VAIBHAV PANDEY

(pandey94@purdue.edu)

ACADEMIC POSITIONS

Purdue University August 2023 — Present
Golomb Visiting Assistant Professor
Department of Mathematics

University of Genova June 2023 — July 2023
INdAM Visiting Fellow
Dipartimento di Matematica

Purdue University August 2022 — May 2023
Visiting Assistant Professor
Department of Mathematics

EDUCATION

University of Utah August 2017 — July 2022
(Salt Lake City, USA)
Ph.D, Mathematics
Thesis advisor: Professor Anurag K. Singh (http://www.math.utah.edu/~singh/)
Dissertation – Dependence of local cohomological dimension on characteristic, and consequences

**National Institute of Science Education
and Research** (Bhubaneswar, India) August 2011 — July 2016
Integrated Master of Science (BS+MS equivalent), Mathematics

RESEARCH PAPERS

Preprints:

3   "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); 22 pp. https://arxiv.org/abs/2509.07217.

2   "Symbolic powers of the generic linkage of maximal minors" (with Matteo Varbaro); preprint, 25 pp. https://arxiv.org/abs/2412.11235.

1   "F-purity and the F-pure threshold as invariants of linkage"; preprint, 23 pp. https://arxiv.org/abs/2406.05323.

Published/Accepted:

8   "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). https://arxiv.org/abs/2310.01816.

7   "Linkage and F-regularity of determinantal rings" (with Yevgeniya Tarasova); **International Mathematics Research Notices**. Voume 11 (2024), pp. 9323–9339. https://arxiv.org/abs/2211.07922.

6   "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). https://arxiv.org/abs/2210.09351.

5 "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. https://arxiv.org/abs/2303.16398.

4 "Homological properties of pinched Veronese rings" (with Kyle Maddox); **Journal of Algebra**, Volume 614 (2023), pp. 307–329. https://arxiv.org/abs/2111.05810.

3 "Cohomological dimension of ideals defining Veronese subrings"; **Proceedings of the American Mathematical Society**, Volume 149, no. 4 (2021), pp. 1387–1393. https://arxiv.org/abs/2005.03250.

2 "A Dedekind domain with nontrivial class group" (with B. Sury and Sagar Shrivastava); **The American Mathematical Monthly**, Volume 125, pp. 356–359, (2018). https://arxiv.org/abs/1612.02919.

1 "On the prime ideals of $C[0,1]$"; **Resonance**, Indian Academy of Sciences, Volume 2, Number 5, pp. 439–446 (2016). https://www.ias.ac.in/article/fulltext/reso/021/05/0439-0446.

AWARDS AND GRANTS

1. AMS–Simons Travel Grant 2023–2025.

2. INdAM Visiting Professor Grant, Summer 2023 (to visit University of Genova, Italy).

3. Summer Research Fellowship, University of Utah, Summer 2020.

4. Student Travel Grant, University of Utah, Summer 2019 and Summer 2022.

5. INSPIRE Fellowship, Government of India, 2011–2016.

TEACHING

At Purdue University **(Instructor of Record)** –

1. Fall 2022, 2023, 2024, Spring 2023 : Linear Algebra (Math 265)

2. Spring 2024 : Commutative Algebra 2 (Math 558)

3. Spring 2025 : Elementary Linear Algebra (Math 351)

4. Fall 2025 : Ordinary Differential Equations (Math 266)

At University of Utah **(Instructor of Record)** –

1. Fall 2018, Spring 2019 : Business Algebra (Math 1090)

2. Spring 2020 : Business Calculus (Math 1100)

3. Summer 2020 : Linear Algebra (Math 2270)

4. Fall 2020 : Discrete Mathematics (Math 2200)

5. Summer 2021 : Applied Statistics (Math 3070)

6. Fall 2021 : Calculus 1 (Math 1210)

Lab instruction –

1. Fall 2017 : Differential Equations and Linear Algebra (Math 2250)

2. Spring 2018 : Engineering Calculus 2 (Math 1320)

3. Fall 2020 : Teaching assistant for Graduate Algebra 1 (Math 6310)

Teaching outreach –

1. Teaching assistant for Pre-REU on Dynamical Systems run by Kurt Vinhage and held at the University of Utah in Summer 2022. The aim was to introduce discrete dynamical systems and proof writing to undergraduates.

2. Teaching assistant for the *Summer High School Program* run by Stefan Patrikis and held at the University of Utah in Summer 2019. The aim was to introduce Number Theory to high school students.

3. Co-organized the *Graduate Teacher Training Program* in Fall 2021 at the University of Utah. This week-long program is designed to train the incoming graduate students and postdoctoral fellows to improve their teaching and lab instruction skills, learn and understand issues pertaining to equity, diversity and inclusivity in Mathematics, and get accustomed to the department culture.

SERVICE

1. 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.

2. 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.

3. Co-organized Purdue Commutataive Algebra Seminar (with Prof. Linquan Ma) in Fall 2023, Spring 2024, Fall 2024, Spring 2025, and (with Prof. Bernd Ulrich) in Fall 2025.

4. Co-organized BRIDGES 2022 (Building Relationships for an Inclusive and Diverse Group of Emerging Students).

5. Teaching assistant for Prof. Eloísa Grifo in Graduate Course in Tight Closure conducted virtually by ICTP in Summer 2022.

6. Referee for Bulletin of the London Mathematical Society, Collectanea Mathematica, Communications in Algebra, International Mathematics Research Notices, Journal of Algebra, Journal of Pure and Applied Algebra, Mathematische Zeitschrift, Nagoya Mathematical Journal, Proceedings of the American Mathematical Society.

7. Organized BIKES: the Commutative Algebra Student Seminar at the University of Utah in Fall 2019 and Spring 2020.

8. Student representative for RPT (reappointment, promotion, tenure) committee, Department of Mathematics, University of Utah, 2020.

INVITED TALKS

1. Commutative Algebra seminar, University of Michigan. October 2025.

2. AMS Fall Central Sectional, St. Louis University. October 2025.

3. AMS Fall Southeastern Sectional, Tulane University. October 2025.

4. Singularities, D-modules, and Connections to Physics, BIRS (Banff). September 2025.

5. Algebra seminar, IIT Bombay. August 2025.

6. Colloquium, IIT Gandhinagar. August 2025.

7. Commutative Algebra seminar, University of Genova. June 2025.

8. Algebra seminar, Auburn University. March 2025.

9. Algebra seminar, ISI Bangalore. July, 2024.

10. Algebra seminar, IISc Bangalore. July 2024.

11. Algebra seminar, IIT Madras. July 2024.

12. Algebra seminar, IMSc Chennai. June 2024.

13. Local rings and singularities conference, IIT Bombay. June 2024.

14. Algebra seminar, IIT Bombay. July 2023.

15. Colloquium. IIT Bombay. July 2023.

16. Commutative Algebra seminar, University of Genova. June 2023.

17. Algebra seminar, University of Utah, Salt Lake City. March 2023.

18. Virtual Commutative Algebra Seminar, IIT Bombay (online). March 2023.

19. Algebra seminar, University of Notre Dame, South Bend. February 2023.

20. KUMUNU 2022, University of Nebraska, Lincoln. May 2022.

21. Colloquium, IIT Delhi. April 2022.

22. Algebra seminar, University of Illinois, Chicago (online). February 2022.

23. CHAMP (online). November 2022.

24. AMS Fall Southeastern sectional meeting (online). November 2022.

25. Algebra seminar, University of Nebraska–Lincoln. September 2021.

26. AMS Fall Eastern sectional meeting (online). October 2020.

27. Algebra seminar, Purdue University, West Lafayette. March 2020.