Prathmesh Vinze

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Education

Academic Qualifications

- **Ecole Polytechnique, IP Paris** — **Palaiseau**
  Ph.D Fluid Mechanics , Collective behaviour of phoretic swimmers — *2021–2024*
- **Indian Institute of Technology Madras** — **Chennai**
  M.S Chemical Engineering , CGPA- 9.79/10 — *2019–2021*
- **Birla Institute of Technology and Scince Pilani, Goa campus** — **Goa**
  B.E(Hons) Chemical Engineering , CGPA- 8.20/10 — *2015–2019*

Notable Projects

- **Self-organisation of phoretic suspensions under external forcings** — **October 2021- Present**
- **Effect of solute advection on the swimming velocity of a Janus particle** — **Feb 2021-Aug 2021**
- **Dynamics of an artificial swimmer in external concentration gradient** — **Mar 2020-Feb2021**
- **Cross stream migration of a particle/drop in Poiseuille flow** — **Jan 2019-Mar 2020**

Research Interests and Work Experience

- My research interest lies in the mathematical modelling of transport processes, particularly with flows involving low Reynolds numbers. As part of my PhD, I modelled the collective dynamics of an autophoretic suspension under external mechanical and chemical forcings.
- During my time as a graduate student, I was a teaching assistant for the following courses:
  1. **Mass Transfer and Reaction Engineering Laboratory** (Jan 2020-May 2020)
  2. **Process Modelling and Simulation** (Aug 2020-December 2020)
  3. **Advanced Physics Lab III** (September 2022-2024)
  4. **Discovery Labs(Mechanics)** (September 2022-2024)

Peer-Reviewed Publication

- **Prathmesh M. Vinze**, Akash Choudhary and S.Pushpavanam, Motion of an active particle in a linear concentration gradient,Physics of Fluids 33, 032011 (2021) (Click here to access the paper)
- **Prathmesh M. Vinze**, S.Pushpavanam, Effect of weak solute advection on a chemically active particle under the influence of an external concentration gradient,Physical Review Fluids, Vol 6 Issue 12, 124201 (2021)(Click here to access the paper)
- **Prathmesh Vinze**, S. Michelin, Self-organisation and rheology of phoretic suspensions in confined shear flow, Physical Review Fluids, Vol 9 Issue 1, 2024 (Click here to access the paper)

Selected Conferences and Seminars

- **Motion of an active particle in linear concentration gradients** at 73rd annual meeting of APS Division of Fluid Dynamics (Virtual) on 23rd November 2020
- **Self Organisation of phoretic suspensions in shear flow and confinement** at 14th edition of European Fluid Mechanics Conference from 12th-16th September 2022.
- **Self Organisation and rheology of phoretic suspensions in confined shear flows** at a workshop on Hydrodynamics at small scales: from soft matter to bioengineering, 14th June-16th June 2023.
- **Rheology of phoretic suspensions in shear flows** at 10th **B**ifurcations and **I**nstabilities in **F**luid **D**ynamics Conference 2024, 24th-28th June 2024.

References

1. Sebastien Michelin, Professor, *Ecole Polytechnique*, IP Paris, electronic address : sebastien.michelin@polytechnique.edu
2. Ludovic Bellon, CNRS Research director, ENS Lyon, electronic address : ludovic.bellon@polytechnique.edu