

Curriculum vitae
Jakub Skrzeczkowski

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(a) Research experience

09.2023–08.2025: University of Oxford, postdoc in the ERC Advanced Grant of José A. Carrillo
01.2022–08.2023: LJLL, Sorbonne University, visiting PhD student, hosted by Benoît Perthame
03.2020–08.2020: LJLL, Sorbonne University, visiting PhD student, hosted by Benoît Perthame
10.2019–09.2023: Institute of Mathematics, Polish Academy of Sciences, PhD student with Piotr Gwiazda
03.2019–05.2019: Heidelberg University, visiting MSc student, hosted by Anna Marciniak-Czochra

(b) Education

19.06.2023 PhD in Mathematics (under supervision of Piotr Gwiazda), Institute of Mathematics, Polish Academy of Sciences
10.2017-08.2018 Erasmus Exchange MSc student, Hausdorff Center for Mathematics, Bonn, Germany
10.2017-09.2019 MSc in Mathematics, specialization in PDEs and analysis, University of Warsaw
10.2014-09.2017 BSc in Mathematics (interdisciplinary degree, 250 ECTS in Mathematics, Physics, Chemistry and Biology), University of Warsaw (MISMaP)
09.2010-05.2013 Academic High School, Nicolaus Copernicus University in Toruń, Poland

(c) Publications

1. C. Elbar, B. Perthame, J. Skrzeczkowski. Pressure jump and radial stationary solutions of the degenerate Cahn-Hilliard equation. *Comptes Rendus Mécanique* (in honour of Roland Glowinski), published online, doi: [10.5802/crmeca.173](https://doi.org/10.5802/crmeca.173).
2. C. Elbar, M. Mason, B. Perthame, J. Skrzeczkowski. From Vlasov equation to degenerate nonlocal Cahn-Hilliard equation. *Communications in Mathematical Physics*, 401, 1033–1057, 2023.
3. B. Perthame, J. Skrzeczkowski. Fast reaction limit with nonmonotone reaction function. *Communications on Pure and Applied Mathematics*, 76 (7), 2023.
4. C. Düll, A. Marciniak-Czochra, P. Gwiazda, J. Skrzeczkowski. Measure Differential Equation with a nonlinear growth/decay term. *Nonlinear Analysis: Real World Applications*, 73, 2023 (art. 103917).
5. C. Elbar, J. Skrzeczkowski. Degenerate Cahn-Hilliard equation: From nonlocal to local. *Journal of Differential Equations*, 364, 576-611, 2023.
6. M. Bulíček, P. Gwiazda, J. Skrzeczkowski, J. Woźnicki. Non-Newtonian fluids with discontinuous-in-time stress tensor. *Journal of Functional Analysis*, 285 (2), 2023 (art. 109943).
7. P. Gwiazda, B. Miasojedow, J. Skrzeczkowski, Z. Szymańska. Convergence of the EBT method for a non-local model of cell proliferation with discontinuous interaction kernel. *IMA Journal of Numerical Analysis*, 43(1), 590-626, 2023.

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8. M. Bulíček, P. Gwiazda, J. Skrzeczkowski. On a range of exponents for absence of Lavrentiev phenomenon for double phase functionals. *Archive for Rational Mechanics and Analysis*, 246, 209–240, 2022.
 9. J. Skrzeczkowski. Fast reaction limit and forward-backward diffusion: a Radon-Nikodym approach. *Comptes Rendus Mathématique*, tome 360, p. 189-203, 2022.
 10. Z. Szymańska, J. Skrzeczkowski, B. Miasojedow, P. Gwiazda. Bayesian inference of a non-local proliferation model. *Royal Society Open Science* 8: 211279, 2021.
 11. C. Düll, A. Marciniak–Czochra, P. Gwiazda, J. Skrzeczkowski. Spaces of measures and their applications to structured population models. *Cambridge Monographs on Applied and Computational Mathematics*, ISBN: 9781316519103, Cambridge University Press, 2021.
 12. M. Bulíček, P. Gwiazda, J. Skrzeczkowski. Parabolic equations in Musielak – Orlicz spaces with discontinuous in time N-function. *Journal of Differential Equations*, 290, 17-56, 2021.
 13. A.S. Ackleh, N. Saintier, J. Skrzeczkowski. Sensitivity equation for measure-valued solutions to transport equations. *Mathematical Biosciences and Engineering*, 17(1), 514-537, 2020.
 14. J. Skrzeczkowski. Measure solutions to perturbed structured population models - differentiability with respect to perturbation parameter. *Journal of Differential Equations*, 268 (8), 4119-4182, 2020.
 15. M. Merski, J. Skrzeczkowski, J.K. Roth, M.W. Górna. A Geometric Definition of Short to Medium Range Hydrogen-Mediated Interactions in Proteins. *Molecules*, 25 (22), 5326, 2020.
 16. M. Merski, K. Młynarczyk, J. Ludwiczak, J. Skrzeczkowski, S. Dunin-Horkawicz, M.W. Górna. Self-analysis of repeat proteins reveals evolutionarily conserved patterns. *BMC Bioinformatics*, 21, 179, 2020.

Preprints.

1. C. Düll, A. Marciniak–Czochra, P. Gwiazda, J. Skrzeczkowski. Structured Population Models on Polish Spaces: A unified approach including Graphs, Riemannian Manifolds and Measure Spaces. Preprint on *arXiv:2307.10957*.
2. P. Gwiazda, J. Skrzeczkowski, L. Trussardi. On the rate of convergence of Yosida approximation for the nonlocal Cahn-Hilliard equation. Preprint on *arXiv:2306.12772*.
3. C. Elbar, B. Perthame, J. Skrzeczkowski. On the limit problem arising in the kinetic derivation of the Cahn-Hilliard equation. Preprint on *arXiv:2306.06486*.
4. C. Elbar, J. Skrzeczkowski. On the inviscid limit connecting Brinkman’s and Darcy’s models of tissue growth with nonlinear pressure. Preprint on *arXiv:2306.03752*.
5. C. Elbar, B. Perthame, A. Poiatti, J. Skrzeczkowski. Nonlocal Cahn-Hilliard equation with degenerate mobility: Incompressible limit and convergence to stationary states. Preprint on *arXiv:2305.06239*.
6. C. Elbar, P. Gwiazda, J. Skrzeczkowski, A. Świerczewska-Gwiazda. From nonlocal Euler-Korteweg to local Cahn-Hilliard via the high-friction limit. Preprint on *arXiv:2305.01348*.
7. J.A. Carrillo, C. Elbar, J. Skrzeczkowski. Degenerate Cahn-Hilliard systems: From nonlocal to local. Preprint on *arXiv:2303.11929*.

(d) PI in research projects

03.2022–02.2023: *Singular limits in parabolic equations*, Bekker 2021, cost: 115k PLN, funded by National Agency for Academic Exchange (Poland)

06.2020–05.2023: *Transport equation in modern theory of partial differential equations*, Preludium 18, cost: 90k PLN, funded by National Science Center (Poland)

(e) Selected honors

- 06/2023: Distinction in Juliusz Schauder Prize for young mathematicians for achievements in nonlinear analysis awarded by Schauder Center for Nonlinear Studies in Toruń, Poland (one prize and two distinctions were awarded for people up to 4 years after PhD)
- 02/2023: Membership of the European Mathematical Society Young Academy (EMYA) (the EMS selected 30 members from mathematicians working in all areas of mathematics in Europe and being up to 5 years after PhD)
- 07/2022: **Scholarship for outstanding young researchers awarded by the Minister of Science of Poland** (17th edition, \approx 200k PLN, only 5 in mathematics and only 1 for people before PhD)
- 05/2022: Scholarship START awarded by Foundation for Polish Science for young researchers (100 scholarships for researchers below 30 years old from all disciplines were awarded)
- 04/2022: **Kazimierz Kuratowski Prize for achievements in mathematics awarded jointly by Institute of Mathematics (Polish Academy of Sciences) and Polish Mathematical Society** (only one prize for people below 30 years old was awarded; considered as the most prestigious prize for young mathematicians in Poland)
- 03/2022: Prize for the best young Polish mathematicians awarded by Polish Mathematical Society (only two such prizes for people below 27 years old were awarded)
- 12/2021: Scholarship of the President of the Polish Academy of Sciences for outstanding academic achievements (only 10 such scholarships are awarded among PhD students in all disciplines represented in the Academy)
- 04/2020: Special Prize in competition for best student thesis in mathematics *Step towards the future* funded by mBank (Poland)
- 02/2020: First Award in LIII Competition for best student paper in probability and applied mathematics, Polish Mathematical Society
- 08/2019: Eugeniusz Fidelis First Prize for best work presented by young mathematicians on 48th National Conference of Applied Mathematics
- 2012, 2013: Laureate title in 58th and 59th National Chemistry Olympiad

(f) Peer-reviewing activity

Verified peer-review information available at [Web of Science](#) profile.

- Journal of Mathematical Biology (1)
- Communications in Partial Differential Equations (1)
- Nonlinear Analysis: Real World Applications (1)
- European Journal of Applied Mathematics (1)
- Discrete and Continuous Dynamical Systems (1)

(g) Organization of events

- Workshop *Crossing the borderlines in fluids and biology*, 12-16.06.2023, Chęciny, Poland (with M. Bulíček and A. Świerczewska-Gwiazda)
- Workshop *Recent Advances in Kinetic Theory and Fluid Dynamics Models* in honour of Claude Bardos, 8-12.08.2022, Banach Center, Warsaw (with P. Gwiazda, A. Świerczewska-Gwiazda, E. Titi)

(h) Shorter academic visits

- E. Zatorska (London), 03.2023
- M. Růžička, A. Kaltenbach (Freiburg): 12.2022
- L. Trussardi (Konstanz): 06.2022
- A. Marciniak-Czochra (Heidelberg): 10.2021, 07.2021, 07.2020, 02.2020
- M. Bulíček (Prague): 11.2022, 07.2022, 10.2019

(i) Participation in conferences, workshops, schools

- Jul 2023: Workshop *Topics on neuroscience, collective migration and parameter estimation*, University of Oxford, UK, invited talk
- Feb 2023: Workshop *Multiscale analysis and methods for PDEs: fluids and active matter dynamics*, Institute of Mathematical Sciences, National University of Singapore, Singapore
- Nov 2022: School *Mathematical Methods for the Study of Self-organization in the Biological Sciences*, Erwin Schrodinger Institute, Vienna, Austria
- Aug 2022: School *3rd Mathematical Biology on the Mediterranean Conference*, Heraklion, Crete
- Jul 2022: Conference *30th Birthday of Acta Numerica*, Będlewo, Poland, talk
- Jun 2022: School *Mathematical Models for Bio-Medical Sciences*, Lake Como, Italy, poster
- Mar 2022: SIAM Conference on Analysis and PDEs, Berlin, Germany, invited talk at the session *Population dynamics: Individual-based and continuum models*
- Feb 2022: Hausdorff School "PDEs in Fluids Mechanics", Bonn, Germany
- Jan 2022: Trimester *Mathematical modeling of organization in living matter*, Institut Henri Poincaré, Paris, FR, poster during the 1st workshop and school in CIRM in Marseille
- Oct 2021: Non-local Models Arising from Biology, CIRM, Marseille, FR, poster
- Sep 2021: XII Forum on PDEs, Będlewo, PL, talk
- Nov 2020: Multiscale Models for Complex Fluids: Modeling and Analysis (BIRS Workshop, online), invited talk
- Dec 2019: SIAM Conference on Analysis of PDEs (PD19), La Quinta, US, invited talk at the session *Transport Equations - Mathematical Biology and Other Applications*
- Nov 2019: Winter School Gradient Flows and Variational Methods in PDEs, Ulm, DE, short talk
- Sep 2019: XLVIII Conference of Applied Mathematics, Zakopane, PL, talk
- Sep 2019: 100th Congress of Polish Mathematics, Cracow, PL, invited talk at PDE session
- Jun 2019: Function Spaces, Differential Operators and Nonlinear Analysis, Turku, FI, talk
- May 2019: Mathematical Aspects of Fluid Flows, Kacov, CZ, short presentation

Feb 2019: Workshop Transport, Mixing and Fluids, Muenster, DE, short talk
Dec 2018: Workshop Mathematical Modelling with Measures, Lorentz Center, Leiden, NE, talk
Oct 2018: Workshop HydroPDE, Imperial College, London, UK, short talk
Sep 2018: Meeting Young Women in Mathematical Physics, HCM, Bonn, DE, participation
Sep 2018: MathFlows 2018 (conference on fluid dynamics), Porquerolles, FR, participation

(j) Teaching (at University of Warsaw)

Student evaluations at <https://students.mimuw.edu.pl/~js357970/teaching.html>

- WS + SS 22/23: Interdisciplinary Seminar on PDEs 3 (seminar, jointly with A. Świerczewska–Gwiazda)
- WS + SS 21/22: Interdisciplinary Seminar on PDEs 2 (seminar, jointly with A. Świerczewska–Gwiazda)
- WS + SS 20/21: Interdisciplinary Seminar on PDEs (seminar, jointly with A. Świerczewska–Gwiazda)
 - SS 20/21: Introduction to PDEs (tutorials, course for 3rd year students)
 - WS 20/21: Hyperbolic Conservation Laws (tutorials, course for 4-5th year and PhD students)
 - WS 20/21: Functional Analysis (tutorials, course for 3rd year students)
 - WS 19/20: Functional Analysis (tutorials, course for 3rd year students)