ARNAJA MITRA

PhD Student of Mathematics

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Y @ArnajaMitra

Education

August 2019 - present

• PhD in Mathematics

The University of Texas at Dallas

Richardson, Texas, USA

GPA: 3.797/4

May 2016 - April 2018

 M.Sc in Mathematics

Savitribai Phule Pune University (Formerly Known: The University of Pune)

Pune, Maharashtra, India

GPA: 9.9/10

June 2013 - April 2016

• B.Sc three years Honours Degree in Mathematics

The University of Burdwan, Hooghly Mohsin College

Chinsurah, Hooghly, West Bengal, India

 $\mathsf{GPA}:83.5\%$

Research Area

• **Equivariant Hopf bifurcation in abstract Hilbert space**

Supervised by late Prof. Zalman Balanov (2020-June 2022) and supervising by Prof. Dmitry Rachinskiy (2020present) and by Prof. Wieslaw Krawcewicz (June 2022-present).

Research Interest

- Applied Mathematical Modeling
- **Bifurcation Problems**
- Ø Dynamical Systems
- Monlinear Analysis

Honors and Awards

• PhD

The Mei Lein Fellowship (May 2021)

Tearly-career AMS-NSF-Simons-ICM Travel Grant (Jan 2022)

Tulia Williams Van Ness Merit Scholarship (Jul 2022)

Honors and Awards (continued)

• **M.Sc**

Ranked 1 across the Savitribai Phule Pune University and received three gold medals and other prizes.

- Tate Principal Ranglar Gopalkrishna Laxman Chandratraya Gold Medal (Jan 2020)
- T Late Shri Damodar Ganesh Ramadasi Gold Medal (Jan 2020)
- Pandit G.M. Joshi Memorial Gold Medal (Jan 2020)
- The Lokmanya Tilak (Mathematics) Prize (Aug 2020)
- The Indian Mathematical Conference Poona, Golden Jubilee Prize (Aug 2020)
- The Prof. M.K.Agarwal M.A/M.Sc. Mathematics Prize (Aug 2020)
- Twrangler Paranjape Mathematics Prize (Aug 2020)

Ranked 1 in the Hooghly Mohsin College and 3 across the University of Burdwan.

- **P** Rani Katyayani Memorial Medal (Sep 2019)
- Tinnovation in science Pursuit for Inspired Research Scholarship

Department of Science and Technology, India Received for five consecutive years from B.Sc to M.Sc (2013-2018)

Projects

• 🕜 Oscillatory Instabilities In Frictional Granular Matter

The University of Texas at Dallas (Fall 2020)

Obtained a result which provided a clear mechanism for the self amplification of small perturbations, it was relevant to the physics of earthquakes.

• 🗹 Equivariant Global Hopf Bifurcation in Abstract Nonlinear Parabolic Equations

The University of Texas at Dallas (Fall 2021 - present)

Developed an equivariant degree based methods for equations in abstract Hilbert spaces allowing to study the symmetric Hopf bifurcation in systems of both FDEs and PDEs without typical smoothness and genericity restrictions of the classical methods. Many problems in population dynamics, neural networks, fluid dynamics, solid mechanics, elasticity, chemistry, electrical engineering, etc., lead to studying the Hopf bifurcation in networks of identical oscillators coupled symmetrically or in systems of PDEs defined on symmetric domains (Will be submitted soon as a research paper).

Research Talk

Dec 20, 2021

• A Mathematics Graduate Students Workshop The University of Texas at Dallas Organized by prof. Oleg Makarenkov

Conferences and Workshops Attended

• International Workshop on Applications of Geometric Methods of Functional May 3 - 5, 2022

The University of Texas at Dallas

• Celebration for Women in Mathematics (Virtual) May 12, 2022 **Mathematical Science Research Institute**

May 16 - 20, 2022The University of Texas at Dallas

Conferences and Workshops Attended (continued)

Jul 6 - 14, 2022

International Mathematical Union

A honor to get a chance as an early career mathematician to join ICM 2022 in person but held virtually due to circumstances.

March 4 - 5, 2023

• Texas Women in Math Symposium 2023 (TWIMS 2023)
The University of Texas at Austin

Service Activities

May 2021

• UTD/UTSW C19VacVolunteer

The University of Texas at Dallas

Davidson-Gundy Alumni Center

Nov 6, 2021

• 🔲 Invited to Assist NSM Dean's Thanksgiving Alumni event

The University of Texas at Dallas

Organized by Natural Science and Mathematics Dean's Office

May 3 - 5, 2022

• International Workshop on Applications of Geometric Methods of Functional Analysis (Volunteered)

The University of Texas at Dallas

In cooperation with Association for Women in Mathematics and sponsored by the National Science Foundation and the University of Texas at Dallas, organized by Late prof. Zalman Balanov, prof. Lorena Bociu, prof. Katy Craig, prof. Akif Ibragimov, prof. Mihaela Ignatova, prof. Alexander Krasnosel'skii, prof. Wieslaw Krawcewicz, prof. Oleg Makarenkov, prof. Dmitriy Rachinskiy

May 16 - 20, 2022

Special Metrics in Complex Geometry (Volunteered)

The University of Texas at Dallas

Sponsored by the National Science Foundation and the University of Texas at Dallas, organized by prof. Ronan Conlon, prof. Hans-Joachim Hein, prof. Song Sun, prof. Gábor Székelyhidi

October 2022-present

The University of Texas at Dallas

Assisting events on STEAM, discussions, and conversions of roles and contributions of women in STEAM

November 2022-present

• Sommiloni of Bengali Students (Committee Chair)

The University of Texas at Dallas

Organize bengali events and promote bengali culture

Professional Affiliation

2021 - present

• American Mathematical Society

2021 - present

• Association for Women in Mathematics

Society for Industrial and Applied Mathematics

Summer 2022 - present

● □ Women in STEAM, Living Learning Community

The University of Texas at Dallas

Employment History

June 2018 - July 2019

• **Private Tutor:** Tutored math for undergrad STEM students, total 18 students.

May 2019 - July 2019

• Math Lecturer: Hooghly Mohsin College, West Bengal, India.

Graph Theory

Employment History (continued)

August 2019 - present

- **Teaching Assistant:** The University of Texas at Dallas, Texas, USA.
 - Calculus of Several Variable (MATH 2415), Teaching (Fall 2019)
 - Integral Calculus (MATH 2414), Teaching (Spring 2020)
 - Applied Calculus 1 (MATH 1325), Teaching (Summer 2020)
 - Linear Algebra (MATH 2415), Teaching (Fall 2020, Spring 2021)
 - Differential Equations (MATH 2420), Teaching (Fall 2021, Spring 2022)
 - Calculus 2 (MATH 2419), Teaching (Fall 2022)
 - Precalculus (MATH 2415), Grading (Fall 2019)
 - College Algebra (MATH 1314), Grading (Fall 2020, Fall 2021)
 - Trigonometry (MATH 1316), Grading (Fall 2020)
 - Real Analysis (MATH 6301), Grading (Fall 2022)
 - Nonlinear Analysis 1 (MATH 6325), Grading (Fall 2022)
 - Discrete Mathematics and Combinatorics (MATH 3315), Grading (Spring 2023)
 - Differential Geometry (MATH 3380), Grading (Spring 2023)

Courses During B.Sc, M.Sc, PhD

- Completed
 - 📕 Advanced Calculus, Algebra, Analytic Geometry and Vector Analysis, Applied Dynamical Systems
 - Boundary Value Problem, Combinatorics, Complex Analysis, Computer Fundamentals (Fortran 77)
 - E Differential Calculus, Differential Equations, Differential Equations and Dynamical Systems, Differential Geometry, Dynamics of a particle and of a Rigid body
 - Field Theory, Functional Analysis, Graph Theory, Hydrostatics
 - Integral Calculus, Integral Equations and Transforms, Lattice Theory, Linear Algebra, Linear Programming and Game Theory
 - Mathematical Probability and Statics, Measure and Integration, Metric Spaces, Nonlinear Analysis, Numerical Analysis
 - Partial Differential Equations, Real Analysis, Ring Theory
 - El Stability and Bifurcation Switch Systems, Stochastic Dynamic Programming, Tensor Caculus, Topological and Algebraic Methods, Topology

Additional Certification Courses

- Completed
 - ☐ Introduction to Programming with Matlab

Issued by Coursera

- Attending
 - The Complete Python Pro Bootcamp for 2023

By Udemy

Python for Data Science and Machine Learning Bootcamp

By Udemy

Skills

- - **▲** English (Professional)
 - Az Bengali (Native)

Skills (continued)

•	□ Programming Languages
	Mathematica
	Matlab
	Python
	R
•	☐ Miscellaneous
•	
•	☐ Miscellaneous ☐ Gap ☐ LaTeX
•	□ Gap