

# Sarasij Maitra

## Curriculum Vitae

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### Education

- 2022–present **Postdoctoral Researcher/Lecturer**, *University of Utah*.
- 2016–2022 **PhD in Mathematics**, *University of Virginia*.
- 2014–2016 **M.Math**, *Indian Statistical Institute*, Kolkata.
- 2011–2014 **B.Math**, *Indian Statistical Institute*, Bangalore.

### Papers and Preprints

- **Extremal behavior of reduced type of one dimensional rings** with V. Mukundan (Submitted)
- **Valuations and Nonzero Torsion in Module of Differentials** with V. Mukundan; *Bulletin des Sciences Mathématiques*, Volume 187, October 2023, 103287
- **Partial Trace Ideals, Torsion and Canonical Module**; (Submitted)
- **Torsion in Differentials and Berger's Conjecture** with C. Huneke and V. Mukundan; *Res Math Sci* 8, 60 (2021)
- **Traceable PRFs: Full Collusion Resistance and Active Security** with D. J. Wu; **PKC 2022**
- **Finding Points On Varieties with MACAULAY2** with S. Bisui, T. T. Nguyễn, Z. Jiang and K. Schwede (To appear in the *Journal of Software for Algebra and Geometry*)
- **On Reflexive and  $I$ -Ulrich Modules over Curve Singularities**, with H. Dao and P. Sridhar; *Trans. Amer. Math. Soc. Ser. B* 10 (2023), 355–380
- **Partial Trace Ideals and Berger's Conjecture**; *Journal of Algebra*, 598: 1–23, 2022.

### Awards and Achievements

- **The Joint Mathematics Meetings 2022 Travel Grant** (Later shifted to a virtual venue)
- **Jefferson Scholars Foundation Research Prize, 2021.**
- **All-University Graduate Teaching Award, University of Virginia, 2019–2020.**
- (2019) Travel Grant for Mathematical Sciences Research Institute 883 Commutative Algebra and its Interaction with Algebraic Geometry.
- 1<sup>st</sup> Division with Distinction in M. Math.
- 1<sup>st</sup> Division with Distinction in B. Math.

## Software

- *RandomPoints*, (Macaulay 2), with S. Bisui, T. T. Nguyễn, Z. Jiang, K. Schwede.
- *SwitchingFields*, (Macaulay 2), with Z. Jiang.

## Invited Talks and Poster Presentations

- April 2023 **On the reduced type of one dimensional analytic  $k$ -algebras.**  
Morgantown Algebra Days (MAD), West Virginia University
- April 2023 **The Frobenius Problem.**  
MathCircle, Salt Lake City, University of Utah
- February 2023 **Frobenius Problem and Numerical Semigroup Rings.**  
Math for All, Salt Lake City, University of Utah
- February 2023 **Module of Differentials and Berger's Conjecture.**  
Algebra Seminar, University of Georgia
- October 2022 **Discussions on Berger's Conjecture.**  
Commutative Algebra Seminar, University of Utah
- April 2022 **Notes On Berger's Conjecture.**  
Graduate Seminar, University of Virginia
- April 2022 **On Reflexive and  $I$ -Ulrich Modules, AMS Special Session on Commutative Algebra,** Joint Mathematics Meetings.
- March 2022 **Torsion in Module of Differentials, Special Session on Recent Developments in Commutative Algebra,** AMS Spring Central Sectional Meeting at Purdue University, West Lafayette, IN.
- March 2022 **Traceable PRFs: Full Collusion Resistance and Active Security (Upcoming).**  
PKC, Japan (virtual)
- January 2022 **Partial Trace Ideals and Berger's Conjecture.**  
Virtual Commutative Algebra Seminar, University of Illinois at Chicago
- April 2021 **Discussions on  $I$ -Ulrich Modules.**  
Virtual Commutative Algebra Seminar, Purdue University
- April 2021 **An Introduction To Gröbner Bases, (Joint Talk with Stephanie Shand).**  
Graduate Seminar, University of Virginia
- February 2021 **Discussions on  $I$ -Ulrich Modules.**  
Algebra Seminar, West Virginia University
- January 2021 **Discussions on Berger's Conjecture.**  
Joint Mathematics Meetings
- October 2020 **A Study of Colength in Dimension One.**  
Commutative and Homological Algebra Market Presentations (CHAMP)
- June 2020 **Poster: An Approach to Berger's Conjecture.**  
Early Commutative Algebra Researchers (eCARs)
- June 2020 **A Simple Study of Colength.**  
Graduate Student Seminar, New Mexico State University

March 2020 **"Berger's Conjecture from the Viewpoint of an Invariant of the Module of Differentials"–An Approach to Berger's Conjecture.**  
A Zoom Session on Commutative Algebra

## Conferences Organized

October 2022 **AMS Special Session on Building Bridges Between Commutative Algebra and Nearby Areas**, *Fall Western Sectional Meeting*, University of Utah, Co-organizers: J. Cameron, T. Tribone.

## Teaching

Spring 2023 **Assistant Professor (Lecturer)**, *University of Utah*.

MATH 3150-004 PDE's for Engineers

Fall 2022 **Assistant Professor (Lecturer)**, *University of Utah*.

MATH 1321-001 Accelerated Engineering Calculus II

Spring 2022 **Graduate Teaching Instructor**, *University of Virginia*.

MATH 1310-400 Calculus I (Flipped Model)

Fall 2021 **Graduate Teaching Instructor**, *University of Virginia*.

MATH 1410-001 Financial Mathematics

Fall 2020 **Graduate Teaching Instructor**, *University of Virginia*.

MATH 1320-200 Calculus II (Online Flipped Model)

Fall 2019 **Graduate Teaching Instructor**, *University of Virginia*.

MATH 1310-001 Calculus I (Flipped Model)

Spring 2019 **Graduate Teaching Instructor**, *University of Virginia*.

MATH 1220-009 A Survey of Calculus II

Spring 2018 **Graduate Teaching Instructor**, *University of Virginia*.

MATH 1210-008 A Survey of Calculus I

Fall 2017 **Graduate Teaching Instructor**, *University of Virginia*.

MATH 1210-007 A Survey of Calculus I

Spring 2017 **Graduate Teaching Assistant**, *University of Virginia*.

MATH 1310-100 Calculus I, MATH 3250-300 Ordinary Differential Equations

Fall 2016 **Graduate Teaching Assistant**, *University of Virginia*.

MATH 1310-500, MATH 1310-700 Calculus I

## Service

- High School Sectional Leader, Mathcircle University of Utah, Spring 2023
- Reviewer for various mathematics journals
- Graduate Teaching Mentor at the University of Virginia, 2020-2021
- AWM Mentor at the University of Utah, 2022-2023

## Memberships

- Association for Women in Mathematics (AWM)

- American Mathematical Society (AMS)

## Other Projects

- Jan - May, 2016 Project on *Bargaining Games with Time-Independent and Time-Dependent Preferences* under Prof. Souvik Roy of Indian Statistical Institute, Kolkata. [[Project Report](#)]
- Dec, 2014 Reading Project on *Hopf Algebra* under Prof. Jyotishman Bhowmick of Indian Statistical Institute, Kolkata.
- May - July, 2013 Indian Academy of Sciences Summer Project on *Algebraic Geometry* under Prof. Kapil Hari Paranjape at Indian Institute of Science Education and Research, Mohali. [[Project Report](#)]

## Skills

- Language English, Bengali, Hindi
- Skills
- Technologies Working knowledge of Macaulay 2,  $\text{\LaTeX}$ , Python, R, HTML, MATLAB