

Quoc P. Ho

Hong Kong University of Science and Technology (HKUST)

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Employment

- 2022–present **Assistant professor (tenure-track),**
Hong Kong University of Science and Technology (HKUST), Clear Water Bay, Hong Kong
Interests: algebraic geometry, representation theory, and low dimensional topology
- 2017–2022 **Postdoctoral researcher,**
Hausel group, IST Austria, Klosterneuburg, Austria
Lise Meitner Fellow, Austrian Science Fund FWF, 2019–2021

Education

- 2011–2017 **PhD Candidate in Mathematics,**
University of Chicago, Chicago, IL, USA
MSc in Mathematics awarded in 2012
PhD in Mathematics awarded in 2017
Advisors: Bảo-Châu Ngô, Dennis Gaitsgory
Thesis: Free factorization algebras and homology of configuration spaces in algebraic geometry
- 2007–2011 **AB in Mathematics,**
Princeton University, Princeton, NJ, USA
Graduated with High Honors
Member of Phi Beta Kappa, the oldest academic honor society in the United States
- 2005–2007 **International Baccalaureate (IB),**
Lester B. Pearson UWC, Victoria, BC, Canada

Grants, Fellowships, and Awards

- 2025–2027 Hong Kong RGC Grant GRF No. 16301324 (2024), PI, 854 001HKD (~\$110 000)
- 2023–2026 Hong Kong RGC Grant GRF No. 16304923 (2023), PI, 877 079HKD (~\$123 000)
- 2022–2025 Hong Kong RGC Grant ECS No. 26305322 (2022), PI, 640 110HKD (~\$82 000)
- 2022–2027 HKUST Startup Grant, 500 000HKD (~\$64 000)
- 2019–2021 Lise Meitner Postdoctoral Fellowship, Austrian Science Fund FWF, PI, 159 340€
- 2011–2013 McCormick Fellowship for Graduate Students, University of Chicago
- 2007–2011 Davis Fellowship, *Full 4-year scholarship (tuition, room and board) to attend Princeton University*

Teaching Experiences

- 2022–present **Assistant professor**, *HKUST*, Clear Water Bay, Hong Kong
Full responsibility for all of the following course(s):
 - MATH 2001: Foundation of Mathematics
 - MATH 2011: Introduction to Multi-variable Calculus
 - MATH 2023: Multi-variable Calculus
 - MATH 5240: Algebraic Topology
 - MATH 6914V: Topics in geometric representation theory (reading course)
 - MATH 6911J: *D*-modules and representation theory (reading course)
- 2017–2022 **Postdoctoral researcher**, *IST Austria*, Klosterneuburg, Austria
Full responsibility for all of the following courses:
 - Introduction to Algebraic Geometry
 - Introduction to Programming with PythonCo-taught *D*-modules (with Sasha Minets)
- 2013–2017 **Lecturer**, *University of Chicago*, Chicago, IL
Full responsibility for all of the following courses:
 - MATH 195: Multi-variable Calculus (4 times)
 - MATH 196: Linear Algebra (3 times)
 - MATH 130s: Freshman Calculus sequence (3 quarters)
- 2014–2016 **Mentor for DRP and REU**, *University of Chicago*, Chicago, IL
Supervised undergraduate student participants in independent study projects
Projects supervised: algebraic topology, de Rham cohomology, Galois theory and fundamental groups via Grothendieck’s fiber functor formalism
- 2012–2013 **College Fellow**, *University of Chicago*, Chicago, IL
Teaching assistant for MATH 160s: Freshman Honors Calculus sequence (3 quarters), IBL (inquiry-based learning) style

Papers

Published

- Q. P. Ho and O. Randal-Williams. “Homological Densities (Appendix to Configuration Spaces as Commutative Monoids)”. In: *Bulletin of the London Mathematical Society* (June 20, 2024). ISSN: 0024-6093, 1469-2120. DOI: 10.1112/blms.13104
- G. Bighin, Q. P. Ho, M. Lemesko, and T. V. Tscherbul. “Diagrammatic Monte Carlo for Electronic Correlation in Molecules: High-order Many-Body Perturbation Theory with Low Scaling”. In: *Physical Review B* 108.4 (July 11, 2023), p. 045115. ISSN: 2469-9950, 2469-9969. DOI: 10.1103/PhysRevB.108.045115
- Q. P. Ho and P. Li. “Eisenstein Series via Factorization Homology of Hecke Categories”. In: *Advances in Mathematics* 404 (Aug. 2022), p. 108410. ISSN: 00018708. DOI: 10.1016/j.aim.2022.108410
- Q. P. Ho. “The Atiyah-Bott Formula and Connectivity in Chiral Koszul Duality”. In: *Advances in Mathematics* 392 (Dec. 2021), p. 107992. ISSN: 00018708. DOI: 10.1016/j.aim.2021.107992
- Q. P. Ho. “Homological Stability and Densities of Generalized Configuration Spaces”. In: *Geometry & Topology* 25.2 (Apr. 27, 2021), pp. 813–912. ISSN: 1364-0380. DOI: 10.2140/gt.2021.25.813

- Q. P. Ho. “Free Factorization Algebras and Homology of Configuration Spaces in Algebraic Geometry”. In: *Selecta Mathematica* (July 14, 2017), pp. 1–53. ISSN: 1022-1824, 1420-9020. DOI: 10.1007/s00029-017-0339-1
- Q. P. Ho, V. B. Lê Hùng, and B. C. Ngô. “Average Size of 2-Selmer Groups of Elliptic Curves over Function Fields”. In: *Mathematical Research Letters* 21.6 (2014), pp. 1305–1339. ISSN: 10732780, 1945001X. DOI: 10.4310/MRL.2014.v21.n6.a6

Preprints

- Q. P. Ho and P. Li. *Graded character sheaves, HOMFLY-PT homology, and Hilbert schemes of points on \mathbb{C}^2* . May 2, 2023. DOI: 10.48550/arXiv.2305.01306. Pre-published
- Q. P. Ho and P. Li. *Revisiting Mixed Geometry*. May 2, 2023. DOI: 10.48550/arXiv.2202.04833. Pre-published
- Q. P. Ho. *Higher Representation Stability for Ordered Configuration Spaces and Twisted Commutative Factorization Algebras*. Oct. 28, 2020. DOI: 10.48550/arXiv.2004.00252. Pre-published

Visits

- Winter 2022 **Mathematical Sciences Research Visitor Program (MSRVP)**,
Australian National University, Canberra ACT 2600, Australia
- Summer 2020 **Early Career Research Visitor Program**,
Australian National University, Canberra ACT 2600, Australia
(canceled due to COVID-19)
- Fall 2014 **Program Associate**,
MSRI, Berkeley, California, USA
Geometric Representation Theory semester program

Invited Lecture Series

- 2019 Cambridge University, UK
Lecture series on factorization homology and homological densities (4 one-hour lectures)
- Harbin Institute of Technology, China
Lecture series on factorization homology and homological densities (2 one-hour lectures)
- Pohang University of Science and Technology (POSTECH), South Korea
Lecture series on factorization homology and number theory over function fields (4 two-hour lectures)

Invited Talks

- 2024 Technische Universität München, Topology Seminar
- 2023 Vietnam Institute of Mathematics (Vietnam Academy of Science and Technology),
Conference on Arithmetic and Cohomology of Algebraic Varieties
- Universität Wien, Representation Theory and Automorphic Forms Seminar
- Universität Hamburg, Colloquium of the Center for Mathematical Physics Hamburg

- Chinese University of Hong Kong (CUHK), Representation and Number Theory (RANT) Seminar
- The University of Sydney, Conference on Categorification in Representation Theory
- 2022 Australian National University, Algebra and Topology Seminar
- Vietnam Institute of Mathematics, Zeta seminar
- Edinburgh Hodge Institute, University of Edinburgh, joint Hodge seminar
- IST Austria, Algebraic Geometry and Number Theory seminar
- MIT, Infinite Dimensional Algebra Seminar
- AGEA, Seminar of Algebraic Geometry of East Asia
- 2021 The University of Copenhagen, Workshop on Homology and Homotopy of Configuration Spaces
- Tsinghua University, Representation Theory Seminar
- GRT at Home (Geometry Representation Theory at Home) seminar
- University of Toronto, Geometric Representation Theory seminar
- University of Michigan, TAPIRS: Talks About Progress In Representation Stability
- 2020 Hong Kong University of Science and Technology (HKUST), Colloquium
- Chinese Academy of Sciences (CAS), Colloquium
- Pohang University of Science and Technology (POSTECH), Colloquium
- Stockholm University, Algebra/Geometry Seminar
- Purdue University, Topology Seminar
- Universiteit Utrecht, Intercity Number Theory Seminar (canceled due to COVID-19)
- Utrecht Geometry Centre, Geometry Seminar (canceled due to COVID-19)
- 2019 The University of Edinburgh, Conference on Geometric Representation Theory and Low-dimensional Topology
- 2018 Université Paris Diderot, Conference on Local Geometric Langlands
- Factorizable algebras and categories (expository)
- Université Paris Diderot, Algebraic Geometry Seminar
- National University of Singapore, Pan Asia Number Theory Conference
- Kavli IPMU Japan, Vertex Algebras, Conference on Factorization Algebras and Applications
- ETH Zürich, Algebraic Geometry Seminar
- 2017 Duke University, Number Theory Seminar
- IST Austria, Algebraic Geometry Seminar
- 2016 Northwestern University, Topology Seminar
- Rice University, Algebraic Geometry/Number Theory Seminar
- Purdue University, Topology Seminar
- 2015 University of Wisconsin-Madison, Number Theory Seminar
- 2014 MSRI, Geometric Representation Theory Semester
- Working group on the Geometric Satake isomorphism (expository)

- 2013 VIASM, Pan Asian Number Theory Conference
- 2012 Vietnam Institute for Advanced Study in Mathematics (VIASM) Summer School
The work of Bhargava-Shankar (expository)

Other Activities

Refereed & provided expert opinion for Annals of Mathematics, Algebra & Number Theory, Advances in Mathematics, Canadian Mathematical Bulletin, Journal of Topology, Pacific Journal of Mathematics, Transactions of the AMS.

Organized a weekly seminar series on Algebra and Geometry at HKUST

Screened PhD applications for IST Austria

Organized learning seminars for quantum groups and derived algebraic geometry at IST Austria

Co-organized general topic seminar for graduate students at the University of Chicago

Co-organized a learning seminar on étale cohomology for graduate students at the University of Chicago

Additional Information

- Languages Vietnamese (native), English (fluent), German (intermediate), French (reading knowledge).
- Interests and Skills Programming (Scala, Java, Python, C), Music Composition, Table Tennis.