

Minh-Tâm Quang Trinh

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Citizenship

American

Current Research

algebraic geometry, combinatorics, quantum algebra, representation theory

Employment

<i>Assistant Professor</i> (tenure-track). Howard University	2025–
<i>Gibbs Assistant Professor</i> . Yale University	2024–25
<i>CLE Moore Instructor</i> . Massachusetts Institute of Technology	2020–24
NSF Mathematical Sciences Postdoctoral Research Fellow (2020–2023)	
— <i>Sponsoring Scientist</i> : Zhiwei Yun	

Education

<i>PhD in Mathematics</i> . University of Chicago	2014–20
— <i>Primary Advisor</i> : Châu Ngô (= Ngô Bảo Châu)	
— <i>Secondary Advisor</i> : Victor Ginzburg	
William Rainey Harper Dissertation Fellow	
<i>AB in Mathematics magna cum laude</i> . Princeton University	2010–14

Publications and Preprints

- Central Elements and Cell Decompositions from Partial Springer Resolutions
Preprint. <https://mqtrinh.github.io/math/research/norms.pdf>
+ N. Williams
- Level-Rank Dualities for Finite Reductive Groups
Extended abstract. [arXiv:2508.07051](https://arxiv.org/abs/2508.07051)
+ T. Xue
- Level-Rank Dualities from Φ -Cuspidal Pairs and Affine Springer Fibers
Preprint. [arXiv:2311.17106](https://arxiv.org/abs/2311.17106)
+ T. Xue
- Unipotent Elements and Kálmán–Serre Duality
Preprint. [arXiv:2210.09051](https://arxiv.org/abs/2210.09051)
- From the Hecke Category to the Unipotent Locus
Preprint. [arXiv:2106.07444](https://arxiv.org/abs/2106.07444)

- The Hilb-vs-Quot Conjecture
J. angew. reine Math. (Crelle), **828** (2025), 83–126.
+ O. Kivinen
- Cell Decompositions of Hecke Traces and Link Polynomials
Extended abstract. Proceedings of the 37th International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC), Sapporo, 2025. *Sém. Lothar. Combin.*, **93B** (2025), Paper No. 90.
+ N. Williams
- Simple Braids Tend Toward Positive Entropy
J. Knot Theory Ramifications, **33**(11) (2024), 2450034, 12 pp.
+ L. Robitaille
- Rational Noncrossing Coxeter–Catalan Combinatorics
Proc. Lond. Math. Soc. **129**(4) (2024), e12643, 50 pp.
+ P. Galashin, T. Lam, N. Williams
- Algebraic Braids and Geometric Representation Theory
PhD thesis. University of Chicago. ProQuest LLC (2020), 239 pp.
- Extremal Primes for Elliptic Curves
J. Num. Theory, **164** (2016), 282–298.
+ K. James, B. Tran, P. Wertheimer, D. Zantout
- Zeros of Dirichlet L -Functions over Function Fields
Comm. Num. Theory Phys., **8**(3) (2014), 511–539.
+ J. Andrade, S. J. Miller, K. Pratt

Non-Research Publications

- The Hodge Theory of Soergel Bimodules
Chapter 18 in *Introduction to Soergel Bimodules*. Ed. B. Elias, S. Makisumi, U. Thiel, G. Williamson. RSME Springer Series, **5** (2020), 347–367.
+ L. Taylor

Invited Talks

- Knots in Washington 52. 12/7/25. 20-minute talk.
- UMD Algebraic Geometry Seminar. 12/1/25.
- UT-Dallas Algebra and Combinatorics Seminar. 11/19/25.
- Howard University Mathematics Colloquium. 9/19/25.
- USNA Mathematics Colloquium. 4/17/25.
- Johns Hopkins Topology Seminar. 4/16/25.
- Rice Algebraic Geometry and Number Theory Seminar. 4/1/25.
- UChicago Representation Theory Seminar. 1/7/25.
- Northeastern Geometry, Physics, and Representation Theory Seminar. 10/31/24.
- WUSTL Combinatorics Seminar. 9/30/24.
- AMS Spring Central Sectional Meeting. 20-minute talk. 4/21/24.
- University at Buffalo Algebra Seminar. 3/4/24.

- Institute for Advanced Study in Mathematics (IASM) Online Geometry and Physics Seminar. Zhejiang University. 1/23/24.
- International Centre for Mathematical Sciences (ICMS) UK–Vietnam Mathematics Joint Meeting. Edinburgh. 12/5/23.
- MIT Lie Groups Seminar. 11/1/23.
- AMS Fall Eastern Sectional Meeting. 1-hour talk. University of Buffalo. 9/10/23.
- Yale Geometry, Symmetry, and Physics Seminar. 4/24/23.
- MIT–Harvard–MSR Combinatorics Seminar. 2/15/23.
- Northeastern Geometry, Physics, and Representation Theory Seminar. 10/6/22.
- ICERM Workshop on Braids in Symplectic and Algebraic Geometry. 10-minute talk. 3/23/22.
- Oxford Algebra Seminar. 11/30/21.
- UMass-Amherst Representation Theory Seminar. 10/25/21.
- Cluster Algebra Seminar. AIM Link Homology research community. 10/7/21.
- Categorical Braid Group Actions and Categorical Representation Theory. UMass-Amherst Focused Research Group (FRG) Conference. 6/17/21.
- MIT Lie Groups Seminar. 3/3/21.
- Chinese University of Hong Kong (CUHK) Representation and Number Theory Seminar. 1/15/21.
- Harvard/MIT Algebraic Geometry Seminar. 9/29/20.
- MIT Lie Groups Seminar. 12/4/19.
- MIT Geometric Representation Theory Seminar. 12/4/19.
- Caltech Algebra and Geometry Seminar. 11/11/19.
- AMS Fall Western Sectional Meeting. 20-minute talk. UC-Riverside. 11/9/19.
- UPenn Math-Physics Joint Seminar. 10/22/19.
- Hilbert Schemes, Categorification, and Combinatorics. 30-minute talk. UC-Davis FRG conference. 6/19/19.
- Perimeter Institute Mathematical Physics Seminar. 5/21/19.
- Johns Hopkins Number Theory Seminar. 4/29/19.
- UC-Davis Algebraic Geometry Seminar. 11/14/18.

Non-Research Invited Talks

- Howard University Graduate Seminar. 10/31/25.
- Algebraic Geometry Seminar. AIM Link Homology community. 10/1/21.
- Geometric Categorification Seminar. AIM Link Homology community. 7/5/21.
- MIT Independent Activities Period (IAP) Mathematics Lecture Series (18.095). 1/20/21.
- Graduate Summer School on the Geometry and Modular Representation Theory of Algebraic Groups. Simons Center for Geometry and Physics. 8/20/19.
- Interactions between Representation Theory and Algebraic Geometry. UChicago. 8/21/17.

Conference and Workshops

- Webs in Algebra, Geometry, Topology, and Combinatorics. ICERM workshop. 12/8–12/12/25.

- Knots in Washington 52. GWU conference. 12/5–12/7/25.
- [Diagrammatic Categorification](#). ICERM workshop. 10/20–0/24/25.
- [Categorification and Symplectic Duality](#). Northeastern workshop. 6/3–6/7/25.
- [Representation Theory Days](#). MIT conference in honor of George Lusztig. 11/9–11/11/24.
- [Summer School and Workshop on Relative Langlands Duality](#). UMinnesota-Twin Cities. 6/3–6/8/24.
- Special Session on Algebraic Methods in Graph Theory and Applications. AMS Spring Central Sectional Meeting. UW-Milwaukee. 4/20–4/21/24.
- [Monodromy and Its Applications](#). Princeton conference in honor of Nick Katz. 12/7–12/9/23.
- UK-Vietnam Mathematics Joint Meeting. ICMS conference. 12/4–12/8/23.
- Special Session on Geometry, Physics and Representation Theory. AMS Fall Eastern Sectional Meeting. University of Buffalo. 9/9–9/10/23.
- [Coulomb Branches and Knot Homology](#). MIT summer school. 6/19–6/23/23.
- Braids in Symplectic and Algebraic Geometry. ICERM workshop. 3/21–3/25/22.
- Link Homology. AIM online research community. 2021–22.
- Categorical Braid Group Actions. UMass FRG conference. 6/14–6/18/21.
- Special Session on Geometric Methods in Representation Theory. AMS Fall Western Sectional Meeting. UC-Riverside. 11/9–11/10/19.
- [Geometry and Representation Theory of Algebraic Groups](#). SCGP summer school. 8/19–8/23/19.
- Hilbert Schemes, Categorification, and Combinatorics. UC-Davis FRG conference. 6/19–6/23/19.
- [Categorified Hecke Algebras, Link Homology, and Hilbert Schemes](#). AIM workshop. 10/1/18–10/5/18.
- [Deligne–Lusztig Theory](#). Workshop on Algebra and Representation Theory, Held on Oregonian Grounds (WARTHOG) summer school. 8/12–8/18/18.
- Interactions between Representation Theory and Algebraic Geometry. UChicago conference. 8/21/17.

Teaching

- Course Instructor.* Howard 2025–
- MATH 250: Topology I (2025)
 - MATH 251: Topology II (2026)
- Course Instructor.* Yale 2024–25
- MATH 340: Advanced Linear Algebra (2025)
 - MATH 430: Introduction to Topology (2025)
 - MATH 665: Topics in Quantum Algebra (2024)
- Course Instructor.* MIT 2022–23
- 18.781: Theory of Numbers (2023)
 - 18.708: Topics in Algebra (2022, *4 lectures*)
 - 18.704: Seminar in Algebra (2022)

Course Administrator. MIT 2022
 — 18.01: Calculus

Recitation Instructor. MIT 2021–24
 — 18.02/18.02A: Calculus (2024, *double recitation*)
 — 18.02A: Calculus (2023, *double*)
 — 18.01A: Calculus (2023, *double*)
 — 18.01A: Calculus (2021)
 — 18.02A: Calculus (2021)

Graduate Instructor. University of Chicago 2017–20
 — MATH 152/44: Calculus II (2020)
 — MATH 153/44: Calculus III (2020)
 — MATH 132/58: Elementary Functions and Calculus II (2018)
 — MATH 131/58: Elementary Functions and Calculus I (2018)
 — MATH 195/51: Mathematical Methods for the Social Sciences (2017)

Teaching Assistant. University of Chicago 2015–16
 — MATH 242: Algebraic Number Theory (2016)
 — MATH 159/53: Introduction to Proof in Linear Algebra and Analysis (2016)
 — MATH 175: Elementary Number Theory (2015)

Service

Referee. 2020–

Journals have included: *Advances in Mathematics*, *Geometry & Topology*, *International Mathematical Research Notices*, *Proceedings of the American Mathematical Society*, *Representation Theory*.

Graduate Admissions Committee. Howard University 2025–

Math Club Faculty Advisor. Howard University 2025–

Co-organizer. GWU–Howard Combinatorics & Algebra Seminar 2025–

Co-organizer. Yale Geometry, Symmetry, and Physics Seminar 2024–25

Research Advisor. PROMYS 2023

Mentor. MIT SPUR 2023

— Maxim Li and Misheel Otgonbayar

Mentor. MIT PRIMES 2021–23

— Michael Yang (2023)

2024 Regeneron STS Scholar

— Luke Robitaille (2021)

2022 Regeneron STS Winner, Tenth Place

2022 Davidson Fellow

Mentor. MIT UROP 2022–23

<i>Research Advisor.</i> MIT PRIMES	2021–23
— Ethan Liu (<i>Mentor:</i> Merrick Cai, 2023)	
— Joshua Guo (<i>Mentor:</i> Kevin Chang, 2021)	
2022 Regeneron STS Scholar	
— Ilaria Seidel (<i>Mentor:</i> Jeffery Yu, 2021)	
<i>Mentor.</i> UChicago Directed Reading Program	2015–20
<i>QED Day Judge.</i> Math Circles of Chicago	2019
<i>Mentor.</i> UChicago REU	2016–19
— Karhan Kayan (2019)	
— Gwyn Moreland (2016)	
— James Stevens (2016)	
<i>QED Day Senior Judge.</i> Math Circles of Chicago	2016
<i>Advising Chair.</i> Princeton Math Club	2013
<i>Director.</i> Princeton University Math Competition	2011–12

Honors

- **2020 Mathematical Sciences Postdoctoral Research Fellowship (MSPRF)** from the National Science Foundation.
- **2019 William Rainey Harper Dissertation Fellowship** from the University of Chicago.
- 2014 Graduate Research Fellowship (GRFP) from the National Science Foundation.
- Phi Beta Kappa Society at Princeton University.
- Society of Sigma Xi at Princeton University.
- 2011 Shapiro Prize for Academic Excellence from Princeton University.

Profiles

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