Pratik P. Aghor

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Current Position

Georgia Institute of Technology — Atlanta, GA, USA
Postdoctoral Fellow, Earth and Atmospheric Sciences, Advisor: Prof Annalisa Bracco — 2023–Current

- Focus: "Interaction of ocean currents and seamounts"

Education

University of New Hampshire (UNH) — Durham, NH, USA
Ph.D. in Applied Mathematics, Advisor: Prof John F Gibson — 2018–2023

- Thesis: "Symmetries, Bifurcations and Transition to Turbulence"

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) — Bengaluru, India
M.S. in Engineering Mechanics, Advisor: Prof M Alam — 2015–2018

- Thesis: "Pattern Formation and Anomalous Modes in Axisymmetric Compressible Taylor-Couette Flow"

Birla Institute of Technology and Science (BITS) Pilani — Pilani, India
B.E.(Hons.) in Mechanical Engineering — 2011–2015

- Thesis: "Investigation of Turing Patterns Using Finite Element Method and Symmetry"

Publications

[1] **P. Aghor** and J. F. Gibson, "Symmetry groups and invariant solutions of plane poiseuille flow", *under review, arXiv preprint arXiv:2409.11517*, 2025.

[2] **P. Aghor**, M. McKinley, and A. Bracco, "Interaction of ocean currents and seamounts: Role of bottom topography around Atlantis II", *under review, ESS Open Archive DOI: 10.22541/essoar.173758245.52913306/v2*, 2025.

[3] M. Atif, P. Dubey, **P. Aghor**, V. López-Marrero, T. Zhang, A. Sharfuddin, K. Yu, F. Yang, F. Ladeinde, Y. Liu, *et al.*, "Fourier neural operators for spatiotemporal dynamics in two-dimensional turbulence", in *SC24-W: Workshops of the International Conference for High Performance Computing, Networking, Storage and Analysis*, IEEE, 2024, pp. 41–48.

[4] **P. Aghor** and M. Atif, "Effect of outer cylinder rotation on the radially heated Taylor-Couette flow", *Physics of Fluids*, vol. 35, no. 9, 2023.

[5] **P. Aghor** and M. Alam, "Nonlinear axisymmetric Taylor-Couette flow in a dilute gas: Multiroll transition and the role of compressibility", *Journal of Fluid Mechanics*, vol. 909, 2021.

Teaching

- **Teaching Assistant** at UNH — 2018 –2019, 2021-2022
  Linearity (covers ODE's, linear algebra, phase plane analysis), Multidimensional Calculus
- **Teaching Assistant** at BITS Pilani — 2015
  Finite Element Method (ME G512)

Scholarships and Awards

- **Department of Mathematics and Statistics Teaching Assistant Award, UNH** **2022–2023**
- **Dissertation Year Fellowship, UNH Graduate School Award** **2022–2023**
- **Departmental Nominee, Graduate School TA Teaching Award** **2021–2022, 2022–2023**
- **R. Narasimha Award for the Best MS Thesis in Engineering Mechanics** **2017–2018**

Conferences, Workshops, Summer Schools

Rossbypalooza Jul 2024
University of Chicago Chicago, Illinois, USA

- **Worked with Prof. William Boos (UC Berkley) on tropical stationary waves**
- **Worked with Prof. Da Yang and Prof. Dorian Abbot (UChicago) on a reduced model of extreme tropical precipitation**

Theoretical and Practical Perspectives in Geophysical Fluid Dynamics May 2024
ICTS Bengaluru, Karnataka, India

- **Gave a talk on 'Symmetries and Transition to Turbulence in Plane Poiseuille Flow'** Video

Boulder Summer School - Hydrodynamics Across Scales Jul 2022
University of Colorado Boulder, Colorado, USA

- **Poster presentation titled: 'Invariant Subspaces of Channel Flow'**

APS-DFD Meeting Nov 2021
Phoenix Convention Center Phoenix, Arizona, USA

- **Gave a talk on 'Exploring Invariant Symmetry Subspaces of Channel Flow'**

School on Dynamics of Complex Systems May-Jun 2016
International Center for Theoretical Sciences (ICTS, Bangalore) Bengaluru, Karnataka, India

- **Theme - Geophysical Fluid Dynamics**

CIMPA Summer School on Current Research in Finite Element Method Jun-Jul 2015
Indian Institute of Technology (IIT, Bombay) Mumbai, Maharashtra, India

- **Conducted tutorial sessions on FreeFem++**

Finite Element Meet 2014 Dec 2014
Tata Institute of Fundamental Research (TIFR-CAM) Bengaluru, Karnataka, India

- **Gave a talk on 'Numerical Continuation and Bifurcation in Presence of Symmetry in FreeFem++'**

Extracurricular Activities (Sports, Writing and Outreach)

- **BITS Pilani University Taekwondo Team** 2014–2015
  Gold Medal in BOSM 2015, Bronze Medal in BOSM 2014
- Wrote a **Ted-Ed** Script - **The greatest mathematician that never lived** Jul 2020
  Video, *Transcript*
- Wrote an article for ***Loksatta***, a state-wide prominent Marathi language Newspaper about the **SIR Model of Epidemiology** Apr 2020
  Link
- Volunteer at the **Student Mentoring Program at JNCASR** 2017, 2018
  Taught $11^{th} - 12^{th}$ *standard physics and mathematics to economically backward students.*

References:

1. Prof. John F. Gibson (john.gibson@unh.edu)
2. Prof. Gregory P. Chini (greg.chini@unh.edu)
3. Prof. Annalisa Bracco (abracco@gatech.edu)
4. Tecahing reference: Prof. Rita Hibschweiler (rita.hibschweiler@unh.edu)