Asilata Bapat | Curriculum Vitae

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Education

The University of Chicago — **Chicago, IL**
PhD in Mathematics. — *2010–2016*
Advisor: Victor Ginzburg.

The University of Chicago — **Chicago, IL**
MS in Mathematics. — *2010–2012*

Massachusetts Institute of Technology — **Cambridge, MA**
SB (Bachelor of Science) in Mathematics with Computer Science. — *2006–2010*
GPA 4.9 out of 5.

Employment

- **2024–present**: Senior Lecturer (Level C), Mathematical Sciences Institute, Australian National University (ANU), Canberra
- **2024–2027**: Australian Research Council DECRA Fellow, Mathematical Sciences Institute, Australian National University (ANU), Canberra
- **2024–2026**: Tuckwell Fellow, Tuckwell Scholarship Program, Australian National University (ANU), Canberra
- **2018–2023**: Lecturer (Level B), Mathematical Sciences Institute, Australian National University (ANU), Canberra
- **2016–2017**: Assistant Professor (Limited Term), Department of Mathematics, University of Georgia (UGA), Athens, GA

Papers and preprints

- Wigglyhedra (with Vincent Pilaud)
  Mathematische Zeitschrift 310, No. 3, Paper No. 54 (2025).
- MatrixNet: Learning over symmetry groups using learned group representations (with Lucas Laird, Circe Hsu, Robin Walters)
  Conference on Neural Information Processing Systems (NeurIPS) 2024
- Some remarks about the faithfulness of the Burau representation of Artin–Tits groups (with Hoel Queffelec)
  Preprint (submitted).
- q-deformed rational numbers and the 2-Calabi–Yau category of type A_2 (with Louis Becker, Anthony Licata)
  Forum of Mathematics, Sigma, 11, e47 (2023).
- Spherical objects and stability conditions on 2-Calabi–Yau quiver categories (with Anand Deopurkar, Anthony Licata)
  Mathematische Zeitschrift 303, No. 1, Paper No. 13 (2023). We are extremely grateful to Edmund Heng for pointing out an error in the statement of Lemma 4.5 of the published version. The error has been corrected in the pdf file linked here.
- Computing the matching distance of 2-parameter persistence modules from critical values (with Robyn Brooks, Claudia Landi, Celia Hacker, Barbara Mahler, Elisabeth Stephenson)
  Preprint.
- Morse-based fibering of the persistence rank invariant (with Robyn Brooks, Claudia Landi, Celia Hacker, Barbara Mahler)
  Research in Computational Topology 2 (2022), pp. 27–62
- A Thurston compactification of the space of stability conditions (with Anand Deopurkar, Anthony Licata)
  Preprint (submitted).
- Recollement for perverse sheaves on real hyperplane arrangements
  Journal of Algebra, 568 (2021), pp. 61–90
- The strong topological monodromy conjecture for Coxeter hyperplane arrangements (with Robin Walters)

Mathematical Research Letters 24 (2017), no. 4, 947–954
- Torus actions and tensor products of intersection cohomology
  Pacific Journal of Mathematics 276 (2015), pp. 19–34
- Lower central series of free algebras in symmetric tensor categories (with David Jordan)
  Journal of Algebra, 373 (2013), pp. 299–311

Grants

The geometry of braids and triangulated categories **ANU**
ARC DECRA grant DE240100447 (AUD 468000) *2024–2026*

Stability conditions: their topology and applications **ANU**
ARC Discovery Project grant DP240101084 (AUD 419421) *2024–2026*
Jointly held with Anand Deopurkar and Anthony M. Licata.

AMS-Simons travel grant **UGA**
Grant for research travel (USD 4000) *2016–2018*

Academic and teaching awards

- Anne Penfold street award, 2023
- Dean's Commendation for Excellence in Education (for Teaching Excellence), ANU, 2021.
- Nadine Kowalsky Fellowship, University of Chicago, 2016.
- Jerry Rao Fellowship, University of Chicago, 2014–2015.
- Young Researcher at the 2nd Heidelberg Laureate Forum, Heidelberg, Germany, 2014.
- Lawrence and Josephine Graves Teaching Prize, University of Chicago, 2014.
- Amick Fellowship, University of Chicago, 2010–2012.
- Phi Beta Kappa, MIT, 2010.
- Rogers Prize for best paper, Summer Program in Undergraduate Research, MIT, 2009.
- Indian National Mathematical Olympiad (INMO) scholarship, 2005.
- International Astronomy Olympiad, Silver medal (2005) and Gold medal (2003).

Teaching

Australian National University

- **2024 Semester 2**: Algebra 3: Advanced Topics in Algebra (MATH3354/MATH6216)
- **2023 Semester 2**: Games, Graphs, and Machines (MATH2301)
- **2022 Semester 2**: Games, Graphs, and Machines (MATH2301)
- **2021 Spring Semester**: Mathematics and Applications 2 (MATH1014)
- **2021 Semester 2**: Games, Graphs, and Machines (MATH2301)
- **2021 Summer Session**: Representation theory (IBL reading course)
- **2020 Spring Semester**: Mathematics and Applications 2 (MATH1014)
- **2020 Semester 1**: Perverse Sheaves (half of a special topics course on Perverse Sheaves and Deligne–Lusztig theory)
- **2020 Semester 2**: Games, Graphs, and Machines (MATH2301)
- **2019 Semester 1**: Advanced Studies Extension for Analysis I (MATH2320).
- **2018–2019 Summer Session**: Introduction to the theory of Computation (reading course)
- **2018 Semester 2**: Mathematical Foundations for Actuarial Studies (MATH 1113), Linear Algebra.
- **2018 Semester 1**: Advanced Studies Extension for Analysis I (MATH2320).

University of Georgia

- **Fall 2017**: Precalculus (Math 1113).
- **Fall 2017**: Graduate Algebra (Math 8000).
- **Spring 2017**: Calculus II for Science and Engineering (Math 2260).
- **Fall 2016**: Calculus I for Science and Engineering (Math 2250).

University of Chicago

- **2015–2016**: IBL Honors Calculus I and II (Math 161 and 162).

- **2014–2015**: Studies in Mathematics I and II (Math 112 and 113).
- **Summer 2014**: Linear Algebra (Math 196).
- **2013–2014**: Calculus I, II, and III (Math 151, 152, and 153).
- **2012–2013**: Calculus I, II, and III (Math 151, 152, and 153).
- **2011–2012**: College fellow for Honors Algebra I, II, and III (Math 257, 258, and 259).

Canada/USA Mathcamp

- **Summer 2015**: Academic coordinator and mentor. Coordinated the academic schedule, invited visiting speakers, and taught several undergraduate-level courses.
- **Summer 2013**: Mentor. Taught several undergraduate-level courses.
- **Summer 2012**: Mentor. Taught several undergraduate-level courses.

Talks and presentations

- **Apr 2026**: Symplectic theory meets representation theory, University of Cambridge
- **Feb 2026**: ICTS workshop on Geometric Structures and Stability, ICTS Bengaluru
- **Nov 2024**: CNRS IRL FAMSI colloquium, ANU
- **May 2024**: Algebra Seminar, University of Sydney
- **May 2024**: Geometry and Dynamics Seminar, Tsinghua University, online
- **Feb 2024**: Winterbraids, Montpellier (mini-course)
- **Jan 2024**: Applied and computational algebraic geometry, Isaac Newton Institute, University of Cambridge
- **Nov 2022**: Tensor categories in Sydney, University of Sydney
- **Nov 2022**: Lie groups seminar, Massachusetts Institute of Technology, online
- **Aug 2022**: QUACKS II, The University of Oregon
- **Jun 2022**: AMSI winter school 2022, The University of Queensland
- **May 2022**: Algebra & discrete mathematics seminar, UC Davis, online
- **Apr 2022**: FD Seminar, online
- **Mar 2022**: LAGOON webinar, online
- **Mar 2022**: Paris algebra seminar, online
- **Feb 2022**: Geometry, physics, and representation theory seminar, Northeastern University
- **Feb 2022**: Braids in representation theory and algebraic combinatorics, ICERM, Brown University
- **Dec 2021**: Special session on Topology, AustMS 2021, online
- **Nov 2021**: EmacsConf 2021, online
- **Jun 2021**: Dynamical Systems in Triangulated Categories and Surfaces (DiTS), online
- **May 2021**: AMS special session on geometric and categorical methods in representation theory, online
- **Jan 2021**: RepNet Virtual seminar, online
- **Nov 2020**: Algebra Seminar, University of Georgia
- **Feb 2020**: New Connections in Representation Theory, Mooloolaba, Queensland
- **Jan 2020**: Derived Days workshop 2020, University of Sydney
- **Jun 2019**: Triangulated Categories in Geometry and Representation Theory, University of Sydney
- **Feb 2019**: Women of Mathematics: a one-day meeting at the ANU, Australian National University
- **Feb 2019**: Pure Mathematics Seminar, University of Queensland
- **Dec 2018**: Special session in Representation Theory, AustMS 2018, University of Adelaide
- **May 2018**: Pure mathematics seminar, University of Melbourne
- **Dec 2017**: Future Directions in Representation Theory, University of Sydney (poster)
- **Nov 2017**: Workshop on Topics in Algebraic Geometry, University of North Carolina at Chapel Hill
- **Jul 2017**: Canada/USA Mathcamp 2017, University of Puget Sound
- **Mar 2017**: Geometric representation theory seminar, University of Toronto
- **Mar 2017**: Algebraic Geometry, Arithmetic Geometry, and Commutative Algebra Seminar, University of South Carolina
- **Mar 2017**: Special session on Geometric Methods in Representation Theory, AMS Southeastern Spring Sectional Meeting, Charleston
- **Jan 2017**: Special session on New Developments in Noncommutative Algebra and Representation Theory, AMS Joint Mathematical Meeting, Atlanta
- **Dec 2016**: Mathematics Seminar, Indian Institute of Science Education and Research, Pune
- **Nov 2016**: Algebra Seminar, University of Georgia

- **Sep 2016**: Algebra Seminar, University of Georgia
- **Jun 2016**: Young Women in Representation Theory, University of Bonn
- **Feb 2016**: Algebraic Geometry Seminar, Ohio State University
- **Jan 2016**: Algebra Seminar, University of Alberta
- **Oct 2015**: AlGeCom 12, University of Michigan (poster)
- **Oct 2015**: AMS Central Fall Sectional Meeting, Loyola University (poster)
- **Sep 2015**: Algebraic Geometry/Commutative Algebra Seminar, University of Notre Dame
- **May 2015**: Oberseminar Representation Theory, University of Bonn
- **May 2015**: Number Theory and Algebraic Geometry Seminar, Katholieke Universiteit Leuven
- **May 2015**: Oberseminar Algebra, Mathematisches Institut, University of Cologne
- **Jul 2014**: Mathematics Seminar, Indian Institute of Science Education and Research, Pune
- **Jun 2014**: Summer school on quiver Hecke algebras, IESC Cargèse (expository)
- **May 2014**: Workshop on Yangians and quantum loop algebras, Austin (expository)