

# 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 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

## Fellowships and Awards

- 2022–2025 Hong Kong RGC Grant ECS No. 26305322, 640 110HKD
- 2022–2027 HKUST Startup Grant, 500 000HKD
- 2019–2021 Lise Meitner Postdoctoral Fellowship, Austrian Science Fund FWF, 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 2011: Multi-variable Calculus  
◦ MATH 5240: Algebraic Topology
- 2017–2022 **Postdoctoral researcher**, *IST Austria*, Klosterneuburg, Austria  
Full responsibility for all of the following courses:  
◦ Introduction to Algebraic Geometry  
◦ Introduction to Programming with Python  
Co-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

- Revisiting mixed geometry, with P. Li, 62 pages, arXiv: 2202.04833
- Eisenstein series via factorization homology of Hecke categories, with P. Li, *Advances in Mathematics*, Vol. 404, part A (Aug. 2022), 34 pages, DOI: 10.1016/j.aim.2022.108410
- Higher representation stability for ordered configuration spaces and twisted commutative factorization algebras, 47 pages, arXiv: 2004.00252
- The Atiyah-Bott formula and connectivity in chiral Koszul duality, *Advances in Mathematics*, Vol. 392 (Dec. 2021), 71 pages, DOI: 10.1016/j.aim.2021.107992
- Homological stability and densities of generalized configuration spaces, *Geometry & Topology*, Vol. 25 (2021), No. 2, pp. 813–912 (100 pages), DOI: 10.2140/gt.2021.25.813
- Free factorization algebras and homology of configuration spaces in algebraic geometry, *Selecta Mathematica (N.S.)*, Vol. 23 (2017), No. 4, pp. 2437–2489 (54 pages), DOI: 10.1007/s00029-017-0339-1
- Average size of 2-Selmer groups of elliptic curves over function fields, with B.V.H. Lê and B.C. Ngô, *Mathematical Research Letters*, Vol. 21 (2014), No. 6, pp. 1305–1339 (35 pages), DOI: 10.4310/MRL.2014.v21.n6.a6

## 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

- 2023 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 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 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 Asian 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 Advances in Mathematics, Canadian Mathematical Bulletin, Journal of Topology, Pacific Journal of Mathematics, Transactions of the AMS.

**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.