

# GOKUL G. NAIR

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Center For Applied Mathematics  
Cornell University, NY  
gn234@cornell.edu

EDUCATION	<b>Ph.D. in Applied Mathematics</b> 2018 - present Cornell University, Ithaca, NY, United States Advisor: Timothy Healey, Department of Mathematics Expected completion: 2024
	<b>Masters in Applied Mathematics</b> 2018-2021 Cornell University, Ithaca, NY, United States Minors: Mathematics, Theoretical Physics
	<b>Bachelor of Science</b> (First Class with Distinction) 2014 - 2018 Indian Institute of Science, Bangalore, India Major: Physics
VISITING POSITIONS	<b>Visiting Graduate Student</b> Feb - April 2023 Hausdorff Research Institute for Mathematics, University of Bonn, Bonn, Germany
	<b>Visiting Scholar</b> May - July 2017 Department of Engineering Sciences and Applied Mathematics, Northwestern University, Evanston, IL, United States
RESEARCH INTERESTS	Calculus of Variations, Nonlinear Elasticity, Differential Geometry, Minimal Surfaces, Complex systems
HONOURS/ AWARDS	<b>Teaching Award</b> , Department of Mathematics, Cornell University 2022
	<b>Cornell Research Travel Grant</b> , Cornell University 2022
	<b>Mathematics Teaching Development Fellow</b> , Cornell University 2022
	<b>First Class with Distinction</b> , Indian Institute of Science 2018
	<b>S.N. Bose Fellowship</b> , Indo-U.S. Science and Technology Forum 2017
	<b>KVPY Fellowship</b> , Government of India 2014
RESEARCH PUBLICATIONS	<ol style="list-style-type: none"><li>1. <i>Energy Minimizing Configurations for Highly Deformable Single-Director Elastic Surfaces</i>, Timothy J. Healey, Gokul G. Nair. Journal of Elasticity (2023) <a href="#">arXiv:2208.09051</a></li><li>2. <i>Energy-Minimizing States for Nonlinearly Elastic Membranes on Prescribed Surfaces</i> (with T. Healey), working manuscript (2022)</li><li>3. <i>Stationary curves under the Möbius-Plateau energy</i>, Max Lipton, Gokul G. Nair. arXiv preprint (2022) <a href="#">arXiv:2208.12678</a></li></ol>

4. *Designing for Robustness in Electric Grids via a General Effective Resistance Measure*, Shriya V. Nagpal, Gokul G. Nair, Francesca Parise, and C. Lindsay Anderson. IEEE TCNS (2022) [arXiv:2201.00929](#)
5. *Fission-fusion dynamics and group-size-dependent composition in heterogeneous populations*, Gokul G. Nair, Athmanathan Senthilnathan, Srikanth K. Iyer, and Vishwesh Guttal. Physical Review E (2019) [arXiv:1711.06882](#)

## TEACHING EXPERIENCE

- Calculus II, Instructor (Fall 2022)
- Partial Differential Equations, Grader (Spring 2022)
- Differential Equations for Engineers, TA (Fall 2021)
- Honours Introduction to Analysis I, Grader (Fall 2020)
- Multivariable Calculus, TA (Spring 2020)
- Differential Equations for Engineers, TA (Fall 2019)
- Multivariable calculus for Engineers, TA (Fall 2018 - Spring 2019)

## TALKS

- **Hausdorff Institute, University of Bonn, Workshop on Variational methods for complex phenomena in solids:** *Energy Minimizing Configurations for Single-Director Cosserat Shells* (2023)
- **Hausdorff Institute, University of Bonn, Work group seminar:** *Convex Integration for the p-Laplace equation* (2023)
- **Cornell University, Analysis Seminar:** *Energy Minimizing Configurations for Highly Deformable Elastic Surfaces* (2022)
- **University of Ulm, Horizons in Nonlinear PDEs Summer School:** *Energy Minimizing Configurations for Highly Deformable Elastic Surfaces* (2022)
- **Cornell University, Applied Dynamics Seminar:** *Schoen and Yau's proof of the Positive Mass theorem* (2021)
- **Cornell University, Applied Math Student Seminar:** *Introduction to Curvature* (2020)
- **Cornell University, Dynamics Seminar:** *Proving the Uniformization theorem using Ricci flow* (2020)
- **Cornell University, Applied Dynamics Seminar:** *On the Dynamics of Power Grids* (2022)
- **Cornell University, REU programme:** *Introduction to Synchronization and the Kuramoto model* (2019)

## CONFERENCES/ WORKSHOPS

- Workshop on Variational Methods for Complex Phenomena in Solids, Hausdorff Institute for Mathematics, University of Bonn, Germany (2023)
- Mathematics for Complex Materials Trimester Programme, Hausdorff Institute for Mathematics, University of Bonn, Germany (2023)
- Horizons in Nonlinear PDEs Summer School, University of Ulm, Germany (2022)
- Communicating Mathematics Conference, Cornell University (2022)
- STEM Communication Workshop, Alan Alda Center for Communicating Science (2021)

**SERVICE**

- President, Cornell SIAM chapter (2021-2022)
- Teaching Development Fellow, Cornell Department of Mathematics (Fall 2022)
- Organizer, Mathematics teaching seminar (Fall 2022)
- Organizer, Applied Mathematics Student Seminar (2020-2022)
- Mentor, Directed Reading Programme, Cornell Department of Mathematics (2020-2022)
- Expanding Your Horizons Volunteer, Cornell University (2022)

**HUMAN  
LANGUAGES**

- Native proficiency: English, Malayalam
- Fluent: Hindi, Kannada
- Limited proficiency: Tamil, Sanskrit

**COMPUTER  
LANGUAGES**

C, C++, Python (Numpy, Scipy), Mathematica,  $\text{\LaTeX}$