

CURRICULUM VITAE

DEBADITYA RAYCHAUDHURY

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CONTACT INFORMATION

Department of Mathematics,
University of Arizona,
617 N. Santa Rita Ave.,
Tucson, AZ 85721, USA

EMPLOYMENT

University of Arizona	Tucson, AZ, USA
<i>Postdoctoral Research Associate I</i>	2023 – Present
University of Toronto	Toronto, ON, Canada
<i>Postdoctoral Fellow</i>	2022 – 2023
The Fields Institute for Research in Mathematical Sciences	Toronto, ON, Canada
<i>Simons Postdoctoral Fellow</i>	2021 – 2022

EDUCATION

University of Kansas <i>Ph.D. in Mathematics</i>	Lawrence, KS, USA 2015 – 2021
<ul style="list-style-type: none">◦ THESIS: Projective Normality and Normal Presentation for Adjoint Linear Series on Minimal Varieties◦ ADVISOR: Purnaprajna Bangere	
University of Kansas <i>M.A. in Mathematics</i>	Lawrence, KS, USA 2015 – 2016
Chennai Mathematical Institute <i>M.Sc. in Mathematics</i>	Chennai, TN, India 2013 – 2015
Chennai Mathematical Institute <i>B.Sc. (Hons.) in Mathematics and Computer Science</i>	Chennai, TN, India 2010 – 2013

FELLOWSHIPS AND GRANTS

- **AMS-Simons Travel Grant - \$5000** 2024 - 2026
 - **PI on Conference Grant DMS-2412921 - \$15,000** 2024
National Science Foundation
 - **Simons Postdoctoral Fellowship** 2021 – 2022
Fields Institute for Research in Mathematical Sciences

RESEARCH INTERESTS

My research is focused on Algebraic Geometry. I am interested in Hodge theory and singularities in birational geometry, aCM and Ulrich bundles on projective varieties, positivity of linear series and syzygies of projective varieties, Fourier–Mukai transforms and generic vanishing theory, deformation theory and geometry of moduli spaces.

PUBLISHED AND ACCEPTED ARTICLES

16. A.F. Lopez, D. Raychaudhury. *Ulrich subvarieties and the non-existence of low rank Ulrich bundles on complete intersections.* **Trans. Amer. Math. Soc.**, to appear.
arXiv:2405.01154 [arXiv]
15. G.V. Ravindra, D. Raychaudhury. *Extendable codimension two subvarieties in a general hypersurface.* **Math. Z.**, to appear.
arXiv:2510.08108 [arXiv]
14. A.F. Lopez, D. Raychaudhury. *On partially ample Ulrich bundles.* **Adv. Geom.** vol. 25 (2025), no. 4, pp. 529–533.
DOI: 10.1515/advgeom-2025-0028 [journal] [arXiv]
13. P. Bangere, F. J. Gallego, J. Mukherjee, D. Raychaudhury. *Construction of varieties of low codimension with applications to moduli spaces of varieties of general type.* **J. Lond. Math. Soc.** (2) 110 (2024), no. 6, Paper No. e70030, 48 pp.
DOI: 10.1112/jlms.70030 [journal] [arXiv]
12. S. Olano, D. Raychaudhury, L. Song. *Singularities of secant varieties from a Hodge theoretic perspective.* **Proc. Lond. Math. Soc.** (3) 129 (2024), no. 4, Paper No. e12635, 34 pp.
DOI: 10.1112/plms.12635 [journal] [arXiv]
11. V. Antonelli, G. Casnati, A.F. Lopez, D. Raychaudhury. *On varieties with Ulrich twisted conormal bundles.* **Proc. Amer. Math. Soc.** 152 (2024), no. 11, 4645–4658.
DOI: 10.1090/proc/16986 [journal] [arXiv]
10. D. Raychaudhury. *Continuous CM-regularity and generic vanishing with an appendix by A. Ito.* **Adv. Geom.** 24 (2024), no. 1, 19–37.
DOI: 10.1515/advgeom-2023-0028 [journal] [arXiv]
9. P. Bangere, J. Mukherjee, D. Raychaudhury. *Koszul property of Ulrich bundles and rationality of moduli spaces of stable bundles on Del Pezzo surfaces.* **Manuscripta Math.** 174 (2024), 847–874.
DOI: 10.1007/s00229-023-01530-2 [journal] [arXiv]
8. A.F. Lopez, D. Raychaudhury. *On varieties with Ulrich twisted tangent bundles.* **Ann. Mat. Pura Appl.** 203 (2024), 1159–1193.
DOI: 10.1007/s10231-023-01397-w [journal] [arXiv]
7. P. Bangere, F. J. Gallego, J. Mukherjee, D. Raychaudhury. *Deformations and moduli of irregular canonical covers with $K^2 = 4p_g - 8$.* **Rev. Mat. Complut.** 37 (2024), no. 2, 551–602.
DOI: 10.1007/s13163-023-00462-5 [journal] [arXiv]
6. P. Kundu, J. Mukherjee, D. Raychaudhury. *Tautological families of cyclic covers of projective spaces.* **Eur. J. Math.** 9 (2023), no. 4, Paper No. 118, 37 pp.
DOI: 10.1007/s40879-023-00703-3 [journal] [arXiv]
5. J. Mukherjee, D. Raychaudhury. *A note on stability of syzygy bundles on Enriques and bielliptic surfaces.* **Proc. Amer. Math. Soc.** 150 (2022), no. 9, 3715–3724.
DOI: 10.1090/proc/15934 [journal] [arXiv]
4. J. Mukherjee, D. Raychaudhury. *Smoothing of multiple structures on embedded Enriques manifolds.* **Math. Z.** 300 (2022), no. 2, 1241–1263.
DOI: 10.1007/s00209-021-02818-3 [journal] [arXiv]
3. P. Bangere, J. Mukherjee, D. Raychaudhury. *K3 carpets on minimal rational surfaces and their smoothings.* **Internat. J. Math.** 32 (2021), no. 6, 2150032, 20 pp.
DOI: 10.1142/S0129167X21500324 [journal] [arXiv]

2. J. Mukherjee, D. Raychaudhury. *Remarks on projective normality for certain Calabi–Yau and hyperkähler varieties.* **J. Pure Appl. Algebra** 224 (2020), no. 10, 106383, 19 pp.
 DOI: 10.1016/j.jpaa.2020.106383 [journal] [arXiv]
1. J. Mukherjee, D. Raychaudhury. *On the projective normality and normal presentation on higher dimensional varieties with nef canonical bundle.* **J. Algebra** 540 (2019), 121–155.
 DOI: 10.1016/j.jalgebra.2019.08.026 [journal] [arXiv]

PREPRINTS

5. A. Ito, J. Moraga, D. Raychaudhury, W. Yeong. *Hyperbolicity of adjoint linear series on varieties with positive tangent bundle.*
 (2025) arXiv:2511.20827 [arXiv]
4. A.F. Lopez, D. Raychaudhury. *A lower bound on the Ulrich complexity of hypersurfaces.*
 (2025) arXiv:2503.13396 [arXiv]
3. B. Dirks, S. Olano, D. Raychaudhury. *A Hodge theoretic generalization of \mathbb{Q} -homology manifolds.*
 (2025) arXiv:2501.14065 [arXiv]
2. S. Olano, D. Raychaudhury. *On the local cohomology of secant varieties.*
 (2024) arXiv:2407.16688 [arXiv]
1. A.F. Lopez, D. Raychaudhury. *Non-existence of low rank Ulrich bundles on Veronese varieties.*
 (2024) arXiv:2406.08162 [arXiv]

FUNDED COLLABORATIONS

- Collaborate@ICERM, *Noether-Lefschetz theory in higher codimensions* Jun. 2026
 (with R. Beheshti, A. Dhillon, A.F. Lopez, G.V. Ravindra and A. Tripathi)

SHORT RESEARCH VISITS

- Università degli Studi Roma Tre, Rome, Italy Sep. 2024
Visiting Angelo Felice Lopez
- University of Leiden, Leiden, The Netherlands Sep. 2024
Visiting Yajnaseni Dutta

INVITED TALKS

- ### CONFERENCES
- Boston College, Boston, MA Mar. 2026
 AMS 2026 Spring Eastern Sectional Meeting
 - *Special Session on Recent Developments in Algebraic Geometry and Commutative Algebra*
 - Saint Louis University, St. Louis, MO Oct. 2025
 AMS 2025 Fall Central Sectional Meeting
 - *Special Session on Commutative algebra, Hodge theory, Singularities*
 - Tulane University, New Orleans, LA Oct. 2025
 AMS 2025 Fall Southeastern Sectional Meeting
 - *Special Session on Syzygies and Local Cohomology in Commutative Algebra*

• University of Wisconsin–Madison, Madison, WI <i>Singularities in the Midwest, IX</i>	Apr. 2025
• University of Kansas, Lawrence, KS AMS 2025 Spring Central Sectional Meeting <ul style="list-style-type: none"> – <i>Special Session on Topics in Classical Algebraic Geometry</i> – <i>Special Session on Interplay between Birational Geometry, Complex Geometry and Hodge Theory</i> 	Mar. 2025
• University of California Riverside, Riverside, CA AMS 2024 Fall Western Sectional Meeting <ul style="list-style-type: none"> – <i>Special Session on Moduli</i> 	Oct. 2024
• Georgia Southern University, Savannah, GA (<i>Cancelled due to Hurricane Helene</i>) AMS 2024 Fall Southern Sectional Meeting <ul style="list-style-type: none"> – <i>Special Session on Topics in Commutative Algebra and Algebraic Geometry</i> 	Oct. 2024
• Canadian Mathematical Society Winter Meeting 2023, Montreal, QC <ul style="list-style-type: none"> – Session: <i>Algebraic, Arithmetic and Kähler Geometry: Recent developments</i> 	Dec. 2023
• University of Nebraska-Lincoln, Lincoln, NE (<i>Cancelled due to Covid-19</i>) <i>URiCA-KUMUNUjr</i>	Apr. 2020
• University of Illinois Chicago, Chicago, IL <i>Midwest Algebraic Geometry Graduate Conference (MAGGC)</i>	Mar. 2019

SEMINARS AND COLLOQUIA.....

• University of Washington, Seattle, WA <i>Algebra and Algebraic Geometry Seminar</i>	Dec. 2025
• University of Georgia, Athens, GA <i>Algebraic Geometry Seminar</i>	Nov. 2025
• Texas A&M University, College Station, TX <i>Geometry Seminar</i>	Oct. 2025
• Washington University, St. Louis, St. Louis, MO <i>Algebraic Geometry and Combinatorics Seminar</i>	Sep. 2025
• Harvard University, Cambridge, MA <i>Harvard–MIT Algebraic Geometry Seminar</i>	Sep. 2025
• Notre Dame University, Notre Dame, IN <i>Notre Dame Algebraic Geometry/Commutative Algebra Seminar</i>	Sep. 2025
• Arizona State University, Tempe, AZ <i>Number Theory and Algebra Seminar</i>	Mar. 2025
• Colorado State University, Fort Collins, CO <i>FRAGMENT Seminar</i>	Feb. 2025
• University of Leiden, Leiden, The Netherlands <i>Algebraic Geometry & Number Theory (AGNT) Seminar</i>	Sep. 2024
• Indian Institute of Science, Bengaluru, India <i>Algebra & Combinatorics Seminar</i>	Jun. 2024
• Chennai Mathematical Institute, Chennai, India <i>Mathematics Seminar</i>	Jun. 2024
• Indian Institute of Technology Bombay, Mumbai, India <i>Mathematics Seminar</i>	May 2024
• Oklahoma State University, Stillwater, OK	Apr. 2024

Department Colloquium

- Simon Fraser University, Burnaby, BC (Online)
SFU Number Theory and Algebraic Geometry (NTAG) Seminar Jan. 2024
- University of Arkansas, Fayetteville, AR
Algebra Seminar Oct. 2023
- University of Toronto, Toronto, ON
Algebraic Geometry Seminar Nov. 2022
- Queen's University, Kingston, ON
Algebra and Geometry Seminar Oct. 2022
- Fields Institute for Research in Mathematical Sciences, Toronto, ON
Fields Number Theory Seminar Oct. 2022
- Fields Institute for Research in Mathematical Sciences, Toronto, ON
Fields Postdoc Colloquium Jan. 2022

CONTRIBUTED TALKS

- University of Arizona, Tucson, AZ
Mathematics Colloquium: Featuring UA Math Postdocs Nov. 2024
- University of Arizona, Tucson, AZ
Algebraic Geometry Seminar Oct. 2023
- University of Arizona, Tucson, AZ
Algebraic Geometry Seminar Sep. 2023
- Fields Institute, Toronto, ON (Online)
GANITA Seminar Sep. 2021
- University of Illinois Chicago, Chicago, IL (Online)
Midwest Algebraic Geometry Graduate Conference (MAGGC) May 2020
- University of Kansas, Lawrence, KS
Geometry Seminar Nov. 2019
- University of Kansas, Lawrence, KS
Geometry Seminar Sep. 2018

POSTER PRESENTATIONS

- University of Michigan, Ann Arbor, MI
Singularities in Ann Arbor May 2024
- University of California, Davis, Davis, CA
Western Algebraic Geometry Symposium (WAGS) Apr. 2024
- Washington University, St. Louis, MO
Western Algebraic Geometry Symposium (WAGS) Nov. 2023
- Università degli Studi Roma Tre, Rome, Italy
Algebraic Geometry in Roma Tre Jun. 2022
(A conference on the occasion of Sandro Verra's 70(+2)-th birthday)
- University of Utah, Salt Lake City, UT
Western Algebraic Geometry Symposium (WAGS) Nov. 2019
- University of Arkansas, Fayetteville, AR
Southwest Local Algebra Meeting (SLAM) Feb. 2018

TEACHING EXPERIENCES

UNIVERSITY OF ARIZONA - INSTRUCTOR

- MATH 413/513 – Linear Algebra (Spring 2025)
- MATH 313 – Introduction to Linear Algebra (Spring 2024, Fall 2025)
- MATH 243 – Discrete Mathematics for Computer Science (Fall 2024)
- MATH 122B – First Semester Calculus (Fall 2023)

UNIVERSITY OF TORONTO - INSTRUCTOR.....

- MAT137 – Calculus with Proofs (Winter 2023)

UNIVERSITY OF KANSAS - INSTRUCTOR

- MATH 127 – Calculus III (Summer 2018)
- MATH 126 – Calculus II (Summer 2019)
- MATH 125/197 – Calculus I Enhanced (Spring 2018, 2020, 2021, Fall 2019)
- MATH 115 – Applied Calculus I (Fall 2015, 2016, Spring 2016)
- MATH 104 – Precalculus (Fall 2018)

UNIVERSITY OF KANSAS - RECITATION INSTRUCTOR

- MATH 126 – Calculus II (Spring 2019, Fall 2020)
- MATH 125 – Calculus I (Spring 2017, Fall 2017)

MENTORING EXPERIENCES

- Undergraduate Research Project (URA), University of Arizona (one student) Fall 2025
Topic: *Positivity of Curves on Algebraic Surfaces*

AWARDS AND HONORS

- *Postdoc Summer Grant* 2025
University of Arizona
- *Charles J. and Mary Pat Himmelberg Graduate Student Award* 2020
University of Kansas (awarded annually to outstanding mathematics graduate students)
- Nomination: *Florence Black Award for Excellence in Teaching* 2018, 2019, 2021
University of Kansas (an award limited to 5 nominees and 1 winner per year)
- *U.G. Mitchell Graduate Summer Scholarship* 2018, 2020
University of Kansas
- *Graduate Scholarship* 2013 – 2015
Chennai Mathematical Institute
- *INSPIRE Scholarship for Higher Education (SHE)* 2010 – 2013
Department of Science and Technology, Govt. of India

ORGANIZING

- *Special Session on Riemann-Hilbert and Singularities of Algebraic Varieties* Mar. 2026
AMS 2026 Spring Eastern Sectional, Boston College, Boston, MA

- *Western Algebraic Geometry Symposium (WAGS)* Nov. 2024
University of Arizona, Tucson, AZ
- *Commutative Algebra and Algebraic Geometry in TUCSON (CAAGTUS)* May 2024
University of Arizona, Tucson, AZ
- *Algebraic Geometry Seminar* 2023 – 2025
University of Arizona, Tucson, AZ
- *Geometry Seminar* 2019 – 2021
University of Kansas, Lawrence, KS
- *Graduate Student Organization (GSO) Seminar* 2019 – 2020
University of Kansas, Lawrence, KS

REFEREEING AND REVIEWING

- REFEREE: *Communications in Algebra, Journal of Algebra, Journal of Pure and Applied Algebra, Journal de l'École polytechnique – Mathématiques, Rendiconti del Seminario Matematico (Univ. Pol. Torino)*
- REVIEWER: *Mathematical Reviews (MathSciNet), zbMATH*

PARTICIPATION IN SPECIAL PROGRAMS

- *2025 Summer Research Institute in Algebraic Geometry* Jul. 2025
Colorado State University, Fort Collins, CO
- *Workshop on higher Du Bois and higher rational singularities* Oct. 2024
American Institute of Mathematics, Pasadena, CA
- *Singularities in Ann Arbor* May 2024
University of Michigan, Ann Arbor, MI
- *Workshop on Lefschetz Properties in Algebra, Geometry, Topology and Combinatorics* May 2023
Fields Institute, Toronto, ON
- *Birational Complexity of Algebraic Varieties* Dec. 2022
Simons Center for Geometry and Physics, Stony Brook, NY
- *MPS Conference on Higher Dimensional Geometry* Feb. 2022
Simons Center for Geometry and Physics, Stony Brook, NY
- *Hodge Theory, Moduli and Representation Theory* Aug. 2017
Stony Brook University, Stony Brook, NY

SERVICE AND OUTREACH

- Mentor for Undergraduate Teaching Assistant Program (UTA), University of Arizona Fall 2024
- Secretary of Graduate Student Organization, University of Kansas 2019 – 2020

MEMBERSHIPS

- Member of the American Mathematical Society

PROGRAMMING LANGUAGES

C++, Python, Haskell, Java, Mathematica

(November 26, 2025)