Atul Anurag

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Education

Ph.D. in Applied Mathematics New Jersey Institute of Technology, USA 2019–Present
Thesis: Generalization of Leapfrogging Orbits of Point Vortices
Advisor: Roy Goodman

M.Sc. in Applied Mathematics National Institute of Technology, India 2015–2017
Thesis: Pulsatile Flow in a Circular Rigid Tube
Advisor: P. Muthu

B.Sc. in Mathematics Ramjas College, University of Delhi, India 2012–2015

Professional Experience

Research Assistant, Ph.D. in Applied Mathematics
New Jersey Institute of Technology Fall 2022–Present

- Currently working on vortex dynamics and nonlinear systems.

Recitation Leader, Calculus I & II
New Jersey Institute of Technology Fall 2019–Spring 2022

- Led recitation sessions, assisted students with calculus problems.
- Solutions to previous exams available at Calculus I & II.

Teaching Assistant, Ph.D. in Applied Mathematics
New Jersey Institute of Technology Fall 2019 – Fall 2022

Intern, Laplace Transformation and Its Applications
TIFR - Centre for Applicable Mathematics Summer 2014

- Worked on image processing problems under the supervision of K. T. Joseph.

Intern, Operator Theory, Analysis of Non-linear PDEs
Indraprastha Institute of Information Technology, New Delhi Summer 2018

- Conducted research under the supervision of Ashish Kumar Pandey.

Publications

A new canonical reduction of three-vortex motion and its application to vortex-dipole scattering, with Roy Goodman, and Ellison O'Grady (2024). *Physics of Fluids*

Working Papers

Classifying the dynamics of three-vortex interactions, with Roy Goodman.

Four-vortex motion with zero total circulation, with Roy Goodman.

Conferences

- **November 2024:** Global Phase Plane Analysis of the three-vortex problem, SIAM-NNP, Rochester Institute of Technology
- **June 2024:** The Phase Space of the Three-Vortex Problem and its Application to Vortex-Dipole Scattering, Summer Talk, New Jersey Institute of Technology
- **June 2024:** The Phase Space of the Three-Vortex Problem, 2024 SIAM Conference on Nonlinear Waves and Coherent Structures, Speaker, Baltimore, MD
- **October 2023:** Point Vortex Dipole Scattering, SIAM-NNP, New Jersey Institute of Technology
- **July 2023:** Continuation of Periodic Orbits in Symmetric Hamiltonian and Conservative Systems, Summer Talk, New Jersey Institute of Technology
- **June 2023:** Mathematical Problems in Industry Workshop, Problem Solver, New Jersey Institute of Technology
- **May 2023:** Frontiers in Applied and Computational Mathematics, Volunteer, Attendee, New Jersey Institute of Technology
- **March 2023:** Second Drexel Waves Workshop, Attendee, Drexel University
- **January 2023:** Generalization of Leapfrogging Orbits of Point Vortices, Thesis Proposal Defense, New Jersey Institute of Technology
- **May 2022:** Frontiers in Applied and Computational Mathematics, Volunteer, New Jersey Institute of Technology
- **June 2021:** Walking Droplet Dynamics Research, Summer Talk, New Jersey Institute of Technology

Skills

- **Programming Languages:** LaTeX, Python, Matlab, Auto-Bifurcation Software

Awards and Honors

IIT-JAM, All India Rank: 354	IIT	2015
CSIR NET/JRF, All India Rank: 46	CSIR	2018

Leadership and Service

- **Vice-President**, Society for Industrial and Applied Mathematics
  New Jersey Institute of Technology — June 2022–2024
- **UCAN Executive Committee**
  Grad executive board member-at-large — June 2024–Present
- **Class Representative (M.Sc.)**
  Department of Mathematics, National Institute of Technology — 2015–2017

Languages

- Fluent in Hindi, English, and Sanskrit

Interests and Activities

- Reading Books, Solving Problems, Blogging at atulanurag.com
- Cricket, Travelling, Photography

References

Prof. Roy Goodman
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Department of Mathematical Sciences
New Jersey Institute of Technology
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