

Curriculum Vitae

Satyajit Pramanik, Ph.D.



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Assistant Professor Grade I

Department of Mathematics

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Personal details

Date of birth: 16 November 1988,

Gender: Male,

Marital status: Married,

Category: OBC.

Permanent address: 31/1 Sashi Khan Road, Santipur - 741404, Nadia, WB, India.

Employment

01/09/2022–till date: **Assistant Professor Grade I**, Department of Mathematics, Indian Institute of Technology Guwahati (IITG), INDIA.

09/07/2020–31/08/2022: **Assistant Professor Grade I**, Discipline of Mathematics, Indian Institute of Technology Gandhinagar (IITGN), INDIA.

Research Experience

01/09/2022–till date: **Assistant Professor Grade I**, Department of Mathematics, Indian Institute of Technology Guwahati (IITG), INDIA.

09/07/2020–31/08/2022: **Assistant Professor Grade I**, Discipline of Mathematics, Indian Institute of Technology Gandhinagar (IITGN), INDIA.

07/2019–07/2020: **Postdoctoral Research Assistant**, University of Oxford, UK.

05/2016–07/2019: **Nordita postdoc**, NORDITA, Stockholm University, SWEDEN.

01/10/2014–31/03/2015: **Ernst Mach scholar**, Technische Universität Wien, AUSTRIA.

21/07/2011–03/01/2012: **Junior research fellow**, Department of Mathematics, IITRPR, INDIA

Educational Qualification

Ph.D. 2016, Mathematics (CGPA: 9.21/10), IIT Ropar, Punjab, India
Thesis Title: *Analysis of hydrodynamic instabilities in miscible displacement flows in porous media*
Thesis Advisor: Prof. Manoranjan Mishra
Defended: 23rd February 2016, Awarded: 21st November 2016.
Awarded **Institute Silver Medal for the Best Thesis in Mathematics** during the 7th convocation of IIT Ropar in 2018

M.Sc. 2011, Mathematics (CGPA: 9.16/10) IIT Kharagpur, West Bengal, India
Project Title: *Numerical approximation of population balance equations and their mathematical analysis*
Project Supervisor: Prof. Jitendra Kumar

Awarded **Institute Silver Medal** for the academic year 2010-2011 on being adjusted to be the best student in order of merit among the students graduating with M.Sc. degree in Mathematics.

B.Sc.	2009, Mathematics (Honours - 86.12%), Physics, Chemistry, University of Kalyani, West Bengal, India First Class with Distinction
Higher Secondary	2006 (79.5%) Santipur Municipal High School (Higher Secondary), West Bengal Council of Higher Secondary Education, WB, India
Secondary	2004 (81.87%) Santipur Hindu High School (Higher Secondary), West Bengal Board of Secondary Education, WB, India.

Research Interests

Mathematical Modeling & Scientific Computing, Fluid Dynamics; Applied Mathematics; Numerical Analysis.

Publications

Referred Journals

1. Ayan Chanda, **Satyajit Pramanik**, Effects of a thin vertical porous barrier on the water wave scattering by a porous breakwater, *Physics of Fluids*, (in press), (2023).
2. Min Chan Kim, **Satyajit Pramanik**, Miscible Viscous Fingering in a Packed Cylindrical Column: Theory and numerics, *Physical Review Fluid*, **8**, 013901 (2023).
3. Lucy C Auton, **Satyajit Pramanik**, Mohit P. Dalwadi, Christopher W. MacMinn, Ian M. Griffiths, A homogenised model for flow, transport and sorption in a heterogeneous porous medium, *Journal of Fluid Mechanics*, **932**, A34 (2022).
4. **Satyajit Pramanik**, Manoranjan Mishra, Role of density gradients on miscible Rayleigh-Taylor fingers in porous media, *AIP Advances*, **11**, 085201 (2021).
5. Min Chan Kim, **Satyajit Pramanik**, Vandita Sharma, Manoranjan Mishra, Unstable miscible displacements in radial flow with chemical reaction, *Journal of Fluid Mechanics*, **917**, A25 (2021).
6. Marco E. Rosti, **Satyajit Pramanik**, Luca Brandt, Dhrubaditya Mitra, The breakdown of Darcy's law in a soft porous material, *Soft Matter*, **16**, 939–944 (2020).
7. Vandita Sharma, Sada Nand, **Satyajit Pramanik**, Ching-Yao Chen, Manoranjan Mishra, Control of radial miscible viscous fingering, *Journal of Fluid Mechanics*, **884**, A16 (2020).
8. Chinar Rana, **Satyajit Pramanik**, Michel Martin, Anne De Wit, Manoranjan Mishra, Influence of Langmuir adsorption and viscous fingering on transport of finite size samples in porous media, *Physical Review Fluids* **4**, 104001 (2019).
9. **Satyajit Pramanik**, John S. Wettlaufer, Confinement induced control of similarity solutions in premelting dynamics and other thin film problems, *SIAM Journal on Applied Mathematics* **79(3)**, 938-958 (2019).
10. Vandita Sharma, **Satyajit Pramanik**, Ching-Yao Chen, Manoranjan Mishra, A numerical study on reaction-induced radial fingering instability, *Journal of Fluid Mechanics* **862**, 624-638 (2019).
11. **Satyajit Pramanik**, John S. Wettlaufer, Confinement effects in premelting dynamics, *Physical Review E* **96**, 052801 (2017).
12. Vandita Sharma, **Satyajit Pramanik**, Manoranjan Mishra, Dynamics of highly viscous circular blob in homogeneous porous media, *Fluids* **2(2)**, 32 (2017).

13. **Satyajit Pramanik**, Manoranjan Mishra, Fingering instability and mixing of a blob in porous media, *Physical Review E* **94**, 043106 (2016).
14. **Satyajit Pramanik**, Manoranjan Mishra, Coupled effect of viscosity and density gradients on fingering instabilities of a miscible slice in porous media, *Physics of Fluids* **28**, 084104 (2016).
15. Tapan Kumar Hota, **Satyajit Pramanik**, Manoranjan Mishra, Nonmodal linear stability analysis of miscible viscous fingering in porous media, *Physical Review E* **92**, 053007 (2015).
16. **Satyajit Pramanik**, Anne De Wit, Manoranjan Mishra, Viscous fingering and deformation of a miscible circular blob in a rectilinear displacement in porous media, *Journal of Fluid Mechanics (Rapids)* **782**, R2 (2015).
17. **Satyajit Pramanik**, Tapan Kumar Hota, Manoranjan Mishra, Influence of viscosity contrast on buoyantly unstable miscible fluids in porous media, *Journal of Fluid Mechanics* **780**, 388-406 (2015).
18. Tapan Kumar Hota, **Satyajit Pramanik**, Manoranjan Mishra, Onset of fingering instability in a finite slice of adsorbed solute, *Physical Review E* **92**, 023013 (2015).
19. **Satyajit Pramanik**, Manoranjan Mishra, Viscosity scaling of fingering instability in finite slices with Korteweg stress, *Europhysics Letters* **109**, 64001 (2015).
20. **Satyajit Pramanik**, Manoranjan Mishra, Effect of Péclet number on miscible rectilinear displacement in a Hele-Shaw cell, *Physical Review E* **91**, 033006 (2015).
21. **Satyajit Pramanik**, Manoranjan Mishra, Nonlinear simulation of miscible viscous fingering with gradient stresses, *Chemical Engineering Science* **122**, 523-532 (2015).
22. **Satyajit Pramanik**, Manoranjan Mishra, Comparison of Korteweg stresses effect on the fingering instability of higher or less viscous miscible slices: Linear stability analysis, *Chemical Engineering Science* **110**, 144-152 (2014).
23. **Satyajit Pramanik**, Manoranjan Mishra, Linear stability analysis of Korteweg stresses effect on miscible viscous fingering in porous media, *Physics of Fluids* **25**, 074104 (2013).

Pre-prints/Submitted/In preparation

1. Matilde Fiori, **Satyajit Pramanik**, Christopher W. MacMinn, Flow and Deformation due to Periodic Loading in a Soft Porous Material, *arXiv*, 2212.12166 (2022).
2. Matilde Fiori, **Satyajit Pramanik**, Christopher W. MacMinn, Solute transport in a periodically-loaded soft porous material, *in preparation*.
3. Ashis Kumar Roy, **Satyajit Pramanik**, Solute transport in a porous channel with an oscillatory boundary through the eyes of generalized dispersion model, *in preparation*.

Funding

• Ongoing Grants

1. **Title:** On homogenization techniques for flow and transport through rigid and deformable porous media.
Grant: Start-up Grant, Indian Institute of Technology Guwahati.
Project Investigator: Satyajit Pramanik.
Project duration: 2022-2024.
Amount: INR 5,00,000.00

2. **Title:** Modeling and simulation of premelting dynamics with impurities.
Grant: Mathematical Research Impact Centric Support, Science and Engineering Research Board (SERB-MATRICS), Department of Science and Technology, Govt. of India.
Project Investigator: Satyajit Pramanik.
Project duration: 2023-2026.
Amount: INR 6,60,000.00
3. **Title:** Mathematical modelling of flow and transport in porous media: A homogenization approach.
Grant: Start-up Research Grant, Science and Engineering Research Board (SRG-SERB), Department of Science and Technology, Govt. of India.
Project Investigator: Satyajit Pramanik.
Project duration: 2021-2033.
Amount: INR 17,09,400.00

• Completed Grants

1. Research Initiation Grant (RIG) from IITGN
PI: Satyajit Pramanik
Amount: INR 2,50,000.00
Grant Number: RIG/0304
2. New Faculty Start-up Fund
PI: Satyajit Pramanik
Amount: INR 6,00,000.00
Grant Number: MIS/IITGN/IF/SP/202122/017
3. Approval of Equipment Purchase
PI: Satyajit Pramanik,
Amount: INR 14,20,000.00
Grant Number: IITGN/R&D/202021/002
4. Project: Numerical investigation of thermo-solutal effects in Saffman-Taylor fingering
Award: Ernst Mach Grant, Ernst Mach weltweit
Awardee: Satyajit Pramanik
Funding Agency: Austrian Agency for International Cooperation in Education and Research (OeAD-GmbH), Centre for International Cooperation & Mobility (ICM); Austrian Federal Ministry of Science, Research and Economy (BMWFV).
Amount: EUR 6,370.00
Grant Number: ICM-2014-07032

Students Supervision

Post Doctoral Researchers:

- Dr. Ayan Chanda 09/2021–08/2022; Currently National Postdoc, IIT Kharagpur
- Dr. Gautam Kumar (2020); Currently Assistant Professor at IcfaiTech, IFHE Hyderabad

Ph.D. Students (on going at IIT Guwahati):

- Ms. Nayan Haldar
- Mr. Pankaj Roy
- Ms. Mijanur Rahman (jointly with Prof. Jiten C. Kalita, Dept. of Mathematics, IITG)

Research Staff (on going at IIT Guwahati):

- Ms. Anindita Saha (JRF, DST-SERB Project)

M.Sc. Students:

- Ms. Shallu Kumari (2023, IITG)
- Mr. Ayush Kumar Bhati (2023, IITG)
- Mr. Sonu Saini (2023, IITG)
- Ms. Asmita Kushwaha (2021–2022, IITGN)
- Mr. Bhanupratap Singh Rajawat (2021–2022, IITGN)
- Mr. Lokesh Kumar (2021–2022, IITGN)
- Mr. Milton Biswas (2020–2021, IITGN)
- Ms. Tulsa Pujhari (2020–2021, IITGN)

Awards and Fellowships

- **ICIAM 2023 Travel Grant** awarded by the National Board for Higher Mathematics (NBHM), Department of Atomic Energy, Govt. of India.
- **Excellence in Research**, Discipline of Mathematics, Indian Institute of Technology Gandhinagar, 2020–2021.
- **Postdoctoral research associateship** in Mathematics, Technion–Israel, 2019 (did not avail).
- **Best Thesis Award** in Mathematics, IIT Ropar, 2018.
- **NBHM Travel Grants** to attend the international conference Twelfth International Conference on Flow Dynamics, Sendai, Japan, October 27-29, 2015.
- **Ernst Mach scholarship** by the Austrian Exchange Service (OeAD-GmbH) financed by the Austrian Federal Ministry of Science, Research and Economy (BWF) to perform research work at the Institut für Strömungsmechanik und Wärmeübertragung, TU Wien, Vienna, October, 2014 - March, 2015 (**Advisor:** Prof. Hendrik C. Kuhlmann).
- **Outstanding poster award** at the School on hands-on research in complex systems at the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, June 30 - July 11, 2014.
- **Travel support** from ICTP for participating in the School on Hands-on Research on Complex Systems at the Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, June 30 - July 11, 2014.
- **Travel support** from the organizers to attend the 1st International Conference on Micro and Nanofluidics Fundamentals and Applications (FLOW14), University of Twente, The Netherlands, May 18-21, 2014.
- **NBHM travel grant** for attending international conference 9th European Fluid Mechanics Conference (EFMC9), Rome, Italy, September 9-13, 2012.
- **NBHM Ph.D. Scholarship** (2012-2016).
- **DST-INSPIRE Ph.D. fellowship** for being 1st in M.Sc. in Mathematics, 2012 (did not avail).
- **Institute silver medal** for the academic year 2010 - 2011 on being adjudged to be the best student in order of merit among the students graduating with M.Sc. degree in Mathematics from IIT Kharagpur.
- **Post graduate merit scholarship for the university rank holders 2009 - 2011** funded by University Grant Commission, India.
- Indian Academy of Sciences **Summer research fellowship - 2010.**
- **Merit-Cum-Means (MCM) fellowship** in M.Sc. in Mathematics, IIT Kharagpur.

Professional & Academic Service

Conference/Symposium/Workshop Organizing Committees:

- Event: [Applied Mathematics Symposium: Artificial Intelligence meets Fluid Dynamics](#)
Dates: July 07, 2023

Organized by: Department of Mathematics, IIT Guwahati, INDIA, Department of Mathematics, IIT Hyderabad, INDIA and Department of Mathematics, VIT Vellore, INDIA

Venue: Online mode on the Microsoft Teams platform

Organizers: **Satyajit Pramanik (Department of Mathematics, IITG)**, Vikas Krishnamurthy (Department of Mathematics, IITH), Sanghasri Mukhopadhyay (Department of Mathematics, VIT Vellore)

- Event: [Applied Mathematics Symposium: Instability and Flow Transition](#)

Dates: November 11, 2022

Organized by: Department of Mathematics, IIT Guwahati, INDIA and Department of Mathematics, IIT Hyderabad, INDIA

Venue: Online mode on the Microsoft Teams platform

Organizers: **Satyajit Pramanik (Department of Mathematics, IITG)**, Vikas Krishnamurthy (Department of Mathematics, IITH)

- Event: [International Conference “Mathematics and Physics of Fluids 2021” \(MPFluids2021\)](#)

Dates: November 1-3, 2021

Organized by: Discipline of Mathematics and Discipline of Physics, IIT Gandhinagar, INDIA

Venue: Online mode on the ZOOM platform

Organizers: **Satyajit Pramanik (Department of Mathematics)**, Sutapa Roy (Discipline of Physics, IITGN)

- Event: eColloquium on “Recent Advancements in Fluid Flow and Heat Transfer”

Dates: October 19-25, 2020

Organized by: Department of Mathematics, IIT Roorkee, INDIA

Venue: Online

Advisory committee member: **Satyajit Pramanik (Department of Mathematics)**

Membership:

- Indian Mathematical Society (IMS) – Life Member
- Indian Society of Industrial and Applied Mechanics (ISIAM) – Life Member
- Indian Society of Theoretical and Applied Mechanics (ISTAM) – Life Member

Collaborative projects:

1. **Title:** Multi-scale matching for flows with a grid, *Acronym:* MultiMatchGrid

Grant: ANR-JCJC

PI: Francesco Romanó (Laboratoire de Mécanique des Fluides de Lille - Kampé de Fériet)

Collaborator Team Members: Antoine Dazin, John Christos Vassilicos (LMFL), *Satyajit Pramanik (IITG)*, Luca Biferale, Michele Buzzicotti (University of Tor Vergata)

Amount: EUR 2,14,862.46 (The financial support is available to the PI only.)