

Anurag K. Singh

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Education and employment

- 2011– ◇ Professor, University of Utah.
- Spring 2024 ◇ Chern Professor, Simons Laufer Mathematical Sciences Institute, Berkeley.
- June 2017 ◇ Visiting Professor, Indian Institute of Technology, Bombay.
- December 2016 ◇ Simons Visiting Professor, Università di Genova, Italy.
- 2012–2013 ◇ Program Organizer, Mathematical Sciences Research Institute, Berkeley.
- July 2011 ◇ Visiting Associate Professor, Indian Institute of Technology, Bombay.
- 2005–2011 ◇ Associate Professor, University of Utah.
- 2002–2006 ◇ Assistant Professor, Georgia Institute of Technology.
- 2002–2003 ◇ Postdoctoral Fellow/Member, Mathematical Sciences Research Institute, Berkeley.
- 1999–2002 ◇ Instructor/Wylie-Scott Assistant Professor, University of Utah.
- 1998–1999 ◇ Visiting Assistant Professor, University of Illinois at Urbana-Champaign.
- 1992–1998 ◇ University of Michigan: M.S. Mathematics, 1994; Ph.D. Mathematics, 1998.

Awards and grants

- 1990–1991 ◇ National Board of Higher Mathematics (India) Scholarship.
- 1992–1994 ◇ Copeland-Glover Fellowship, University of Michigan.
- 1996–1997 ◇ Rackham Predoctoral Fellowship, University of Michigan.
- 2000–2003 ◇ NSF Grant DMS 0070268, *Studies in commutative algebra*.
- 2001 ◇ Outstanding Instructor Award, University of Utah.
- 2003–2006 ◇ NSF Grant DMS 0300600, *Questions in commutative algebra*.
- 2006–2009 ◇ NSF Grant DMS 0600819, *Tight closure, local cohomology, and related questions*.
- 2009–2012 ◇ NSF Grant DMS 0856044, *Studies in commutative algebra*.
- 2012 ◇ Faculty Undergraduate Teaching Award, University of Utah.
- 2012–2015 ◇ NSF Grant DMS 1162585, *Local cohomology, tight closure, and related questions*.
- 2015–2018 ◇ NSF Grant DMS 1500613, *Questions on local cohomology and tight closure theory*.
- 2018–2021 ◇ NSF Grant DMS 1801285, *Determinantal rings, local cohomology, and tight closure*.
- 2021–2024 ◇ NSF Grant DMS 2101671, *Local cohomology, differential operators, and determinantal rings*.
- 2022 ◇ Faculty Undergraduate Teaching Award, University of Utah.
- 2023 ◇ Fellow of the American Mathematical Society.

Thesis supervision

- ◇ Christopher Kocs, Honors thesis, 2007. (Working for the Department of Defense)
- ◇ Qiang Song, Ph.D. thesis, 2007. (Working for Misys, Beijing)
- ◇ Julian Chan, Ph.D. thesis, 2011. (Professor, Weber State University)
- ◇ Jack Jeffries, Ph.D. thesis, 2015. (Tenure-track Assistant Professor, University of Nebraska)
- ◇ Jennifer Kenkel, Ph.D. thesis, 2019. (Tenure-track Assistant Professor, Grinnell College)
- ◇ Michele Houtappels, M.Sc. thesis, 2019. (Working for Northrop Grumman)

Thesis supervision (continued)

- ◇ Isaac Martin, Honors thesis, 2021. (Graduate student, University of Texas, Austin)
- ◇ Moses Samuelson-Lynn, REU thesis, 2021. (Undergraduate, University of Utah)
- ◇ Annie Giokas, Honors thesis, 2022. (Graduate student, Purdue University)
- ◇ Vaibhav Pandey, Ph.D. thesis, 2022. (Golomb Assistant Professor, Purdue University)
- ◇ Trung Chau, Ph.D. thesis, in progress.
- ◇ Aryaman Maithani, Ph.D. thesis, in progress.

Visiting students mentored (over a month)

- ◇ Akiyoshi Sannai, University of Tokyo, Japan, February–July 2010.
- ◇ Max J. Nitsche, Max Planck Institute, Leipzig, Germany, March–April 2011.
- ◇ Ehsan Tavanfar, Shahid Beheshti University, Iran, September 2015–May 2016.

Postdoctoral mentoring

- ◇ Lance Miller, VIGRE postdoc, 2010–13; currently Associate Professor, University of Arkansas.
- ◇ Matteo Varbaro, MSRI postdoc, Fall 2012; currently Professor, Università di Genova, Italy.
- ◇ Wenliang Zhang, MSRI postdoc, Spring 2013; currently Professor, University of Illinois at Chicago.
- ◇ Daniel Hernández, NSF postdoc, 2013–15; currently Associate Professor, University of Kansas.
- ◇ Emily Witt, RTG postdoc, 2014–15; currently Associate Professor, University of Kansas.
- ◇ Maral Mostafazadehfard, CNPq Brazil postdoc, 2015–16; currently Assistant Professor, Federal University of Rio de Janeiro, Brazil.
- ◇ Eloísa Grifo, Visiting postdoc, 2019–20; currently Assistant Professor, University of Nebraska-Lincoln.
- ◇ Kriti Goel, Fulbright Scholar, 2022–23; currently Postdoctoral Fellow, Basque Center for Applied Mathematics, Bilbao, Spain.
- ◇ Hunter Simper, postdoc, 2023–26.
- ◇ I have had substantial interaction with several other postdocs at the University of Utah.

Teaching experience

- 1992–1998 ◇ University of Michigan. *Calculus*, *Business calculus*.
- 1998–1999 ◇ University of Illinois at Urbana-Champaign. *Calculus*, *Linear algebra*.
- 1999–2002 ◇ University of Utah. *Business algebra*, *Business calculus*, *Abstract algebra*, *Local cohomology*, *Intersection multiplicities*.
- 2003–2005 ◇ Georgia Institute of Technology. *Graduate algebra*, *Undergraduate algebra*.
- 2005– ◇ University of Utah. *Business algebra*, *Business calculus*, *Discrete mathematics*, *Complex variables*, *Foundations of algebra*, *History of mathematics*, *Number theory*, *Cryptography*, *Algebraic topology*, *Undergraduate algebra*, *Graduate algebra*, *Commutative algebra*, *Invariant theory*.

Publications

- ◇ Failure of F -purity and F -regularity in certain rings of invariants, *Illinois Journal of Mathematics* **42** (1998), 441–448.
- ◇ *A computation of tight closure in diagonal hypersurfaces*, *Journal of Algebra* **203** (1998), 579–589.
- ◇ *Tight closure in non-equidimensional rings*, *Communications in Algebra* **26** (1998), 3969–3983.
- ◇ *Deformation of F -purity and F -regularity*, *Journal of Pure and Applied Algebra* **140** (1999), 137–148.
- ◇ *F -regularity does not deform*, *American Journal of Mathematics* **121** (1999), 919–929.

Publications (continued)

- ◇ *Separable integral extensions and plus closure*, *Manuscripta Mathematica* **98** (1999), 497–506.
- ◇ *\mathbb{Q} -Gorenstein splinter rings of characteristic p are F -regular*, *Mathematical Proceedings of the Cambridge Philosophical Society* **127** (1999), 201–205.
- ◇ *Multi-symbolic Rees algebras and strong F -regularity*, *Mathematische Zeitschrift* **235** (2000), 335–344.
- ◇ *Veronese subrings and tight closure*, *Pacific Journal of Mathematics* **192** (2000), 399–413.
- ◇ *Intersection multiplicities over Gorenstein rings*, with Claudia M. Miller, *Mathematische Annalen* **317** (2000), 155–171.
- ◇ *p -torsion elements in local cohomology modules*, *Mathematical Research Letters* **7** (2000), 165–176.
- ◇ *Relative test elements for tight closure*, *Journal of Pure and Applied Algebra* **158** (2001), 101–109.
- ◇ *p -torsion elements in local cohomology modules II*, in: *Local cohomology and its applications* (Guanajuato, 1999), *Lecture Notes in Pure and Applied Mathematics* **226**, pp. 155–167, 2002.
- ◇ *Todd classes of affine cones of Grassmannians*, with Kazuhiko Kurano, *International Mathematics Research Notices* **35** (2002), 1841–1855.
- ◇ *Cyclic covers of rings with rational singularities*, *Transactions of the American Mathematical Society* **355** (2003), 1009–1024.
- ◇ *Associated primes of local cohomology modules*, in: *Proceedings of the 48th Algebra Symposium, August 4–7, 2003, Nagoya University* (2003), 133–145.
- ◇ *Associated primes of local cohomology modules and of Frobenius powers*, with Irena Swanson, *International Mathematics Research Notices* **33** (2004), 1703–1733.
- ◇ *The F -signature of an affine semigroup rings*, *Journal of Pure and Applied Algebra* **196** (2005), 313–321.
- ◇ *On the arithmetic rank of certain Segre products*, with Uli Walther, *Contemporary Mathematics* **390** (2005), 147–155.
- ◇ *Annihilators of local cohomology in characteristic zero*, with Paul Roberts and V. Srinivas, *Illinois Journal of Mathematics*, special volume in honor of Phillip Griffith, **51** (2007), 237–254.
- ◇ *Local cohomology and pure morphisms*, with Uli Walther, *Illinois Journal of Mathematics*, special volume in honor of Phillip Griffith, **51** (2007), 287–298.
- ◇ *Divisor class groups of graded hypersurfaces*, with Sandra Spiroff, *Contemporary Mathematics* **448** (2007), 237–243.
- ◇ *Twenty-four hours of local cohomology*, with Srikanth B. Iyengar, Graham Leuschke, Anton Leykin, Claudia Miller, Ezra Miller, and Uli Walther, *AMS Graduate Studies in Mathematics* **87**, 2007.
- ◇ *A connectedness result in positive characteristic*, with Uli Walther, *Transactions of the American Mathematical Society* **360** (2008), 3107–3119.
- ◇ *Tight closure: applications and questions*, in: *Proceedings of the 4th Japan-Vietnam Joint Seminar on Commutative Algebra, February 17–21, 2009, Meiji University* (2009), 45–63.
- ◇ *Multigraded rings, rational singularities, and diagonal subalgebras*, with Kazuhiko Kurano, Ei-ichi Sato, and Kei-ichi Watanabe, *Journal of Algebra*, special volume in honor of Paul Roberts, **322** (2009), 3248–3267.
- ◇ *An algorithm for computing the integral closure*, with Irena Swanson, *Algebra & Number Theory* **3** (2009), 587–595.
- ◇ *Bockstein homomorphisms in local cohomology*, with Uli Walther, *Journal für die reine und angewandte Mathematik* **655** (2011), 147–164.
- ◇ *Reconciling Riemann-Roch results*, with Paul Roberts, *Contemporary Mathematics* **555** (2011), 165–172.
- ◇ *Galois extensions, plus closure, and maps on local cohomology*, with Akiyoshi Sannai, *Advances in Mathematics* **229** (2012), 1847–1861.
- ◇ *A note on Bockstein homomorphisms in local cohomology*, with Uli Walther, *Advanced Studies in Pure Mathematics* **62** (2012), 513–521.

Publications (continued)

- ◇ *Rings of Frobenius operators*, with Mordechai Katzman, Karl Schwede, and Wenliang Zhang, *Mathematical Proceedings of the Cambridge Philosophical Society* **157** (2014), 151–167.
- ◇ *Local cohomology modules of a smooth \mathbb{Z} -algebra have finitely many associated primes*, with Bhargav Bhatt, Manuel Blickle, Gennady Lyubeznik, and Wenliang Zhang, *Inventiones Mathematicae* **197** (2014), 509–519.
- ◇ Appendix, with Karl Schwede, to *Deformation of F -injectivity and local cohomology*, by Jun Horiuchi, Lance E. Miller, and Kazuma Shimomoto, *Indiana University Mathematics Journal* **63** (2014), 1139–1157.
- ◇ *The F -pure threshold of a determinantal ideal*, with Lance E. Miller and Matteo Varbaro, *Bulletin of the Brazilian Mathematical Society*, special volume in honor of Steven Kleiman and Aron Simis, **45** (2014), 767–775.
- ◇ *The F -pure threshold of a Calabi-Yau hypersurface*, with Bhargav Bhatt, *Mathematische Annalen* **362** (2015), 551–567.
- ◇ *Local cohomology modules supported at determinantal ideals*, with Gennady Lyubeznik and Uli Walther, *Journal of the European Mathematical Society* **18** (2016), 2545–2578.
- ◇ *A Gorenstein criterion for strongly F -regular and log terminal singularities*, with Shusuke Takagi and Matteo Varbaro, *International Mathematics Research Notices* **21** (2017), 6484–6522.
- ◇ *Positive characteristic methods in commutative algebra*, GIAN lecture notes, June 2017.
- ◇ *A polynomial identity via differential operators*, in: *Homological and computational methods in commutative algebra (Cortona, 2016)*, Springer INdAM Series **20**, pp. 239–247, 2017.
- ◇ *Hankel determinantal rings have rational singularities*, with Aldo Conca, Maral Mostafazadehfard, and Matteo Varbaro, *Advances in Mathematics* **335** (2018), 111–129.
- ◇ *Stabilization of the cohomology of thickenings*, with Bhargav Bhatt, Manuel Blickle, Gennady Lyubeznik, and Wenliang Zhang, *American Journal of Mathematics* **141** (2019), 531–561.
- ◇ *On a conjecture of Lynch*, with Uli Walther, *Communications in Algebra* **48** (2020), 2681–2682.
- ◇ *Homogeneous prime elements in normal two-dimensional graded rings*, with Ryo Takahashi and Kei-ichi Watanabe, *Journal of Algebra*, special volume in honor of Craig Huneke, **571** (2021), 339–349.
- ◇ *Koszul and local cohomology, and a question of Dutta*, with Linquan Ma and Uli Walther, *Mathematische Zeitschrift* **298** (2021), 697–711.
- ◇ *An asymptotic vanishing theorem for the cohomology of thickenings*, with Bhargav Bhatt, Manuel Blickle, Gennady Lyubeznik, and Wenliang Zhang, *Mathematische Annalen* **380** (2021), 161–173.
- ◇ *On Segre products, F -regularity, and finite Frobenius representation type*, with Kei-ichi Watanabe, *Acta Mathematica Vietnamica*, special volume in honor of Ngo Viet Trung, to appear.
- ◇ *When are the natural embeddings of classical invariant rings pure?*, with Mel Hochster, Jack Jeffries, and Vaibhav Pandey, *Forum of Mathematics*, *Sigma* **11** (2023), paper no. e67, 43 pp.
- ◇ *Differential operators on classical invariant rings do not lift modulo p* , with Jack Jeffries, *Advances in Mathematics* **432** (2023), paper no. 109276, 53 pp.
- ◇ *On an example of Nagarajan*, with Annie Giokas, *Journal of Algebra* **638** (2024), 931–936.
- ◇ *Local cohomology of modular invariant rings*, with Kriti Goel and Jack Jeffries, arXiv:2306.14279.
- ◇ *Frobenius on the cohomology of thickenings*, with Bhargav Bhatt, Manuel Blickle, Gennady Lyubeznik, and Wenliang Zhang, *International Mathematics Research Notices*, to appear.
- ◇ *Regular morphisms do not preserve F -rationality*, with Eamon Quinlan-Gallego and Austyn Simpson, arXiv:2307.03785.
- ◇ *Applications of perverse sheaves in commutative algebra*, with Bhargav Bhatt, Manuel Blickle, Gennady Lyubeznik, and Wenliang Zhang, arXiv:2308.03155.
- ◇ *Frobenius representation type for invariant rings of finite groups*, with Mitsuyasu Hashimoto, arXiv:2312.11786.

Lecture Series

- ◇ Commutative algebra and interactions with algebraic geometry and combinatorics, June 2004, International Centre for Theoretical Physics (ICTP), Trieste, Italy. (Four lectures)
- ◇ Summer school in commutative algebra: Local cohomology and its interactions with algebra, geometry, and analysis, June 2005, Snowbird, Utah. (Three lectures)
- ◇ Fourth Japan-Vietnam Joint Seminar on Commutative Algebra, February 2009, Meiji University, Tokyo, Japan. (Five lectures)
- ◇ CIMPA-TUBITAK school on commutative algebra and applications to combinatorics and algebraic geometry, September 2010, Feza Gürsey Institute, Istanbul, Turkey. (Five lectures)
- ◇ Workshop on local cohomology, July 2011, Indian Institute of Technology, Bombay, India. (Five lectures)
- ◇ Pragmatic: Research school in algebraic geometry and commutative algebra, June–July 2014, Catania, Italy. (Five lectures)
- ◇ \mathcal{D} -modules in commutative algebra, August 2015, Centro de Investigación en Matemáticas (CIMAT), Guanajuato, Mexico. (Three lectures)
- ◇ Advanced Instructional School on invariant theory, December 2015–January 2016, Chennai Mathematical Institute, India. (Five 90-minute lectures)
- ◇ Mini-course on invariants of finite groups, August 2016, Universidad de Costa Rica, San José, Costa Rica. (Six 3-hour lectures)
- ◇ GIAN lecture series on positive characteristic methods in commutative algebra, June 2017, Indian Institute of Technology, Bombay, India. (Ten 90-minute lectures)
- ◇ Advanced Instructional School on Gröbner bases and their applications, December 2017, Indraprastha Institute of Information Technology, Delhi, India. (Two 90-minute lectures)
- ◇ Advanced Instructional School on commutative algebra and algebraic geometry in positive characteristics, December 2018, Indian Institute of Technology, Bombay, India. (Six 75-minute lectures)
- ◇ Commutative algebra and its interaction with algebraic geometry, MSRI/SLMath Summer Graduate School, May–June 2023, University of Notre Dame. (Five lectures)

Other talks

- ◇ American Mathematical Society Mathfest, August 1996, Seattle, Washington.
- ◇ American Mathematical Society Meeting, November 1996, Columbia, Missouri.
- ◇ American Mathematical Society Meeting, January 1998, Baltimore, Maryland.
- ◇ Second annual Missouri algebra weekend, October 1998, Columbia, Missouri.
- ◇ American Mathematical Society Meeting, March 1999, Urbana, Illinois.
- ◇ American Mathematical Society Meeting, September 1999, Salt Lake City, Utah.
- ◇ Conference on local cohomology, November–December 1999, Centro de Investigación en Matemáticas (CIMAT), Guanajuato, Mexico.
- ◇ American Mathematical Society Meeting, April 2000, Notre Dame, Indiana.
- ◇ Commutative algebra seminar, August 2000, University of Minnesota.
- ◇ American Mathematical Society Meeting, March 2001, Lawrence, Kansas.
- ◇ Colloquium, January 2002, Georgia Institute of Technology.
- ◇ Colloquium, January 2002, University of Illinois at Urbana-Champaign.
- ◇ Colloquium, February 2002, University of Kentucky.
- ◇ Colloquium, February 2002, Syracuse University.
- ◇ Special lecture, February 2002, University of Minnesota.

Other talks (continued)

- ◇ Workshop on commutative algebra: local and birational theory, December 2002, Mathematical Sciences Research Institute (MSRI), Berkeley.
- ◇ Algebra seminar, April 2003, University of Kansas.
- ◇ Ellis B. Stouffer colloquium, April 2003, University of Kansas.
- ◇ American Mathematical Society Meeting, May 2003, San Francisco, California.
- ◇ Algèbre commutative et ses interactions avec la géométrie algébrique, June 2003, Centre International de Rencontres Mathématiques (CIRM), Luminy, France.
- ◇ Singularities seminar, July 2003, Nihon University, Japan. (Three hours.)
- ◇ Algebra seminar, July 2003, Shinshu University, Japan.
- ◇ Commutative algebra seminar, August 2003, Meiji University, Japan. (Three hours.)
- ◇ 48th Algebra Symposium, August 2003, Nagoya University, Japan.
- ◇ Joint International Meeting of the American Mathematical Society and the Indian Mathematical Society, December 2003, Bangalore, India.
- ◇ Algebra seminar, February 2004, University of Texas at Austin.
- ◇ Commutative algebra: homological and birational theory, September 2004, Banff International Research Station (BIRS), Banff, Canada.
- ◇ Algebra seminar, October 2004, University of Georgia.
- ◇ American Mathematical Society Meeting, October 2004, Nashville, Tennessee.
- ◇ Colloquium, January 2005, University of Notre Dame.
- ◇ Colloquium, January 2005, University of Utah.
- ◇ Colloquium, February 2005, University of Kansas.
- ◇ Colloquium, February 2005, Purdue University.
- ◇ Conference on commutative algebra: recent developments in tight closure, April 2005, University of Arkansas.
- ◇ Workshop on Kommutative Algebra, April 2005, Oberwolfach, Germany.
- ◇ CIMPA international conference on commutative algebra, January 2006, Hanoi, Vietnam.
- ◇ American Mathematical Society Meeting, April 2006, Notre Dame, Indiana.
- ◇ American Mathematical Society Meeting, April 2006, San Francisco, California.
- ◇ Homological conjectures in commutative algebra: a conference in honor of Paul Roberts, May 2006, Snowbird, Utah.
- ◇ Algebra seminar, February 2007, University of Nebraska.
- ◇ Colloquium, February 2007, University of Nebraska.
- ◇ Hilbert functions and syzygies in commutative algebra and combinatorics: a conference in honor of Jürgen Herzog, September 2007, Cortona, Italy.
- ◇ Georgia State University-University of South Carolina joint seminar, November 2007, Columbia.
- ◇ Macaulay 2 conference, March 2008, Cornell University.
- ◇ Algèbre commutative et ses interactions avec la géométrie algébrique, October 2008, Centre International de Rencontres Mathématiques (CIRM), Luminy, France.
- ◇ Workshop on Kommutative Algebra, April 2009, Oberwolfach, Germany.
- ◇ First Pacific Rim Mathematical Association (PRIMA) Congress, July 2009, Sydney, Australia.
- ◇ Commutative algebra and its connections to geometry: Pan-American Advanced Study Institute (PASI) conference in honor of Wolmer Vasconcelos, August 2009, Olinda, Brazil.
- ◇ Frobenius splitting in algebraic geometry, commutative algebra, and representation theory, May 2010, University of Michigan.

Other talks (continued)

- ◇ Local rings and local study of algebraic varieties, June 2010, International Centre for Theoretical Physics (ICTP), Trieste, Italy.
- ◇ Workshop on integral closure, July 2010, Mathematical Sciences Research Institute (MSRI), Berkeley.
- ◇ Georgia State University-University of South Carolina Joint Seminar, September 2010, Atlanta.
- ◇ Algèbre commutative et ses interactions avec la géométrie algébrique, November 2010, Centre International de Rencontres Mathématiques (CIRM), Luminy, France.
- ◇ Colloquium, May 2011, University of California, Riverside.
- ◇ Midwest commutative algebra and geometry conference, May 2011, Purdue University.
- ◇ Seminar, July 2011, Chennai Mathematics Institute, Chennai, India.
- ◇ Relating test ideals and multiplier ideals, August 2011, American Institute of Mathematics (AIM), Palo Alto.
- ◇ American Mathematical Society Meeting, October 2011, Lincoln, Nebraska.
- ◇ Algebra and number theory seminar, February 2012, Penn State University.
- ◇ Colloquium, February 2012, Penn State University.
- ◇ Computational workshop on Frobenius singularities and invariants, May 2012, University of Michigan.
- ◇ 12th ALGA meeting, August 2012, Instituto Nacional de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, Brasil.
- ◇ Commutative algebra and algebraic geometry seminar, October 2012, University of California, Berkeley.
- ◇ Singularity categories in algebraic geometry and commutative algebra, January 2013, Indian Institute of Technology, Madras, India.
- ◇ Joint International Meeting of the American Mathematical Society and the Romanian Mathematical Society, June 2013, Alba Iulia, Romania.
- ◇ Combinatorial structures in algebra and topology, July 2013, Universität Osnabrück, Germany.
- ◇ Algèbre commutative et ses interactions avec la géométrie algébrique, July 2013, Centre International de Rencontres Mathématiques (CIRM), Luminy, France.
- ◇ International conference on commutative algebra and its interaction to algebraic geometry and combinatorics, December 2013, Hanoi, Vietnam.
- ◇ Colloquium, March 2014, University of Arkansas.
- ◇ American Mathematical Society Meeting, April 2014, Albuquerque, New Mexico.
- ◇ Seminari geometria algebraica, June 2014, Universitat de Barcelona, Spain.
- ◇ Commutative algebra and singularity theory: a conference in honor of Kei-ichi Watanabe, July-August 2014, Tateyama, Japan.
- ◇ Commutative algebra seminar, August 2014, Meiji University, Japan. (Three hours.)
- ◇ MOCCA: Meeting on combinatorial commutative algebra, September 2014, Trento, Italy.
- ◇ American Mathematical Society Meeting, October 2014, San Francisco, California.
- ◇ Recent developments in positive characteristic techniques in commutative algebra: Frobenius operators and Cartier algebras, March 2015, Georgia State University.
- ◇ Joint International Meeting of the American Mathematical Society, European Mathematical Society, and Sociedade Portuguesa de Matemática, June 2015, Porto, Portugal.
- ◇ Midwest commutative algebra conference, August 2015, Purdue University.
- ◇ Syzygies in algebra and geometry, August 2015, Haeundae, South Korea.
- ◇ KUMUNU conference, October 2015, University of Missouri.
- ◇ Commutative algebra and algebraic geometry seminar, January 2016, Indian Institute of Technology, Bombay, India.

Other talks (continued)

- ◇ American Mathematical Society Meeting, March 2016, Athens, Georgia.
- ◇ Homological and computational methods in commutative algebra: a conference in honor of Winfried Bruns, May-June 2016, Cortona, Italy.
- ◇ Commutative algebra and its interactions with algebraic geometry: tight closure, linkage, and syzygies; a conference honoring Craig Huneke, July 2016, University of Michigan.
- ◇ Algebra and geometry seminar, December 2016, Università di Genova, Italy.
- ◇ Colloquium, February 2017, Reed College.
- ◇ Commutative algebra seminar, April 2017, University of Michigan.
- ◇ Colloquium, June 2017, International Centre for Theoretical Sciences (ICTS), Bengaluru, India.
- ◇ Local cohomology in commutative algebra and algebraic geometry: a conference in honor of Gennady Lyubeznik, August 2017, University of Minnesota.
- ◇ Colloquium, October 2017, University of Notre Dame.
- ◇ Algebraic geometry and commutative algebra seminar, October 2017, University of Notre Dame.
- ◇ 39th Japan Symposium on Commutative Algebra, November 2017, Research Institute for Mathematical Sciences (RIMS), Kyoto, Japan.
- ◇ Algebraic geometry and number theory conference, December 2017, Indian Statistical Institute, Bengaluru, India.
- ◇ Colloquium, October 2018, Georgia State University.
- ◇ Algebra seminar, October 2018, Georgia State University.
- ◇ Singularities and homological aspects of commutative algebra, February 2019, Oberwolfach, Germany.
- ◇ American Mathematical Society Meeting, March 2019, Auburn, Alabama.
- ◇ Colloquium, April 2019, Purdue University.
- ◇ Conference on commutative algebra and its interaction with algebraic geometry, in honor of Bernd Ulrich, June 2019, University of Notre Dame.
- ◇ Commutative algebra seminar, September 2019, University of Illinois at Chicago.
- ◇ Colloquium, October 2019, University of Minnesota.
- ◇ Commutative algebra seminar, February 2020, University of Michigan.
- ◇ Fellowship of the ring zoom seminar, April 2020, Mathematical Sciences Research Institute (MSRI), Berkeley, California.
- ◇ Virtual commutative algebra seminar, June 2020, Indian Institute of Technology, Bombay, India.
- ◇ D -modules, group actions, and Frobenius: computing on singularities, August 2021, Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University.
- ◇ Seminar, November 2022, Osaka Metropolitan University, Japan.
- ◇ 43rd Japan Symposium on Commutative Algebra, November 2022, Osaka University, Japan.
- ◇ Algebraic/arithmetical geometry seminar, December 2022, Technische Universität München, Germany.
- ◇ Géométrie écrite: algèbre commutative, January 2023, Centre International de Rencontres Mathématiques (CIRM), Luminy, France.
- ◇ Commutative algebra and algebraic geometry seminar, March 2023, University of California, Berkeley.
- ◇ Colloquium, April 2023, Georgia State University.

Professional activities

- ◇ Editorial Board of *Communications in Algebra*, 2006–11.
- ◇ Editor (with K. E. Smith) special volume of *Michigan Mathematical Journal* in honor of Melvin Hochster, Volume 57, 2008.
- ◇ Editor (with D. Eisenbud, S. B. Iyengar, J. T. Stafford, and M. Van den Bergh), *Commutative Algebra and Noncommutative Algebraic Geometry, Volume I: Expository Articles*, Mathematical Sciences Research Institute Publications 67, Cambridge University Press, 2015.
- ◇ Editor (with D. Eisenbud, S. B. Iyengar, J. T. Stafford, and M. Van den Bergh), *Commutative Algebra and Noncommutative Algebraic Geometry, Volume II: Research Articles*, Mathematical Sciences Research Institute Publications 68, Cambridge University Press, 2015.
- ◇ Editor (with A. Conca and S. B. Iyengar), *Recent developments in commutative algebra*, Lecture Notes in Mathematics 2283, Springer, 2021.
- ◇ Editorial Board of *Journal of the Ramanujan Mathematical Society*, since 2023.
- ◇ Moderator for the arXiv since 2007.
- ◇ Reviewer for *Mathematical Reviews*.
- ◇ Panelist for the NSF; referee for proposals submitted to NSF, NSA, Simons Foundation, RGC (Research Grant Council, Hong Kong), INdAM (Istituto Nazionale di Alta Matematica Francesco Severi, Italy), and NCN (Narodowe Centrum Nauki, Poland).
- ◇ External reviewer for the Ph.D. theses of Axel Stäbler, Universität Osnabrück (2010), Matteo Varbaro, Università di Genova (2011), Ajay Kumar, Indian Institute of Science Education and Research, Mohali (2014), Alberto Fernandez Boix, Universitat de Barcelona (2014), Parangama Sarkar, Indian Institute of Technology, Bombay (2016), Jai Laxmi, Indian Institute of Technology, Bombay (2018), Mitra Koley, Chennai Mathematical Institute (2018), and Saipriya Dubey, Indian Institute of Technology, Bombay (2022).
- ◇ Referee for about 290 papers submitted to various journals and proceedings including: *Acta Mathematica Vietnamica*, *Advances in Mathematics*, *Algebra & Number Theory*, *Algebras and Representation Theory*, *Annales de la Faculté des Sciences de Toulouse*, *Archiv der Mathematik*, *Beiträge zur Algebra und Geometrie*, *Bulletin of the Belgian Mathematical Society*, *Bulletin of the London Mathematical Society*, *Canadian Mathematical Bulletin*, *Communications in Algebra*, *Compositio Mathematica*, *Comptes Rendus de l'Académie des Sciences*, *Contemporary Mathematics*, *Czechoslovak Mathematical Journal*, *Duke Mathematical Journal*, *International Journal of Algebra and Computation*, *Illinois Journal of Mathematics*, *International Electronic Journal of Algebra*, *International Journal of Algebra and Computation*, *International Journal of Mathematics and Mathematical Sciences*, *International Mathematics Research Notices*, *Inventiones Mathematicae*, *Journal für die reine und angewandte Mathematik*, *Journal of Algebra*, *Journal of Algebra and its Applications*, *Journal of Algebraic Geometry*, *Journal of Commutative Algebra*, *Journal of the American Mathematical Society*, *Journal of the London Mathematical Society*, *Journal of Pure and Applied Algebra*, *Journal of Symbolic Computation*, *Le Matematiche*, *Linear Algebra and its Application*, *Manuscripta Mathematica*, *Mathematical Research Letters*, *Mathematische Annalen*, *Mathematica Scandinavica*, *Mathematical Proceedings of the Cambridge Philosophical Society*, *Mathematische Zeitschrift*, *Michigan Mathematical Journal*, *Nagoya Mathematical Journal*, *Pacific Journal of Mathematics*, *Proceedings of the American Mathematical Society*, *Proceedings of the London Mathematical Society*, *Rendiconti del Seminario Matematico della Università di Padova*, *Revista de la Unión Matemática Argentina*, *Rocky Mountain Journal of Mathematics*, *São Paulo Journal of Mathematical Sciences*, *Springer INdAM series*, *Taiwanese Journal of Mathematics*, *Thai Journal of Mathematics*, and *Transactions of the American Mathematical Society*.

Selected organizational work

- ◇ (with P. Roberts), *Special session on commutative algebra and algebraic geometry*, Joint Mathematics Meeting, January 2002, San Diego, California.
- ◇ (with F. Enescu and K. E. Smith), *Special session on commutative algebra*, American Mathematical Society Meeting, March 2002, Ann Arbor, Michigan.
- ◇ (with S. B. Iyengar, S. Sather-Wagstaff, and C. Yackel), *Special session on commutative algebra*, Joint Mathematics Meeting, January 2005, Atlanta, Georgia.
- ◇ (with U. Walther), *Summer school in commutative algebra: local cohomology and its interactions with algebra, geometry, and analysis*, June 2005, Snowbird, Utah.
Two-week summer school, part of the AMS-IMS-SIAM Joint Summer Research Conferences; additional funding from Mathematical Sciences Research Institute (MSRI), Berkeley.
- ◇ (with S. B. Iyengar, G. Leuschke, and C. Miller), *Minnowbrook workshop on commutative algebra*, August 2005, Minnowbrook Adirondack Conference Center, Syracuse, New York.
One-week workshop, funded by NSA and by Syracuse University.
- ◇ (with A. Kustin, M. Miller, and S. Spiroff), *Commutative algebra conference honoring the contributions of Phillip Griffith*, September 2005, University of Illinois at Urbana-Champaign.
Funded by NSA, University of Illinois at Urbana-Champaign, and University of South Carolina.
- ◇ (with P. Roberts and O. Veliche), *Special session on commutative algebra*, American Mathematical Society Meeting, October 2006, Salt Lake City, Utah.
- ◇ (with P. Roberts and O. Veliche), *Special session on commutative algebra and algebraic geometry*, Joint Mathematics Meeting, January 2007, New Orleans, Louisiana.
- ◇ (with C. Huneke and K. E. Smith), *Commutative algebra and its interactions: a conference in honor of Mel Hochster*, August 2008, Ann Arbor, Michigan.
One-week conference, funded by the NSF, NSA, the University of Michigan, and the Michigan Mathematical Journal.
- ◇ (with D. Eisenbud and K.-i. Watanabe), *Special session on commutative algebra*, First Pacific Rim Mathematical Association (PRIMA) Congress, July 2009, Sydney, Australia.
- ◇ (with P. Roberts and S. Spiroff), *Special session on local commutative algebra*, Joint Mathematics Meeting, January 2011, New Orleans, Louisiana.
- ◇ (with S. B. Iyengar and J. K. Verma), *Workshop and conference on local cohomology*, July 2011, Indian Institute of Technology, Bombay, India.
Two-week event, funded by the National Board for Higher Mathematics, India.
- ◇ (with C.-Y. Chan and L. E. Miller), *Special session on commutative algebra*, American Mathematical Society Meeting, October 2011, Salt Lake City, Utah.
- ◇ (with D. Eisenbud, S. B. Iyengar, E. Miller, and K. E. Smith), *Commutative algebra program year*, August 2012–May 2013, Mathematical Sciences Research Institute (MSRI), Berkeley.
- ◇ (with B. Bhatt, S. B. Iyengar, and W. Niziol), *The homological conjectures*, Hot Topics workshop, March 2018, Mathematical Sciences Research Institute (MSRI), Berkeley.
- ◇ (with S. B. Iyengar) *Topics in commutative algebra*, May 2018, RTG workshop, University of Utah.
- ◇ (with A. Conca and S. B. Iyengar), *Recent developments in commutative algebra*, July 2019, Centro Internazionale Matematico Estivo (CIME), Trento, Italy.
- ◇ (with S. B. Iyengar, C. Miller, and C. Polini), *Introductory workshop: Commutative algebra*, January 2024, MSRI/SLMath, Berkeley.
- ◇ (Upcoming, with M. Hashimoto and S. Takagi), *Commutative algebra and singularity theory: a conference in honor of Kei-ichi Watanabe*, September 2024, Osaka Metropolitan University, Japan.

Committees

Georgia Institute of Technology

- ◇ Mathematics Graduate comprehensive exam committee, Spring 2004, Fall 2004, Spring 2005.
- ◇ Algorithms, Combinatorics, and Optimization Program, Graduate comprehensive exam committee, Spring 2004, Fall 2004, Spring 2005.
- ◇ School of Mathematics, Elections and nominations committee, 2004–05.
- ◇ M.S. committee for Florian Zickfeld, 2004, and Patricia Pichardo, 2005.
- ◇ Ph.D. thesis committee for Zixia Song, 2004.

University of Utah

- ◇ College of Science committee on admissions standards and degree programs, 2005–09. (Chair, 2007–08.)
- ◇ Department of Mathematics, Mathematics Education Committee, 2006–07.
- ◇ Department of Mathematics, Graduate Committee, 2008–09.
- ◇ Department of Mathematics, Library Committee, 2009–12, and 2013–18.
- ◇ Department of Mathematics, Hiring Committee, 2006–08, 2010–11, 2014–16, and 2017–18 (Chair).
- ◇ Department of Mathematics, Faculty Undergraduate Teaching Award Committee, 2018–19.
- ◇ Department of Mathematics, COVID taskforce, 2020–21.
- ◇ Department of Mathematics, Executive Committee, 2008–09, 2011–12, 2020–22.
- ◇ Department of Mathematics, Instructorship Committee, 2016–17 (Chair), 2018–19, and 2022–23.
- ◇ Department of Mathematics, Undergraduate Curriculum Committee, 2022–23.
- ◇ Department of Mathematics, Tenured Faculty Review Committee, 2022–23.
- ◇ Departmental Ambassador to MSRI/SLMath, Berkeley, 2006–24.
- ◇ Course coordinator, *Discrete Mathematics*, 2014–24.
- ◇ College of Science Council, 2010–12, 2015–17, and 2022–24.
- ◇ Promotions and Review Committee for Career-Line Faculty and Instructional Staff, Chair, 2023–24.
- ◇ Equity, Diversity, and Inclusion Committee, Fall 2023.
- ◇ Utah Conference Board on Mathematical Sciences, Pathways Early College Design Team, 2023–24.
- ◇ M.S. committee chair for Jessica Brooke Ernest (2008), Jared Huff (2009), Adam Wilson (2011), Jetjaroen Klangwang (2011), James Gossell (2017), and Michele Houtappels (2019).
- ◇ Oral exam/Ph.D. thesis committees for Rahul Ajit, Nikolas Aksamit, Matteo Altavilla, Andrew Bydlon, Javier Carvajal-Rojas, Donald Chacon-Taylor, Erin Chamberlain, Kei Yuen Chan, Julian Chan, Trung Chau, Chih-Chieh Chen, Kevin Childers, Omprokash Das, Trung Dinh, Pinches Dirnfeld, Veronika Ertl, James Farre, Stefano Filipazzi, Matt Housley, John Hull, Yoshihiro Iwao, Jack Jeffries, Xiaodong Jiang, Casey Johnson, Antonia Kekkou, Jennifer Kenkel, Christian Klevdal, Hankun Ko, Chung Ching Lau, Seungsu Lee, Janina Letz, Haydee Lindo, Ruyi Ma, Dapeng Mu, Vaibhav Pandey, Marin Petkovic, Marcus Robinson, Sandra Rodríguez, Franco Rota, Allechar Serrano Lopez, Daniel Smolkin, Robbie Snellman, Qiang Song, Sam Swain, Ben Trahan, Jason Underdown, Yohsuke Watanabe, Ziwen Zhu, and Dylan Zwick.

Miscellaneous

- ◇ Summer Graduate Schools Committee, Mathematical Sciences Research Institute, Berkeley, 2016–19.
- ◇ Mathematics Department Advisory Committee (since 2021), Indian Institute of Technology, Jammu.
- ◇ Scientific Committee (since 2021), Virtual Commutative Algebra Seminar, Indian Institute of Technology, Bombay.