

Aprameya Girish Hebbar

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Areas of Interest Partial Differential Equations & Geometric analysis, specifically, Geometric flows.

Education *Doctor of Philosophy in Mathematics* Sep 2023 - (expected) 2028
PhD Candidate under the guidance of Dr. Nataša Šešum
Rutgers, The State University Of New Jersey, New Brunswick
Current GPA: 4.0/4.0

MS in Mathematics Sep 2023 - Oct 2025
Rutgers, The State University Of New Jersey, New Brunswick
CGPA: 4.0/4.0

Bachelor of Mathematics (Hons.) Dec 2020 - May 2023
Indian Statistical Institute (ISI), Bangalore Center
Average Grade: 95.47%

Preprints

1. Hebbar, Aprameya Girish.; Shao, Guanhua; Sun, Qi. Immortal Curve Shortening Flow on Analytic Surfaces, arXiv preprint, [arxiv:2609.10197](https://arxiv.org/abs/2609.10197).
2. Hebbar, Aprameya Girish. κ -solutions with the round cylinder as an asymptotic shrinker, arXiv preprint, [arXiv:2605.14905](https://arxiv.org/abs/2605.14905), submitted.
3. Hebbar, Aprameya Girish; Šešum, Nataša. Asymptotic Geometry of Four-Dimensional Steady Solitons, arXiv preprint, [arXiv:2603.21397](https://arxiv.org/abs/2603.21397), submitted.

Workshops & Conferences Attended

- *Graduate Student Topology and Geometry Conference 2026* Rutgers University, New Brunswick (Apr 24 - 26, 2026).
- *Bloomington Geometry Workshop 2026* Indiana University, Bloomington (Apr 17 - 19, 2026).
- *Courant-Rutgers Geometric Analysis Workshop 2026*, Rutgers University, New Brunswick, New Jersey (Jan 15 - 16, 2026).
- *Texas Topology and Geometry Conference (TGTC)*, UT Dallas, Texas (Nov 7 - 9, 2025).
- *Rutgers Gauge Theory, Low-Dimensional Topology, and Geometric Analysis Conference 2025*, Rutgers University, New Brunswick, New Jersey (May 19 - 20, 2025).
- *Simons Workshop on Geometric Analysis at Courant*, New York, (Courant Institute of Mathematical Sciences New York University) (May 9 - 11, 2025).
- *Recent progress on geometric analysis and Riemannian geometry*, Berkeley, California, organized by SLMATH (Simons Laufer Mathematical Sciences Institute) (Oct 21 - 25, 2024).
- *Special Geometric Structures and Analysis*, St. Mary's College, Moraga, California, organized by SLMATH (Jun 17 - 28 2024).
- *Rutgers Gauge Theory, Low-Dimensional Topology, and Geometric Analysis Conference 2024*, Rutgers University, New Brunswick, New Jersey (May 13 - 17 2024).

Talks

Research talks

- *Four-dimensional steady solitons* at Geometric Analysis seminar, Rutgers University (Sept 2026).
- *Geometry of 4D steady solitons* at Graduate student topology and geometry conference at Rutgers University (Apr 2026).

Expository talks

- *Metric Flows as Weak Ricci Flow: Heat Kernels, $\mathbb{F}$ -convergence and Compactness* at the Graduate student ∇ seminar at Rutgers University (Feb 2026).
- *Rotational symmetry in Riemannian manifolds* at the Graduate student ∇ seminar at Rutgers University (Oct 2025).
- *Nash estimates for Parabolic Equations*, part of PDEs II course at Rutgers University (Apr 2025)
- *Blow up of mean curvature in Mean Curvature Flow*, part of Mean Curvature Flow course at Rutgers University (Apr 2025)
- *The Li-Yau Harnack inequality* at the Graduate student ∇ seminar at Rutgers University (Apr 2025).
- *Pseudo-differential operators and regularity for elliptic PDEs with smooth coefficients* at the Graduate student ∇ seminar at Rutgers University (Nov 2024).
- *Fundamental solutions and the Malgrange–Ehrenpreis theorem*, part of Functional Analysis II course at Rutgers University (Apr 2024).
- *Haar measures on locally compact topological groups* at Math Club, ISI Bangalore (Oct 2022).
- *Matrix Lie groups and Lie algebras* at Math Club, ISI Bangalore (Sep 2022).
- Presentations at IISc Bangalore (Jun - Jul 2022). A series of 3 talks:
 - (1) *Carleson’s Interpolation theorem*
 - (2) *Interpolating Sequences for Hilbert Spaces and their Multiplier Algebra*
 - (3) *The Inhomogeneous Cauchy–Riemann equations*
- *An Introduction to Module Theory* at Math Club, ISI Bangalore, as a part of foundation course series.
- *Calculus from the Beginning*, on the history of Real Analysis aimed at high school students at LIMIT 2021, ISI Bangalore.

Teaching Experience

- *Mentorship*
Directed Reading Program (DRP) in Nonlinear ODEs and Chaos, Rutgers University, Spring 2026.
DRP in Differential geometry of curves and surfaces, Rutgers University, Fall 2025.
- *Teaching Assistant.*
Intro to Real Analysis, Spring 2026, Rutgers University.
Linear Algebra, Spring 2026, Rutgers University.
Calculus III, Fall 2025, Rutgers University.
Calculus I for Math and Physical Sciences, Fall 2024, Rutgers University.
- *Grading*
Introduction to Mathematical Reasoning, Spring 2024, Rutgers University.
Introduction to Mathematical Reasoning, Fall 2023, Rutgers University.
Introduction to Real Analysis I, Fall 2023, Rutgers University.

	• <i>Group reading supervision</i> Measure theory, Summer UGDRP 2022, ISI Bangalore.		
Services	• Co-organizer of the ▽ Seminar - Graduate Student Analysis Seminar at Rutgers University, Spring 2025 - now.		
Scholarships, Awards & Achievements	• Rutgers Academic Excellence Awards on performance in the written qualifying exam. • S. H. Aravind Gold Medal for outstanding performance in B. Math. (Hons.) programme 2020-23. • Secured All India Rank of 1560 in JEE Advanced Examination from among 1.50 Lakh students in 2020. • Dakshana Scholarship for All India Jawahar Navodaya Vidyalaya students during grades 11 - 12.		
Selected Graduate Coursework	<table> <tr> <td> • PDEs I • PDEs II • Functional Analysis • Functional Analysis II • Harmonic analysis • Minimal Surfaces • Differential Topology </td><td> • Intro to Differential Geometry • Differential Geometry II • Ricci Flow • Mean Curvature Flow • Nonlinear Wave Equations • Algebraic topology I </td></tr> </table>	• PDEs I • PDEs II • Functional Analysis • Functional Analysis II • Harmonic analysis • Minimal Surfaces • Differential Topology	• Intro to Differential Geometry • Differential Geometry II • Ricci Flow • Mean Curvature Flow • Nonlinear Wave Equations • Algebraic topology I
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Undergraduate Reading Projects	• <i>Guided Reading Project: PDEs and Sobolev spaces</i> Dec 2022 At TIFR Centre For Applicable Mathematics - Centre for Applicable Mathematics (TIFR CAM), Bangalore Guide: Dr. Sandeep K, TIFR CAM, Bangalore • <i>Summer Research Fellowship Program (SRFP) 2022</i> May - Jul 2022 At Indian Institute of Science (IISc), Bangalore Mentor: Dr. Purvi Gupta, IISc. Topics studied: Hardy Spaces on Disk, Interpolating Sequences, Several Complex Variables, Inhomogeneous Cauchy–Riemann Equations, Bergman Spaces. • <i>Reading Project: Schwartz Theory of Distributions</i> 2022 Guide: Dr. Soumyashant Nayak, ISI Bangalore Topics studying: Scalar valued distributions, Vector valued distributions. • <i>Undergraduate Directed Group Reading Program</i> Jul 2021 - Aug 2021 Topics studied: Matrix Groups and Representation Theory.		
References	• Dr. Nataša Šešum Email: natasas@math.rutgers.edu • Dr. Purvi Gupta Email: purvigupta@iisc.ac.in • Dr. Soumyashant Nayak Email: soumyashant@isibang.ac.in		