

# Quoc P. Ho

Institute of Science and Technology Austria (IST Austria)

Homepage: [quoc-ho.github.io](https://quoc-ho.github.io)

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## Employment

- 2017–present **Postdoctoral researcher**,  
*Hausel group, IST Austria, Klosterneuburg, Austria.*  
Lise Meitner Fellow, Austrian Science Fund FWF, 2019–2021  
Interests: algebraic geometry, number theory, representation theory, and topology

## 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

- 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

- 2017–present **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

- 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.
- Eisenstein series via factorization homology of Hecke categories, with P. Li, 23 pages, arXiv: 2103.10137.
- Higher representation stability for ordered configuration spaces and twisted commutative factorization algebras, 47 pages, arXiv: 2004.00252.

## Visits

- 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

- 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, Geometric Representation Theory and Low-dimensional Topology Conference
- 2018 Université Paris Diderot, Local Geometric Langlands Conference.  
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, Factorization Algebras and Applications Conference  
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, Journal of Topology, Pacific Journal of Mathematics

**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.