GWTC-4.0: Updating the Gravitational-Wave Transient Catalog with Observations from the First Part of the Fourth LIGO-Virgo-KAGRA Observing Run”. [arXiv:2508.18082](https://arxiv.org/abs/2508.18082) (2025).
15. L. E. Uronen, T. Li, J. Janquart, H. Phurailatpam, J. Poon, E. Wempe, L. Koopmans, and **O. A. Hannuksela**, “Finding black holes: an unconventional multi-messenger”. *Philosophical Transactions of the Royal Society of London Series A* **383.2294** p. **20240152** (2025).
16. M. Wright et al., “LensingFlow: An Automated Workflow for Gravitational Wave Lensing Analyses”. [arXiv:2507.20256](https://arxiv.org/abs/2507.20256) (2025).

2024

17. R. Abbott et al., “Search for Gravitational-lensing Signatures in the Full Third Observing Run of the LIGO–Virgo Network”. *ApJ* **970.2** p. **191** (2024).
18. K. H. M. Chan and **O. A. Hannuksela**, “Extracting ultralight boson properties from boson clouds around postmerger remnants”. *Phys. Rev. D* **109.2** p. **023009** (2024).
19. H. Narola, J. Janquart, L. Haegel, K. Haris, **O. A. Hannuksela**, and C. Van Den Broeck, “How well can modified gravitational wave propagation be constrained with strong lensing?” *Phys. Rev. D* **109.8** p. **084064** (2024).
20. T. C. K. Ng, S. Rinaldi, and **O. A. Hannuksela**, “Inferring cosmology from gravitational waves using non-parametric detector-frame mass distribution”. [arXiv:2410.23541](https://arxiv.org/abs/2410.23541) (2024).
21. S. Rinaldi, G. Demasi, W. Del Pozzo, and **O. A. Hannuksela**, “Hierarchical inference of evidence using posterior samples”. [arXiv:2405.07504](https://arxiv.org/abs/2405.07504) (2024).
22. E. Wempe, L. V. E. Koopmans, A. R. A. C. Wierda, **O. A. Hannuksela**, and C. Van Den Broeck, “On the detection and precise localization of merging black holes events through strong gravitational lensing”. *MNRAS* **530.3** pp. **3368–3390** (2024).

23. S. M. C. Yeung, M. H. Y. Cheung, M. Zumalacarregui, and **O. A. Hannuksela**, “*wolensing: A Python package for computing the amplification factor for gravitational waves with wave-optics effects*”. [arXiv:2410.19804 \(2024\)](#).
- 2023
24. M. Çalışkan, J. M. Ezquiaga, **O. A. Hannuksela**, and D. E. Holz, “*Lensing or luck? False alarm probabilities for gravitational lensing of gravitational waves*”. [Phys. Rev. D 107.6 p. 063023 \(2023\)](#).
25. J. Janquart et al., “*Follow-up analyses to the O3 LIGO-Virgo-KAGRA lensing searches*”. [MNRAS 526.3 pp. 3832–3860 \(2023\)](#).
26. J. Janquart, K. Haris, **O. A. Hannuksela**, and C. Van Den Broeck, “*The return of GOLUM: improving distributed joint parameter estimation for strongly lensed gravitational waves*”. [MNRAS 526.2 pp. 3088–3098 \(2023\)](#).
27. A. Liu, I. C. F. Wong, S. H. W. Leong, A. More, **O. A. Hannuksela**, and T. G. F. Li, “*Exploring the hidden Universe: a novel phenomenological approach for recovering arbitrary gravitational-wave millilensing configurations*”. [MNRAS 525.3 pp. 4149–4160 \(2023\)](#).
28. Z.-F. Wu, L. W. L. Chan, M. Hendry, and **O. A. Hannuksela**, “*Reducing the impact of weak-lensing errors on gravitational-wave standard sirens*”. [MNRAS 522.3 pp. 4059–4077 \(2023\)](#).
29. S. M. C. Yeung, M. H. Y. Cheung, E. Seo, J. A. J. Gais, **O. A. Hannuksela**, and T. G. F. Li, “*Detectability of microlensed gravitational waves*”. [MNRAS 526.2 pp. 2230–2240 \(2023\)](#).
- 2022
30. D. H. T. Cheung, K. W. K. Wong, **O. A. Hannuksela**, T. G. F. Li, and S. Ho, “*Testing the robustness of simulation-based gravitational-wave population inference*”. [Phys. Rev. D 106.8 p. 083014 \(2022\)](#).
31. J. Janquart, **O. A. Hannuksela**, K. Haris, and C. Van Den Broeck, “*GOLUM: A fast and precise methodology to search for, and analyze, strongly lensed gravitational-wave events*”. [arXiv:2203.06444 \(2022\)](#).
32. K. Kim, J. Lee, **O. A. Hannuksela**, and T. G. F. Li, “*Deep Learning-based Search for Microlensing Signature from Binary Black Hole Events in GWTC-1 and -2*”. [ApJ 938.2 p. 157 \(2022\)](#).
33. E. Seo, **O. A. Hannuksela**, and T. G. F. Li, “*Improving Detection of Gravitational-wave Microlensing Using Repeated Signals Induced by Strong Lensing*”. [ApJ 932.1 p. 50 \(2022\)](#).
- 2021
34. R. Abbott et al., “*Observation of Gravitational Waves from Two Neutron Star-Black Hole Coalescences*”. [ApJ 915.1 p. L5 \(2021\)](#).
35. R. Abbott et al., “*Search for Lensing Signatures in the Gravitational-Wave Observations from the First Half of LIGO-Virgo’s Third Observing Run*”. [ApJ 923.1 p. 14 \(2021\)](#).
36. R. Abbott et al., “*Tests of general relativity with binary black holes from the second LIGO-Virgo gravitational-wave transient catalog*”. [Phys. Rev. D 103.12 p. 122002 \(2021\)](#).
37. M. H. Y. Cheung, J. Gais, **O. A. Hannuksela**, and T. G. F. Li, “*Stellar-mass microlensing of gravitational waves*”. [MNRAS 503.3 pp. 3326–3336 \(2021\)](#).
38. J. Janquart, **O. A. Hannuksela**, K. Haris, and C. Van Den Broeck, “*A fast and precise methodology to search for and analyse strongly lensed gravitational-wave events*”. [MNRAS 506.4 pp. 5430–5438 \(2021\)](#).
39. J. Janquart, E. Seo, **O. A. Hannuksela**, T. G. F. Li, and C. Van Den Broeck, “*On the Identification of Individual Gravitational-wave Image Types of a Lensed System Using Higher-order Modes*”. [ApJ 923.1 p. L1 \(2021\)](#).
40. K. Kim, J. Lee, R. S. H. Yuen, **O. A. Hannuksela**, and T. G. F. Li, “*Identification of Lensed Gravitational Waves with Deep Learning*”. [ApJ 915.2 p. 119 \(2021\)](#).
41. K. K. Y. Ng, S. Vitale, **O. A. Hannuksela**, and T. G. F. Li, “*Constraints on Ultralight Scalar Bosons within Black Hole Spin Measurements from the LIGO-Virgo GWTC-2*”. [Phys. Rev. Lett. 126.15 p. 151102 \(2021\)](#).
42. K. K. Y. Ng, **O. A. Hannuksela**, S. Vitale, and T. G. F. Li, “*Searching for ultralight bosons within spin measurements of a population of binary black hole mergers*”. [Phys. Rev. D 103.6 p. 063010 \(2021\)](#).
43. A. R. A. C. Wierda, E. Wempe, **O. A. Hannuksela**, L. V. E. Koopmans, and C. Van Den Broeck, “*Beyond the Detector Horizon: Forecasting Gravitational-Wave Strong Lensing*”. [ApJ 921.2 p. 154 \(2021\)](#).
- 2020
44. R. Abbott et al., “*GW190521: A Binary Black Hole Merger with a Total Mass of  $150 M_{\odot}$* ”. [Phys. Rev. Lett. 125.10 p. 101102 \(2020\)](#).
45. R. Abbott et al., “*Properties and Astrophysical Implications of the  $150 M_{\odot}$  Binary Black Hole Merger GW190521*”. [ApJ 900.1 p. L13 \(2020\)](#).

46. **O. A. Hannuksela**, K. C. Y. Ng, and T. G. F. Li, “*Extreme dark matter tests with extreme mass ratio inspirals*”. [Phys. Rev. D 102.10 p. 103022 \(2020\)](#).
47. **O. A. Hannuksela**, T. E. Collett, M. Çalıřkan, and T. G. F. Li, “*Localizing merging black holes with sub-arcsecond precision using gravitational-wave lensing*”. [MNRAS 498.3 pp. 3395–3402 \(2020\)](#).
48. G. Pagano, **O. A. Hannuksela**, and T. G. F. Li, “*LENSINGGW: a PYTHON package for lensing of gravitational waves*”. [A&A 643 A167 \(2020\)](#).
49. P. T. H. Pang, **O. A. Hannuksela**, T. Dietrich, G. Pagano, and I. W. Harry, “*Lensed or not lensed: determining lensing magnifications for binary neutron star mergers from a single detection*”. [MNRAS 495.4 pp. 3740–3750 \(2020\)](#).

2019

50. J. M. Diego, **O. A. Hannuksela**, P. L. Kelly, G. Pagano, T. Broadhurst, K. Kim, T. G. F. Li, and G. F. Smoot, “*Observational signatures of microlensing in gravitational waves at LIGO/Virgo frequencies*”. [A&A 627 A130 \(2019\)](#).
51. **O. A. Hannuksela**, K. W. K. Wong, R. Brito, E. Berti, and T. G. F. Li, “*Probing the existence of ultralight bosons with a single gravitational-wave measurement*”. [Nature Astronomy 3 pp. 447–451 \(2019\)](#).
52. **O. A. Hannuksela**, K. Haris, K. K. Y. Ng, S. Kumar, A. K. Mehta, D. Keitel, T. G. F. Li, and P. Ajith, “*Search for Gravitational Lensing Signatures in LIGO-Virgo Binary Black Hole Events*”. [ApJ 874.1 p. L2 \(2019\)](#).

2018

53. G. Carullo, L. van der Schaaf, L. London, P. T. H. Pang, K. W. Tsang, **O. A. Hannuksela**, J. Meidam, M. Agathos, A. Samajdar, A. Ghosh, T. G. F. Li, W. Del Pozzo, and C. Van Den Broeck, “*Empirical tests of the black hole no-hair conjecture using gravitational-wave observations*”. [Phys. Rev. D 98.10 p. 104020 \(2018\)](#).
54. A. Jit Singh, I. S. C. Li, **O. A. Hannuksela**, T. G. F. Li, and K. Kim, “*Classifying Lensed Gravitational Waves in the Geometrical Optics Limit with Machine Learning*”. [arXiv:1810.07888 \(2018\)](#).
55. K.-H. Lai, **O. A. Hannuksela**, A. Herrera-Martín, J. M. Diego, T. Broadhurst, and T. G. F. Li, “*Discovering intermediate-mass black hole lenses through gravitational wave lensing*”. [Phys. Rev. D 98.8 p. 083005 \(2018\)](#).

2016

56. S. Hoilijoki, M. Palmroth, B. M. Walsh, Y. Pfau-Kempf, S. von Alfthan, U. Ganse, **O. A. Hannuksela**, and R. Vainio, “*Mirror modes in the Earth’s magnetosheath: Results from a global hybrid-Vlasov simulation*”. [Journal of Geophysical Research \(Space Physics\) 121.5 pp. 4191–4204 \(2016\)](#).

2015

57. Y. Kempf, D. Pokhotelov, O. Gutynska, L. B. Wilson III, B. M. Walsh, S. von Alfthan, **O. A. Hannuksela**, D. G. Sibeck, and M. Palmroth, “*Ion distributions in the Earth’s foreshock: Hybrid-Vlasov simulation and THEMIS observations*”. [Journal of Geophysical Research \(Space Physics\) 120.5 pp. 3684–3701 \(2015\)](#).
58. M. Palmroth, M. Archer, R. Vainio, H. Hietala, Y. Pfau-Kempf, S. Hoilijoki, O. Hannuksela, U. Ganse, A. Sandroos, S. von Alfthan, and J. P. Eastwood, “*ULF foreshock under radial IMF: THEMIS observations and global kinetic simulation Vlasiator results compared*”. [Journal of Geophysical Research \(Space Physics\) 120.10 pp. 8782–8798 \(2015\)](#).

## TEACHING

### SUMMARY

**CUHK (2021-NOW)** I currently co-supervise Kailib Doney (PhD), Laura Uronen (PhD), Jason Poon (PhD), Hemantakumar Phurailatpam (PhD), Anna Liu (PhD), Samson Leong (PhD), Brian Cheng (MPhil), 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 Leo Ng, 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 (now faculty at UCLouvain), who works on gravitational-wave lensing and leads a group-wide LVK study alongside leading the lensing effort within LVK now 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.

#### STAFF

- 2025-2028 Souvik Jana, CUHK, [\[link to research work\]](#)  
2025-2027 Samuel Lange, CUHK, [\[link to research work\]](#)  
 *Joint hire with Prof. T.K. Chan*  
2023-2026 Paul Martens, CUHK, [\[link to research work\]](#)

#### STUDENT MENTORING

##### PhD students

- 2024- Kailib Doney, CUHK, supervisor  
 *Co-supervisor: Prof. Tjonnie Li*  
 *Under Joint International PhD Supervision Scheme (KU Leuven-CUHK)*  
 *PhD IMPAC Award 2026*  
2023- Laura Uronen, CUHK, supervisor [\[link to research work\]](#)  
 *Co-supervisor: Justin Janquart*  
 *Hong Kong PhD Fellowship (HKPFS)*  
 *PhD IMPAC Award 2026*  
2023- Samson Hin Wai Leong, CUHK, supervisor [\[link to research work\]](#)  
 *Co-supervisor: Juan Calderon Bustillo*  
2023-2024 Ramon Luichies, Groningen University, co-supervisor  
 *Supervisors: Leon Koopmans, Chris Van Den Broeck*  
2022-2026 Jason Poon Cheung Chi, CUHK, supervisor [\[link to research work\]](#)  
 *Hong Kong PhD Fellowship (HKPFS)*  
2022-2026 Hemantakumar Phurailatpam, CUHK, supervisor [\[link to research work\]](#)  
 *Co-supervisor: Tjonnie Li*  
 *Main developer of [ler](#) and [gwsnr](#)*  
2021-2022 Mesut Caliskan, Johns Hopkins University, research project mentor [\[link to research work\]](#)  
2021-2025 Anna Liu, CUHK, supervisor [\[link to research work\]](#)  
 *co-supervisor: Tjonnie Li*  
 *Continued to UIUC for postdoc under Prof. Yunes*  
2021-2022 Narola Harsh, Utrecht University, mentor [\[link to research work\]](#)  
2020-2022 Justin Janquart, Utrecht University, daily mentor [\[link to research work\]](#)  
 *Continued postdoc at Utrecht, then accepted faculty position at UCLouvain, Belgium in 2024*  
 *Lead of the gravitational-wave lensing software development effort, O4 tutorials, and workflow planning*  
 *History of supervising CUHK undergraduate/postgraduate students*  
2019-2020 Giulia Pagano, University of PISA, research project mentoring [\[link to research work\]](#)

##### MPhil students

- 2025- Brian Cheng, CUHK, supervisor  
 *Co-supervisors: Isaac C. F. Wong (KULeuven), Thomas E. Collett (during SURE); Mentors: Laura E. Uronen*  
2024-2026 Elwin Li, CUHK, supervisor  
 *Daily mentors: Juno CL Chan (Niels Bohr), AKY Li (UTokyo)*  
2024-2026 Charmaine Wong, CUHK, supervisor  
 *Co-supervisor: Stefano Rinaldi (Heidelberg); Daily mentors: Thomas C.K. Ng, Samson Leong*  
2023-2025 Thomas C.K. Ng, CUHK, supervisor [\[link to research work\]](#)  
 *Co-supervisor: Stefano Rinaldi (Heidelberg), Kaze Wong (Johns Hopkins)*  
2021-2022 Eungwang Seo, CUHK, co-supervisor [\[link to research work\]](#)  
 *Continued to U. Glasgow for PhD with Prof. Martin Hendry*  
2021-2024 Amit Jit Singh, CUHK, co-supervisor [\[link to research work\]](#)  
 *Daily co-supervisor: Nidhi Pant*  
2019-2021 Joseph Gais, CUHK, research project mentoring

##### BSc students

- 2025- Leo Felix, CUHK, supervisor  
 *Daily mentors: Thomas C. K. Ng (Nikhef)*  
2025- Yucheng Wang, CUHK, supervisor  
 *Daily mentors: Zhaofeng Wu, Simon Yeung, Jason Poon*  
2025 Tristen McLaurin, University of North Carolina, SURP program student supervisor  
2024- Ryan Zhang, Johns Hopkins, supervisor  
 *Co-supervisors: Paul Martens, Daily mentors: Samson Leong (CUHK), Mesut Caliskan (Johns Hopkins)*  
 *SURP Program at CUHK, 2024, continued research*  
2024- Peony Lai, CUHK, supervisor  
 *Co-supervisors: Alvin Li, Paul Martens, Daily mentors: Elwin Li, m Thomas Ng*

- SURE Program at UTokyo, 2025
- SURP Program at CUHK, 2024
- 2024-2025 Helen Xian, CUHK, supervisor
  - Co-supervisors: Paul Martens, Michalis Agathos (during SURE; Queen Mary), Daily mentors: Thomas, Samson Leong
- SURE Program at UK Queen Mary University of London, 2025
- SURP Program at CUHK, 2024
- 2024-2025 Martes Wong, CUHK, supervisor
  - Co-supervisor: Alvin Li
  - OPUS student 2023-2025 Xu Yu Ben On, CUHK, supervisor
  - Co-supervisor: Kaze Wong; Daily mentor: Thomas Ng
  - SURE student at Flatiron Institute (USA) 2023
  - Daily mentor: Thomas Ng
- 2024-2025 Lisa Li, CUHK, supervisor
  - Daily mentor: Hemantakumar Phurailatpam
- 2023-2025 Brian Cheng, CUHK, supervisor
  - Co-supervisor: T. Collett; Daily mentors: Laura Uronen, Hemantakumar Phurailatpam
  - SURE student at ICG Portsmouth (UK)
  - Moved to MPhil/CUHK in 2025
- 2023-2024 Chung Yin Leo Ng, CUHK, supervisor
  - Co-supervisor: Justin Janquart; Daily mentors: Hemantakumar Phurailatpam
  - Moved to Penn State (USA) for PhD
- 2023-2024 Charmaine Wong, CUHK, supervisor
  - Co-supervisor: Kaze Wong
  - Continued MPhil/CUHK
- 2022-2024 Aidan Chong Hang Yan, CUHK, supervisor [\[link to research work\]](#)
  - Co-supervisor: Alvin Li
- 2022-2023 Timothy Chan Hoi Man, CUHK, supervisor
  - SURE Program at Flatiron Institute
  - Moved to Stony Brook (USA) for PhD
- 2022-2023 Thomas Ng Chi Kit, CUHK, supervisor [\[link to research work\]](#)
  - Continued for MPhil at CUHK
- 2021-2022 Kelvin Chan Hoi Man, CUHK, supervisor [\[link to research work\]](#)
  - Moved to McGill (Canada) for MPhil
- 2021-2022 Simon Yeung Manchun, CUHK, supervisor [\[link to research work\]](#)
  - Moved to UWM (USA) for PhD
- 2021-2022 Damon Cheung Hoi Tim, CUHK, supervisor [\[link to research work\]](#)
  - Co-supervisor: Stefano Rinaldi
  - Moved to Michigan U (USA) for PhD
- 2021-2022 Chan Wing Lok, CUHK, supervisor [\[link to research work\]](#)
  - Co-supervisor: Martin Hendry
- 2024 Louis Chiu, CUHK, supervisor (SURP program)
- 2020-2021 Renske Wierda, Utrecht University, co-supervisor [\[link to research work\]](#)
- 2019-2021 Mesut Caliskan, University of Chicago, mentor [\[link to research work\]](#)
- 2019-2021 Mark Cheung Ho Yeuk, CUHK, research project mentor [\[link to research work\]](#)
  - Moved to Johns Hopkins for PhD
- 2018 Amit Jit Singh, CUHK, summer research project student mentor [\[link to research work\]](#)
- 2018 Ivan S.C. Li, Imperial College London, summer research project student mentor
- 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

### High-school students

- 2025-2027 Vian W.Y. Chan, HKAGE, supervisor
  - Co-supervisors: Samuel C. Lange, Tsang Keung Chan

## COURSES

(UG=undergraduate, PG=postgraduate)

THE CHINESE UNIVERSITY OF HONG KONG (HONG KONG)

- 2025-2026 PHYS1122 University Physics II
- 2025-2026 UGEB2411 Astronomy - A Short Introduction
- 2025-2026 GEUC4011 College FYP
- 2024-2025 University Physics II Introduction to Optics and Modern Physics
- 2022-2023 UGEB2401D Astronomy
- 2022-2023 STAR4050 Seminar III
- 2022-2023 STAR3050 Seminar II
- 2024-2025 PHYS4610/PHYS4620 Senior Project I – Wong, Martes (CUHK)

- Topic: Digging out faint sub-threshold gravitational waves*
  - Co-supervisor: Alvin Li (UTokyo)*
- 2023-2025    PHYS4610/PHYS4620 Senior Project I – Cheng, Brian (CUHK)
  - Topic: Localising cluster-lensed gravitational waves*
  - SURE program: ICG Portsmouth (UK) - Summer 2024*
  - Daily mentors: Laura Uronen (pre- and post-summer); Hemantakumar Phurailatpam (pre-summer)*
  - To continue graduate studies at CUHK*
- 2023-2025    PHYS4610/PHYS4620 Senior Project I – On, Xu Yu Ben (CUHK)
  - Topic: Gravitational waves and machine learning*
  - SURE program at Flatiron Institute - Summer 2023*
  - Supervisors: Kaze Wong*
  - To continue graduate studies at CUHK*
- 2023-2024    PHYS4610/PHYS4620 Senior Project I – Ng, Chung Yin Leo (CUHK)
  - Topic: Search for gravitational-wave strong lensing*
  - SURE program at Utrecht University - Summer 2023*
  - Supervisors: Justin Janquart, Chris Van Den Broeck*
  - To continue graduate studies at Penn State, US*
- 2022-2023    PHYS4610/PHYS4620 Senior Project I – Chan, Yan-Mong Timothy (CUHK)
  - Topic: Gravitational-wave doppler lensing*
  - To continue graduate studies at Stony Brook University, New York, US*
- 2022-2023    PHYS4610/PHYS4620 Senior Project I – Ng, Chi Kit Thomas (CUHK)
  - 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*
- 2021-2022    PHYS4610/PHYS4620 Senior Project I – Kelvin, Chan Hoi Man (CUHK)
  - Topic: Probing ultralight bosons with binary merger remnants [link]*
  - To continue graduate studies at McGill University, Montreal, Canada*
- 2021-2022    PHYS4610/PHYS4620 Senior Project I – Simon, Yeung Manchun (CUHK)
  - Topic: Modeling microlensing wave optics effects [link]*
  - To continue graduate studies at the University of Milwaukee, Wisconsin, United States*
- 2021-2022    PHYS4610/PHYS4620 Senior Project I – Damon, Cheung Hoi Tim (CUHK)
  - 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*
- 2021-2022    PHYS4610/PHYS4620 Senior Project I – Chan Wing Lok (CUHK)
  - Topic: Studying the effect of weak lensing on gravitational-wave inferences of cosmology [link]*
  - One term*

POSTDOCTORAL RESEARCHER, NIKHEF/UTRECHT UNIVERSITY (THE NETHERLANDS)

- 2020-2021    BONZ Honor's 1-year Bachelor course Supervised Renske Wierda – UG Course
  - 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]*
  - Continued graduate studies at the Amsterdam University*

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

- Student Centred Learning I
- Guided Studies II
- Gravitational Waves (PG)
- Guided Studies (General Relativity) (PG)
- Perspectives in Materials Science
- Electromagnetic Theory I

**TALKS**

- 2025 SEP 16    *Tutorial on gravitational-wave lensing, Ewha Womans University*
  - Tutorial*
- 2025 SEP 15    *Gravitational waves, ripples in the fabric of spacetime, Ewha Womans University Colloquium*
  - Colloquium*
- 2025 JUL 28    *Gravitational-wave lensing talk, UTokyo*
- 2025 JUN 15    *Talk on gravitational waves, UIB, Spain*
- 2025 APR 24    *Gravitational-wave lensing, APCTP-GW2025, Taiwan*
- 2025 FEB 7    *Gravitational-wave lensing, CityU, Hong Kong*

- 2025 JUN 3 *SURP Talk - Pursuing a Research Career*,  
 *SURP career talk*
- 2024 DEC 17 *Gravitational-wave lensing challenges and opportunities*, [UCLouvain plenary talk \(Belgium\)](#)  
 *Plenary talk*
- 2024 AUG 1 *Gravitational-wave lensing*, [YGA2024](#)
- 2024 DEC 12 *Gravitational-wave wave optics lensing simulations and phenomenology*, [Erwin Schrödinger Institute: Wave optics in strong gravity](#)
- 2024 DEC 2 *Gravitational wave lensing overview*, [Gravitational-wave lensing mini-workshop \(Beijing Normal University\)](#)
- 2024 JUN 15-17 *Gravitational lensing of gravitational waves*, [CosPA24 \(Ningbo\)](#)
- 2024 MAR 11-12 *Towards the first detection: the gravitational wave perspective*, [Multimessenger Gravitational Lensing \(UK\)](#)
- 2023 DEC 15 *High-school student workshop: Gravitational-wave data analysis*, [CUHK \(HK\)](#)  
 *High-school outreach workshop (held in December 2023)*
- 2023 NOV 8-9 *Multimessenger Astronomy: Bridging Transients, Lensing, and Dark Matter (Cosmic Frontiers)*, [CUHK](#)  
 *Main organiser*
- 2023 SEP 11-15 *Gravitational-wave lensing sub-group organization*, [LVK F2f @ Toyama \(Japan\)](#)  
 *Sub-group organization*
- 2023 SEP 4 *Recent work in gravitational-wave lensing*, [YITP Seminar \(Japan\)](#)
- 2023 AUG 1-3 *Gravitational-wave lensing*, [YGA2023](#)
- 2023 JUL 19 *Localizing merging black holes using gravitational-wave lensing*, [Amaldi15](#)
- 2023 JUN 13 *Gravitational-wave astronomy*, [Helsinki University Seminar](#)
- 2023 JUN 9 *Exploring gravitational-wave lensing*, [PISA University Seminar](#)
- 2023 MAY 23-25 *Future prospects of gravitational-wave lensing (joint with Tjonnie Li)*, [GRASP Opening Workshop](#)  
 *Joint talk with Tjonnie Li*
- 2023 MAR 11-16 *Gravitational-wave lensing sub-group organization*, [LVK March 2023](#)  
 *Sub-group organization*
- 2022 NOV 14-17 *Gravitational-wave lensing talk*, [AAPPS-DACG Workshop 2022 on Astrophysics, Cosmology, and Gravitation](#)
- 2022 NOV 9 *Focus Group for Young Scientists (Astronomy)*, [HKLF Focus group @ Masterminds](#), [Masterclasses 2](#).  
 *Moderator*
- 2022 OCT 13 *Story of Gravity (outreach)*, [St. Francis of Assisi's English Primary School, Hong Kong](#)  
 *Outreach talk for Hong Kong primary school*
- 2022 JUL 25-29 *Gravitational-wave lensing*, [Boom! An LLSTC workshop](#), [University of Illinois at Urbana-Champaign](#)
- 2022 JUN 9 *Lecture on gravitational lensing of gravitational waves*, [65th Workshop on Gravitational Waves and Numerical Relativity](#), [APCTP, Korea](#)
- 2022 MAR 18 *AI for GW inference*, [Applications of Artificial Intelligence to Gravitational Wave Science \(2022\)](#)  
 *Panel member*
- 2022 FEB 9-10 *What are gravitational waves?*, [CUHK Postgraduate Physics Seminar](#)
- 2021 SEP 2 *Gravitational-wave lensing with ground-based gravitational-wave detectors*, [TAUP \(2021\)](#)
- 2021 JUL 22 *Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run*, [Amaldi14](#)
- 2021 JUN 2 *Gravitational-wave lensing in the O3a*, [IGFAE Seminar](#)
- 2021 MAY 27 *LIGO-Virgo gravitational-wave lensing webinar*,  
 *Moderator*
- 2021 MAR 19 *Gravitational-wave lensing seminar*, [UIB Online Seminar](#)
- 2021 JAN 28 *Talk on gravitational-wave lensing*, [GdR Gravitational Waves](#), [Cosmology meeting](#)
- 2020 SEP 22 *Gravitational-wave lensing within ground-based gravitational-wave detectors*, [Space Science @ Drop Tower Seminar](#)
- 2020 APR 27 *Gravitational-wave lensing within ground-based gravitational-wave detectors*, [Institut d'astrophysique de Paris \(IAP\) theory seminar](#)
- 2020 APR 4 *Gravitational-wave lensing within ground-based gravitational-wave detectors*, [THC meeting, Leiden](#)
- 2019 NOV 20 *Gravitational Wave Lensing in LIGO/Virgo*, [Institute of Cosmology and Gravitation \(ICG\) colloquium](#), [Portsmouth](#)
- 2019 NOV 11-13 *Extreme Dark Matter Tests with Extreme Mass Ratio Inspirals*, [GW Probes of Fundamental Physics Workshop](#), [Amsterdam](#)
- 2019 JUL 7-12 *Probing the existence of ultralight bosons with a single gravitational-wave measurement*, [22nd International Conference on General Relativity and Gravitation / 13th Edoardo Amaldi Conference](#)
- 2018 JUL 31 *Talk on ultralight bosons and their detection*, [MIT LIGO Labs, Boston](#)
- 2018 JUL 18 *Talk on ultralight bosons and their detection*, [Johns Hopkins University, Baltimore](#)
- 2018 JUL 16 *Talk on ultralight bosons and their detection*, [University of Wisconsin-Milwaukee](#)
- 2018 JUL 9-13 *Poster: Probing the existence of ultralight bosons with gravitational waves*, [12th International LISA Symposium, Chicago](#)  
 *Poster presentation*

- 2018 FEB 8 [Discovering binary environments with gravitational waves, Gravity and Cosmology 2018 workshop, Kyoto](#)
- 2017 JUN 28-30 [Invited lecture - Summer School on gravitational waves, NCU 2017 Summer Astro Camp, Taiwan](#)  
 [Invited lecture](#)

## ORGANISATION

- 2026 JAN 12-16 [Organising committee, IAS Fundamental Physics 2026, HKUST Hong Kong](#)
- 2025 DEC 10-12 [Co-organiser, East-Asia Gravitational-Wave Workshop 2025, Nagoya Japan](#)  
 [Organised with Keiko Kokeyama \(Nagoya\), Chunglee Kim \(Ewha\)](#)
- 2025 NOV 27-30 [Co-organiser, Gravitational Waves Hands-on Workshop 2025, CUHK Hong Kong](#)  
 [Co-organised with NTHU](#)  
 [Organisers: Paul J. Martens \(CUHK; main organiser\), Albert Kong \(NTHU\), Surojit Saha \(NTHU\)](#)  
 [Contributors: Samuel Lange, Souvik Jana, Samson Leong, Helen Xian, Peony Lai, Matteo Lulli, Yanyan Zheng,](#)
- Isaac Wong*
- 2024 AUG 15-20 [Co-organiser, CUHK Gravitational-Wave Open Data Workshop, CUHK Hong Kong](#)  
 [Organisers: Alvin Li \(UTokyo; main organiser\), Paul Martens \(CUHK\)](#)  
 [Contributors: Elwin Li \(CUHK\)](#)
- 2025 APR 7-10 [Scientific organising committee, Dark Matter under the Gravitational Lens, CUHK Hong Kong](#)
- 2025 JAN 13-17 [Organising committee, IAS Fundamental Physics 2025, HKUST Hong Kong](#)
- 2023 DEC 16 [Organiser, High-School Winter Workshop 2023, CUHK Hong Kong](#)
- 2023 NOV 8-9 [Co-organiser, Multimessenger Astronomy: Bridging Transients, Lensing, and Dark Matter \(Cosmic Frontiers\), CUHK Hong Kong](#)
- 2023 SEP 11-15 [Lensing sub-group organisation, LIGO-Virgo-KAGRA collaboration meeting @ Toyama, Toyama Japan](#)
- 2023 MAR 11-16 [Lensing sub-group organisation, LIGO-Virgo-KAGRA March Collaboration Meeting, Northwestern USA](#)

## BLOGS, NEWS, AND PRESS RELEASES

- 2025 [Gravitationally lensed gravitational waves from black holes around black holes, AASNova](#)
- 2025 [CUHK's research advances the world's first discovery of multi-messenger gravitational lensing, CUHK Press / CUHK in Focus](#)
- 2025 [Unlocking the mysteries of the universe with multi-messenger gravitational lensing, phys.org](#)
- 2025 [We are about to hear echoes in the fabric of space for the first time, New Scientist](#)
- 2023 [HK Astronomical Society Article on gravitational waves, HKAS](#)
- 2022 [IOPScience Paper Interview, YouTube](#)
- 2022 [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](#)
- 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](#)
- 2019 [Searching For Ultralight Bosons With Gravitational Waves, Asian Scientist](#)
- 2019 [CUHK Probes the Existence of Ultralight Bosons with a Single Gravitational Wave Measurement., CUHK Press](#)
- 2019 [Researchers suggest LISA should be able to see ultralight bosons near supermassive black holes., Phys Org](#)
- 2019 [Gravitational waves could reveal ultralight bosons lurking near black holes., Physics World](#)
- 2019 [Probing the Existence of Ultralight Bosons with a Single Gravitational Wave Measurement., Nature Blog](#)

## AWARDS, FELLOWSHIPS, CERTIFICATES

- 2022 [IOPScience Top Cited Paper Award](#)
- 2019 [CIERA Postdoctoral Fellowship, Northwestern University](#)
- 2019 [Postgraduate Research Output Award](#)
- 2017 [CUHK Teaching Award](#)
- 2017 [Exchange Scholarship \(Hong Kong University\)](#)
- 2017 [Hong Kong PhD Fellowship](#)
- 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

- 2022 - NOW [PI, CUHK LIGO Group](#)
- 2023 - NOW [PI, CUHK KAGRA Group](#)

2022 - NOW      KAGRA Scientific Congress Member, KAGRA  
2021 - NOW      Senior Council Member, LIGO Scientific Collaboration  
2021 - NOW      Member, LIGO Scientific Collaboration  
2022 - 2025      Co-chair, LVK Gravitational-wave Lensing Working Group  
2019 - 2022      Chair, LVK Gravitational-wave Lensing Sub-group under TGR group  
2019 - 2021      Member, Virgo Collaboration  
2016 - 2019      Member, LIGO Scientific Collaboration

## **REFERENCES**

References available upon request