

Curriculum Vitae (last update: 24 March 2026)

Dr. Jonasz Słomka
jonasz.slomka@fuw.edu.pl
[GoogleScholar](#)

Biophysics Division, Faculty of Physics
University of Warsaw
Pasteura 5, B3.03
02-093 Warsaw

Employment

Assistant Professor, Faculty of Physics, University of Warsaw 03/2026 - present

Junior Group Leader, Institute of Environmental Engineering, ETH Zürich 09/2021 – 02/2026
Mentors: Prof. Roman Stocker and Prof. Sebastian Bonhoeffer

Postdoctoral Fellow, Institute of Environmental Engineering, ETH Zürich 09/2018 – 08/2021
Mentor: Prof. Roman Stocker

Education

PhD in Physical Applied Mathematics, Massachusetts Institute of Technology, USA 09/2013 – 06/2018
Advisor: Prof. Jörn Dunkel

Master of Advanced Study in Mathematics (Part III), University of Cambridge, UK 09/2012 – 06/2013
Awarded Distinction

Master of Physics, University of Oxford, UK 09/2008 – 06/2012
Awarded First Class Degree

Awards & Honors

Polish Returns grant (Senior Fellow track), Polish National Agency for Academic Exchange, 03/2026-02/2030

SNF Ambizione grant, 09/2021 – 08/2025

ETH Postdoctoral Fellowship, 09/2018 – 08/2020

Johnson Prize for a research paper, MIT Mathematics, 2018

Housman Award for Excellence in Teaching, MIT Mathematics, 2017

MIT Presidential Fellowship, 09/2013 – 06/2014

Dr. J. A. J. Whelan Prize in Mathematics, Christ's College, University of Cambridge, 2013

The Gibbs Prize for the best use of experimental apparatus in a MPhys Project, University of Oxford, 2012

Mansfield College Scholarship for excellent exam results, University of Oxford, 09/2009 – 06/2012

UK EPSRC summer project (with Prof. Amalia Coldea), 07/2011 – 08/2011

Graduate students supervision

Matti Zbinden, PhD student, ETH, Spring 2022 – present

Bachelor and Master students supervision

Mithun JR Edathil, Master thesis, ETH, *Trichodesmium aggregation under controlled and persistent shear environments*, Spring 2024

Carlotta Maggio, Bachelor thesis, ETH, *The efficiency of bacterial chemotactic searches in the water column*, Spring 2024

Pascal Keller, Bachelor thesis, ETH, *How often do bacteria exchange genes in a turbulent flow?*, Spring 2024
Alessio Häseli, Bachelor thesis, ETH, *How often do bacteria exchange genes in a turbulent flow?*, Spring 2023
Yao Zhou, Master Project, ETH, *The effects of bacterial encounters on conjugation rates*, Fall 2022
Pit Mathieu, Bachelor thesis, ETH, *Computational study of fluid flow gradients in microfluidic devices with a focus on bacterial attachment in a model porous medium*, Spring 2020

Invited talks

Biophysics Division Seminar, Warsaw University, Warsaw (Poland), March 2026
Soft Matter and Statistical Physics Seminar, Warsaw University, Warsaw (Poland), March 2026
BioInference, Bardonecchia (Italy), May 2025
American Physical Society March Meeting, Anaheim (USA), March 2025
INFRAMES fall meeting, EAWAG, Zurich (Switzerland), October 2024
Principles of Microbial Ecosystems Collaborative Annual Meeting, Simons Foundation, New York (USA), September 2024
Hwa Lab, University of California San Diego, San Diego (USA), August 2024
Horizontal Gene Transfer and Mobile Elements, KITP, Santa Barbara (USA), July-August 2024
Coherence Correlations Complexity Seminar, Wrocław University of Science and Technology (Poland), June 2024
Physical Mathematics Seminar, MIT, Cambridge (USA), May 2024
Principles of Microbial Ecosystems Collaborative Annual Meeting, Simons Foundation, New York (USA), September 2023
NCCR Microbiomes Seminar, online (Switzerland), June 2023
Soft Matter and Statistical Physics Seminar, Warsaw University, Warsaw (Poland), June 2023
Principles of Microbial Ecosystems Collaborative Annual Meeting, Simons Foundation, New York (USA), August 2022
18th International Symposium on Microbial Ecology, Lausanne (Switzerland), August 2022
Microbial ecology for engineering biology, Theo Murphy scientific meeting, Oxfordshire (UK), March 2022
Principles of Microbial Ecosystems Collaborative, Annual Meeting (online), September 2021
Frontiers in Computational Methods for Active Matter, EPFL CECAM, Lausanne (Switzerland), February 2020
Soft Matter and Statistical Physics Seminar, Warsaw University, Warsaw (Poland), January 2020
Colloquium, Center for Theoretical Physics, Polish Academy of Sciences, Warsaw (Poland), January 2020
Max Planck Institute for Dynamics and Self-Organization, Göttingen (Germany), December 2018
Physics of Living Systems, MIT, Cambridge (USA), March 2018
Prakash Lab, Stanford University, Stanford (USA), December 2017
Widely Applied Mathematics Seminar, Harvard University, Cambridge (USA), December 2017
Biophysical Modeling Group, Flatiron Institute, New York (USA), October 2017

Contributed conference & seminar talks

EPFL – Latsis Symposium, Lausanne (Switzerland), July 2025
Physics of Microbial Motility, Paris (France), November 2022
Latsis Symposium 2022: The Origin and Prevalence of Life, Zurich (Switzerland), August - September 2022
Annual Meeting of the Swiss Society for Microbiology, Lausanne (Switzerland), August - September 2022
Biology for Physics, Barcelona (Spain), July 2022
Microscale Ocean Biophysics 6.0, Mallorca (Spain), May 2022
American Physical Society March Meeting, online (USA), March 2022
NCCR Microbiomes Workshop, online (Switzerland), April 2021
American Physical Society March Meeting, online (USA), March 2021
Batchelor Centenary Event, Cambridge (UK), March 2020 (cancelled due to Covid19)
American Physical Society March Meeting, Boston (USA), March 2019

American Physical Society March Meeting, Los Angeles (USA), March 2018
American Physical Society Division of Fluid Dynamics Meeting, Denver (USA), November 2017
Brown/Boston University Dynamics & PDE Seminar, Brown University (USA), April 2017
American Physical Society March Meeting, New Orleans (USA), March 2017
American Physical Society Division of Fluid Dynamics Meeting, Portland (USA), November 2016
American Physical Society March Meeting, Baltimore (USA), March 2016

Posters

NCCR Microbiomes Annual Meeting, online (Switzerland), June 2021
Principles of Microbial Ecosystems Collaborative, virtual meeting, September 2020
Fluid Physics of Life, Dresden (Germany), October 2019
Marine Particles and Phycospheres, Ascona (Switzerland), May 2019
Microscale Ocean Biophysics, Whistler (Canada), January 2019
Complex Motion in Fluids, University of Cambridge (UK), September 2017
DFG International Conference on Microswimmers, Bonn (Germany), October 2016

Workshops

ENSA Mental Health First Aid course, online (Switzerland), February 2022
Topology in Complex Fluids, Leiden (The Netherlands), May 2018

Teaching

Introduction to Environmental Engineering, Water Science and Engineering (Lecturer), ETH, October 2022, October 2023, October 2024
Computational Science and Engineering I (Lecturer), MIT, Summer 2016
Differential equations (Teaching Assistant), MIT, Fall and Spring 2016, Fall 2017

Service

Organizer of the Microscale Ocean Biophysics Seminar Series
Lead moderator on the ARC platform: An open web-platform for request/supply matching for a prioritized and controlled COVID-19 response in Switzerland
Initiator and organizer of 'LiMMat' – the Living Matter Seminar Series, Stocker Lab
Reviewer for peer-review journals (*Phys. Rev. Lett.*, *Proc. Natl. Acad. Sci. U.S.A.*, *Nat. Comm.*, *Sci. Adv.*, *J. Fluid Mech.*, *Phys. Rev. Fluids*, *Soft Matter*, *Environ. Sci. Technol.*)

Publications (* joint first authors, if more than one; † corresponding authors, if more than one)

1. J. Turczynowicz*, R. Waszkiewicz*, J. Słomka† and M. Lisicki†, Bridging advection and diffusion in the encounter dynamics of sedimenting marine snow, *J. Fluid Mech.*, 1031: A5, 2026
2. G. T. Vercelli, X. Zhou, S. Moreno-Gámez, R. R. Jeeda, R. Gregor, J. Słomka, A. Dagadu, A. L. Furst, O. X Cordero, A universal surface functionalization technique to chemically enhance live microbial cells, *Mol. Syst. Biol.*, 2026
3. M. Zbinden, J. S. Huisman, N. Blitvic, R. Stocker, J. Słomka, Fluid flow generates bacterial conjugation hot spots by increasing the rate of shear-driven cell–cell encounters, *Proc. Natl. Acad. Sci. U.S.A.*, 122: e2505446122, 2025
4. E. E. Clerc*, J. E. Schreier*, J. Słomka, C. B. Smith, H. Fu, J. R. Seymour, J.-B. Raina, M. A. Moran†, R. Stocker†, Chemotaxis, growth, and inter-species interactions shape early bacterial community assembly, *ISME J.*, wraf101, 2025

5. U. Alcolombri, A. Nissan, [J. Słomka](#), S. Charlton, E. Secchi, I. Short, S. L. Kang, F. J. Peaudecerf, D. A. Baumgartner, A. Sichert, U. Sauer, A. Sengupta and R. Stocker, Biogel scavenging slows the sinking of organic particles to the ocean depths, *Nat. Comm.*, 16: 3290, 2025
6. R. Foffi, D. R. Brumley, F. Peaudecerf, R. Stocker, [J. Słomka](#), Slower swimming promotes chemotactic encounters between bacteria and small phytoplankton, *Proc. Natl. Acad. Sci. U.S.A.*, 122: e2411074122, 2025
7. N. Romeo, [J. Słomka](#), J. Dunkel and K. J. Burns, Vortex line entanglement in active Beltrami flows, *J. Fluid Mech.*, 982: A12, 2024
8. U. Pfreundt*, [J. Słomka](#)*, G. Schneider, A. Sengupta, F. Carrara, V. Fernandez, M. Ackermann and R. Stocker, Controlled motility in the cyanobacterium *Trichodesmium* regulates aggregate architecture, *Science*, 380: 830-835, 2023
9. [J. Słomka](#), U. Alcolombri, F. Carrara, R. Foffi, F. J. Peaudecerf, M. Zbinden and R. Stocker, Encounter rates prime interactions between microorganisms, *Interface Focus*, 13: 20220059, 2023
10. J.-A. Arguedas Leiva*, [J. Słomka](#)*, C. C. Lalescu, R. Stocker and M. Wilczek, Elongation enhances encounter rates between phytoplankton in turbulence, *Proc. Natl. Acad. Sci. U.S.A.*, 119: e2203191119, 2022
11. G. Savorana, [J. Słomka](#), R. Stocker, R. Rusconi and E. Secchi, A microfluidic platform for characterizing the structure and rheology of biofilm streamers, *Soft Matter*, 18: 3878-3890, 2022
12. J.-D. Courcol, C. F. Invernizzi, Z. C. Landry, M. Minisini et al., ARC: An open web-platform for request/supply matching for a prioritized and controlled Covid-19 response, *Front. Public Health*, 9: 607677, 2021
13. [J. Słomka](#) and R. Stocker, Bursts characterize coagulation of rods in a quiescent fluid, *Phys. Rev. Lett.*, 124: 258001, 2020
14. [J. Słomka](#), U. Alcolombri, E. Secchi, R. Stocker and V. I. Fernandez, Encounter rates between bacteria and sinking particles, *New J. Phys.*, 22: 043016, 2020
15. [J. Słomka](#) and R. Stocker, On the collision of rods in a quiescent fluid, *Proc. Natl. Acad. Sci. U.S.A.*, 117: 3372-3374, 2020
16. [J. Słomka](#), A. Townsend and J. Dunkel, Stokes' second problem and reduction of inertia in active fluids, *Phys. Rev. Fluids*, 3: 103304, 2018
17. [J. Słomka](#), P. Suwara and J. Dunkel, The nature of triad interactions in active turbulence, *J. Fluid Mech.*, 841: 701-731, 2018
18. O. Mickelin*, [J. Słomka](#)*, K. J. Burns, D. Lecoanet, G. M. Vasil, L. M. Faria and J. Dunkel, Anomalous chained turbulence in actively driven flows on spheres, *Phys. Rev. Lett.*, 120: 164503, 2018
19. [J. Słomka](#) and J. Dunkel, Spontaneous mirror-symmetry breaking induces inverse energy cascade in 3D active fluids, *Proc. Natl. Acad. Sci. U.S.A.*, 114: 2119-2124, 2017
20. [J. Słomka](#) and J. Dunkel, Geometry-dependent viscosity reduction in sheared active fluids, *Phys. Rev. Fluids*, 2: 043102, 2017
21. [J. Słomka](#) and J. Dunkel, Generalized Navier-Stokes equations for active suspensions, *Eur. Phys. J. Spec. Top.*, 224: 1349-1358, 2015