

# 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  $\Phi$ -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**

- GWU–Howard Combinatorics & Algebra Seminar, TBA.
- 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 research community. 10/1/21.
- Geometric Categorification Seminar. AIM Link Homology research 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 (SCGP). 30-minute talk. 8/20/19.
- Interactions between Representation Theory and Algebraic Geometry. 30-minute talk. 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 in honor of Sasha Beilinson and Victor Ginzburg. 8/21–8/24/17.
- [Soergel Bimodules](#). MSRI (SLMath) workshop. 6/26–7/7/17.

## 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)

<i>Course Instructor.</i> MIT	2022–23
— 18.781: Theory of Numbers (2023)	
— 18.708: Topics in Algebra (2022, <i>4 lectures</i> )	
— 18.704: Seminar in Algebra (2022)	
<i>Course Administrator.</i> MIT	2022
— 18.01: Calculus	
<i>Recitation Instructor.</i> MIT	2021–24
— 18.02/18.02A: Calculus (2024, <i>double recitation</i> )	
— 18.02A: Calculus (2023, <i>double</i> )	
— 18.01A: Calculus (2023, <i>double</i> )	
— 18.01A: Calculus (2021)	
— 18.02A: Calculus (2021)	
<i>Graduate Instructor.</i> 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)	
<i>Teaching Assistant.</i> 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)	
<b>Service</b>	
<i>Referee.</i>	2020–
Journals have included: <i>Advances in Mathematics</i> , <i>Geometry &amp; Topology</i> , <i>International Mathematical Research Notices</i> , <i>Proceedings of the American Mathematical Society</i> , <i>Representation Theory</i> .	
<i>Graduate Admissions Committee.</i> Howard University	2025–
<i>Math Club Faculty Advisor.</i> Howard University	2025–
<i>Co-organizer.</i> GWU–Howard Combinatorics & Algebra Seminar	2025–
<i>Co-organizer.</i> Yale Geometry, Symmetry, and Physics Seminar	2024–25
<i>Research Advisor.</i> PROMYS	2023
<i>Mentor.</i> MIT SPUR	2023
— Maxim Li and Misheel Otgonbayar	
<i>Mentor.</i> MIT PRIMES	2021–23
— Michael Yang (2023)	
<b>2024 Regeneron STS Scholar</b>	

— Luke Robitaille (2021)

**2022 Regeneron STS Winner, Tenth Place**

**2022 Davidson Fellow**

*Mentor.* [MIT UROP](#)

2022–23

*Research Advisor.* [MIT PRIMES](#)

2021–23

— Ethan Liu (*Mentor:* Merrick Cai, 2023)

— Joshua Guo (*Mentor:* Kevin Chang, 2021)

**2022 Regeneron STS Scholar**

— Ilaria Seidel (*Mentor:* Jeffery Yu, 2021)

*Mentor.* [UChicago Directed Reading Program](#)

2015–20

*QED Day Judge.* [Math Circles of Chicago](#)

2019

*Mentor.* [UChicago REU](#)

2016–19

— [Karhan Kayan](#) (2019)

— [Gwyn Moreland](#) (2016)

— [James Stevens](#) (2016)

*QED Day Senior Judge.* [Math Circles of Chicago](#)

2016

*Advising Chair.* [Princeton Math Club](#)

2013

*Director.* [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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