Sébastien Gomé

Date of birth: 08/03/1996
Nationality: French

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Research Interests Fluid dynamics, turbulence, statistical mechanics, computational physics, geophysical flows

Current position Post-doctoral researcher at the **Technion - Israel Institute of Technology**, (Dept. of Physics), in collaboration with Anna Frishman. 01/2023 – now
Subject: "Mean-wave interactions in rotating turbulence".

Education

Sorbonne Université, Paris (France) 2019–2022

- Ph.D. in Fluid Mechanics at the Laboratory of Physics and Mechanics of Heterogeneous Media (ESPCI Paris): "Transition to turbulence in shear flows", under the supervision of Prof. Laurette S. Tuckerman & Prof. Dwight Barkley.

ISAE-Supaero, Toulouse (France). 2018–2019

- Master in Engineering: Aerodynamics, simulations and modeling.
- MSc in Fluid Dynamics, Energy and Transfers (Université Paul Sabatier)

Ecole polytechnique, Palaiseau (France). 2015–2019

- *Diplôme d'Ingénieur* (MSc) in Mechanical Engineering.
- Research project at EPFL (Switzerland) in 2018: "Impact of wetting conditions on the Faraday instability" (Supervisor: François Gallaire).

Preparatory class, Lycée Saint-Louis, Paris (France). 2013–2015

- BSc: Physics, Mathematics, Chemistry.

Teaching

Teaching Assistant at Sorbonne Université (Dept. of Mechanics):

- *Mathematical and numerical methods for mechanics*, for 2nd and 3rd year Undergraduates;
- *Fluid Mechanics* (including the supervision of experimental projects) for 2nd and 3rd year Undergraduates.

Awards

- **Euromech Young Scientist Prize 2025**, received at the 2nd European Fluid Dynamics Conference for the best oral presentation given by an attendee under the age of 35.
- **Runner-up** in the **JFM Emerging Scholar Best Paper Prize 2024** for paper n°5.

Publications

1. S. Gomé & A. Frishman. "Helicity controls the direction of fluxes in rotating turbulence". *submitted to Physical Review Letters*, 2025.
2. S. Gomé & A. Frishman. "Waves drive the rise and fall of 2D flows in rotating turbulence". *manuscript under revision, Physical Review X*, 2024.
3. S. Gomé, A. Rivière, L. S. Tuckerman, D. Barkley. "Phase Transition to Turbulence via Moving Fronts". *Physical Review Letters*, 2024. (Editor's suggestion)
4. S. Gomé, L. S. Tuckerman, D. Barkley. "Wavelength selection in transitional shear turbulence. Part 1. Spectral analysis". *Journal of Fluid Mechanics*, 2023
5. S. Gomé, L. S. Tuckerman, D. Barkley. "Wavelength selection in transitional shear turbulence Part 2: Emergence and optimal wavelength". *Journal of Fluid Mechanics*, 2023.
(JFM Emerging Scholar Best Paper Prize – Runner up Honorable Mention)
6. S. Gomé, L. S. Tuckerman, D. Barkley. "Extreme events in transitional turbulence". *Philosophical Transactions of the Royal Society*, 2022.
7. S. Gomé, L. S. Tuckerman, D. Barkley. "Statistical transition to turbulence in plane channel flow". *Physical Review Fluids*, 2020. (Editor's suggestion)

Schools

- CIRM 2025 (Marseille): "Physics and Mathematics of Hydrodynamic and Wave turbulence"
- Les Houches 2023, "200 years of Navier-Stokes and turbulences"
- Boulder 2022, "Hydrodynamics across scales"

Conferences

1. 2nd European Fluid Dynamics Conference (2025, Dublin, Ireland): "Rotating turbulence: 2D or not 2D?"
2. 70th Annual Meeting of the Israel Physics Society (2025): "Rotating turbulence: 2D or not 2D"
3. 1st European Fluid Dynamics Conference (2024, Aachen, Germany): "Condensate formation in 3D rotating turbulence"
4. European Turbulence Conference 2023 (Valencia, Spain): "Mechanism for turbulent proliferation in planar shear flows"
5. European Turbulence Conference 2023 (Valencia, Spain): "Transition to turbulence without large-scale flow"
6. European Fluid Mechanics Conference 2022 (Athens, Greece): "Mean flow and patterns in transitional turbulence"
7. Rencontres du Non-Lineaire 2022 (Paris, France): "Wavelength selection in transitional shear flows"
8. APS-DFD 2021 (Phoenix, USA): "Wavelength selection of turbulent bands in transitional turbulence"
9. ICTAM 2020+1 (online): "Decay and splitting pathways in transitional channel flow"
10. APS - March Meeting 2021 (online): "Rare events and the transition to turbulence in channel flow" (participant)
11. APS - DFD 2020 (online): "Rare events and the transition to turbulence in channel flow"
12. European Turbulence Conference 2019 (Torino, Italy) . "Transition to turbulence in plane channel flow".

Invited seminars

1. Institut de Physique de Nice, 08/12/2025, "Self-organized turbulence: from shear flows to wave systems"
2. Ecole polytechnique, 03/2025, "Rotating turbulence: 2D or not 2D?"
3. University of Sheffield (UK), 11/23/2022, "Transition to turbulence in planar shear flows"
4. University of Leeds (UK), 11/21/2022, "Transition to turbulence in planar shear flows"
5. Johns Hopkins University, Baltimore (USA), 11/30/2021, "Extreme events in transitional shear flows"
6. École Normale Supérieure, Paris, 11/16/2021, "Extreme events in transitional shear flows"
7. Imperial College, London (UK), 06/25/2021, "Rare events in transitional shear flows"
8. Simons Foundation (turbulence and statistical physics group) : "Rare-event algorithm applied to transition to turbulence."

Reviewing

Referee for the Journal of Fluid Mechanics

Technical Skills

- *Programming Languages*: C/C++, Fortran, Python, Matlab

Miscellaneous

- Music: playing the viola for 20 years (Regional Conservatory of Paris)
- Vice-President of the university orchestra of Ecole Polytechnique and Paris-Saclay University (2016-2017)