

# VAIBHAV PANDEY

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<https://vaibhav-pandey1.github.io/>

## ACADEMIC APPOINTMENTS

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<b>Indian Institute of Technology Madras</b> Assistant Professor	May 2026–
<b>Purdue University</b> Golomb Visiting Assistant Professor	August 2023–May 2026
<b>University of Genova</b> INdAM Visiting Fellow	June 2023–July 2023
<b>Purdue University</b> Visiting Assistant Professor	August 2022–May 2023

## EDUCATION

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<b>University of Utah</b> , Salt Lake City Department of Mathematics Ph.D. in Mathematics (Advisor: Professor Anurag K. Singh) Dissertation: <a href="#">Dependence of local cohomological dimension on characteristic, and consequences</a>	August 2017–August 2022
<b>National Institute of Science Education and Research</b> , Bhubaneswar School of Mathematical Sciences Integrated M.Sc. in Mathematics (BS+MS equivalent)	August 2011–July 2016

## RESEARCH PAPERS

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### Published/Accepted:

- 8 “Bounds on the plus-pure thresholds of some hypersurfaces in (ramified) regular rings” (with Marta Benozzo, Vignesh Jagathese, Pedro Ramírez-Moreno, Karl Schwede, and Prashanth Sridhar); to appear in **Mathematische Zeitschrift** (22 pp.) [[arXiv](#)].
- 7 “The arithmetic rank of the residual intersections of a complete intersection ideal” (with Manav Batavia, Kesavan Mohana Sundaram, and Taylor Murray); to appear in **International Mathematics Research Notices** (20 pp.) [[arXiv](#)].
- 6 “On the natural nullcones of the symplectic and general linear groups” (with Yevgeniya Tarasova and Uli Walther); **Journal of the London Mathematical Society**, Volume 111 (2025), no.3, Paper No. e70078 (31 pp.) [[arXiv](#)][[journal](#)].
- 5 “Linkage and  $F$ -regularity of determinantal rings” (with Yevgeniya Tarasova); **International Mathematics Research Notices**. Volume 11 (2024), pp. 9323–9339 [[arXiv](#)][[journal](#)].
- 4 “Counting geometric branches via the Frobenius map and  $F$ -nilpotent singularities” (with Hailong Dao and Kyle Maddox); **Nagoya Mathematical Journal**. Volume 255 (2024), pp. 724–741 [[arXiv](#)][[journal](#)].
- 3 “When are the natural embeddings of classical invariant rings pure?” (with Melvin Hochster, Jack Jeffries, and Anurag K. Singh); **Forum of Mathematics, Sigma**. Volume 11 (2023), Paper No. e67 (43 pp.) [[arXiv](#)][[journal](#)].
- 2 “Homological properties of pinched Veronese rings” (with Kyle Maddox); **Journal of Algebra**, Volume 614 (2023), pp. 307–329 [[arXiv](#)][[journal](#)].

- 1 “Cohomological dimension of ideals defining Veronese subrings”; **Proceedings of the American Mathematical Society**, Volume 149, no. 4 (2021), pp. 1387–1393 [[arXiv](#)][[journal](#)].

### Preprints:

- 3 “The arithmetic rank of determinantal nullcones” (with Jack Jeffries, Anurag K. Singh, and Uli Walther); 53 pp. [[arXiv](#)].
- 2 “Symbolic powers of the generic linkage of maximal minors” (with Matteo Varbaro); 25 pp. [[arXiv](#)].
- 1 “ $F$ -purity and the  $F$ -pure threshold as invariants of linkage”; 23 pp. [[arXiv](#)].

### Undergraduate Research:

- 2 “A Dedekind domain with nontrivial class group” (with B. Sury and Sagar Shrivastava); **The American Mathematical Monthly**, Volume 125, pp. 356–359, (2018) [[arXiv](#)][[journal](#)].
- 1 “On the prime ideals of  $C[0, 1]$ ”; **Resonance**, Indian Academy of Sciences, Volume 2, Number 5, pp. 439–446 (2016) [[arXiv](#)][[journal](#)].

## AWARDS AND GRANTS

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- 2026 Excellence in Postdoctoral Mentoring Award – College of Science, Purdue University
- AMS–Simons Travel Grant (2023–2025)
- INdAM Visiting Professor Grant (Summer 2023)
- Summer Research Fellowship, University of Utah (Summer 2020)
- Student Travel Grant, University of Utah (Summer 2019 and Summer 2022)
- INSPIRE Fellowship, Government of India (2011–2016)

## TEACHING

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### Purdue University:

- Fall 2022, 2023, 2024, Spring 2023 : Linear Algebra (Math 265)
- Spring 2024 : Commutative Algebra 2 (Math 558)
- Spring 2025, Spring 2026 : Elementary Linear Algebra (Math 351)
- Fall 2025 : Ordinary Differential Equations (Math 266)

### University of Utah:

- Fall 2018, Spring 2019 : Business Algebra (Math 1090)
- Spring 2020 : Business Calculus (Math 1100)
- Summer 2020 : Linear Algebra (Math 2270)
- Fall 2020 : Discrete Mathematics (Math 2200)
- Summer 2021 : Applied Statistics (Math 3070)
- Fall 2021 : Calculus 1 (Math 1210)

## SERVICE

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- Co-organized [Algebra Across Time](#) (a conference in honor of Prof. Bill Heinzer) with Profs. Linquan Ma, Bernd Ulrich, and Uli Walther at Purdue University, April 2025.

- Co-organized a [Special Session on Commutative Algebra, D-modules, and Singularities](#) in Fall Central AMS Sectional Meeting, 2023 with Profs. Uli Walther and Claudia Miller.
- Co-organized [Purdue Commutative Algebra Seminar](#) (with Prof. Linqun Ma) in Fall 2023, Spring 2024, Fall 2024, Spring 2025, and (with Prof. Bernd Ulrich) in Fall 2025, Spring 2026.
- Co-organized [BRIDGES 2022](#) (Building Relationships for an Inclusive and Diverse Group of Emerging Students) at University of Utah.
- Teaching assistant for Prof. Eloísa Grifo in [Graduate Course in Tight Closure](#) conducted virtually by ICTP in Summer 2022.
- Referee for Bulletin of the London Mathematical Society, Collectanea Mathematica, Communications in Algebra, Épijournal de Géométrie Algébrique, Indian Journal of Pure and Applied Mathematics, International Mathematics Research Notices, Journal of Algebra, Journal of Pure and Applied Algebra\*, Mathematische Zeitschrift\*, Nagoya Mathematical Journal, Proceedings of the American Mathematical Society (\*= quick opinion).
- Organized BIKES: the Commutative Algebra Student Seminar at the University of Utah in Fall 2019 and Spring 2020.
- Student representative for RPT (reappointment, promotion, tenure) committee, Department of Mathematics, University of Utah, 2020.

## INVITED TALKS

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- RMS Conference, Manipal Institute of Technology-Bengaluru, July 2026
- AMS Spring Central Sectional, North Dakota State University, April 2026
- Commutative Algebra Seminar, University of Utah, April 2026
- Commutative Algebra Seminar, University of Michigan, October 2025
- AMS Fall Central Sectional, Saint Louis University, October 2025
- AMS Fall Southeastern Sectional, Tulane University, October 2025
- Singularities, D-modules, and Connections to Physics, BIRS, September 2025
- Algebra Seminar, IIT Bombay, August 2025
- Colloquium, IIT Gandhinagar, August 2025
- Commutative Algebra Seminar, University of Genova, June 2025
- Algebra Seminar, Auburn University, March 2025
- Algebra Seminar, ISI Bangalore, July 2024
- Algebra Seminar, IISc Bangalore, July 2024
- Algebra Seminar, IIT Madras, July 2024
- Algebra Seminar, IMSc, June 2024
- Local Rings and Singularities Conference, IIT Bombay, June 2024
- Algebra Seminar, IIT Bombay, July 2023
- Colloquium, IIT Bombay, July 2023
- Commutative Algebra Seminar, University of Genova, June 2023
- Algebra Seminar, University of Utah, March 2023

- Virtual Commutative Algebra Seminar, IIT Bombay, March 2023
- Algebra Seminar, University of Notre Dame, February 2023
- KUMUNU Conference, University of Nebraska–Lincoln, May 2022
- Algebra Seminar, IIT Delhi, April 2022
- Algebra Seminar, University of Illinois Chicago, February 2022
- CHAMP (online), November 2022
- AMS Sectional Meeting (online), November 2022
- Algebra Seminar, University of Nebraska–Lincoln, September 2021
- AMS Sectional Meeting (online), October 2020
- Algebra Seminar, Purdue University, March 2020