

Curriculum vitae
Jakub Skrzeczkowski

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(a) Interest statement

I am broadly interested in partial differential equations and their connections with analysis and probability theory. I am currently involved in research activities on the following topics:

1. transport equation (structured population models) in spaces of measures,
2. PDEs in non-standard growth setting (Musielak-Orlicz spaces),
3. reaction-diffusion systems and their singular limits,
4. bayesian approach to inverse problems in PDEs.

(b) Education

University of Warsaw, Warsaw, PL; Mathematics; PhD with Piotr Gwiazda, since 10/2019
University of Warsaw, Warsaw, PL; Mathematics; MSc with Piotr Gwiazda, 2019
University of Warsaw, Warsaw, PL; Mathematics (interdisciplinary degree, 250 ECTS); BSc, 2017
Academic High School, Torun, PL; Mathematics, Physics, Chemistry (individual curriculum); 2013

(c) Publications

1. B. Perthame, J. Skrzeczkowski. Fast reaction limit with nonmonotone reaction function. Accepted in *Communications on Pure and Applied Mathematics*, preprint on *arXiv:2008.11086*.
2. C. Düll, A. Marciniak–Czochra, P. Gwiazda, J. Skrzeczkowski. Spaces of measures and their applications to structured population models. Book accepted in *Cambridge Monographs on Applied and Computational Mathematics*.
3. M. Bulíček, P. Gwiazda, J. Skrzeczkowski. Parabolic equations in Musielak – Orlicz spaces with discontinuous in time N -function. Submitted, preprint on *arXiv:1911.10826*.
4. 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.
5. J. Skrzeczkowski. Measure solutions to perturbed structured population models - differentiability with respect to perturbation parameter. *Journal of Differential Equations*, 268 (8), 4119-4182, 2020.
6. 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.
7. 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.

(d) Principal investigator in research projects

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) Longer academic visits

03.2020–08.2020: Sorbonne University, Paris, FR, hosted by Benoît Perthame

03.2019–05.2019: Heidelberg University, DE, hosted by Anna Marciniak-Czochra

10.2017–08.2018: Hausdorff Center for Mathematics, Bonn, DE, exchange student

(f) Selected honors

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 Society of Mathematics

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

(g) Shorter academic visits

28.06-3.07/2020: Heidelberg University, DE, collaboration with A. Marciniak-Czochra, lecture

24-28/02/2020: Heidelberg University, DE, collaboration with A. Marciniak-Czochra

30.09-02.10/2019: Charles University in Prague, CZ, collaboration with M. Bulíček

(h) Participation in conferences, workshops, schools

11-14/12/2019: SIAM Conference on Analysis of PDEs (PD19), La Quinta, US, invited talk at the session *Transport Equations - Mathematical Biology and Other Applications*

25-29/11/2019: Winter School Gradient Flows and Variational Methods in PDEs, Ulm, DE, short talk

9-16/09/2019: XLVIII Conference of Applied Mathematics, Zakopane, PL, talk

2-7/09/2019: 100th Congress of Polish Mathematics, Cracow, PL, invited talk at PDE session

10-15/06/2019: Function Spaces, Differential Operators and Nonlinear Analysis, Turku, FI, talk

27-31/05/2019: Mathematical Aspects of Fluid Flows, Kacov, CZ, short presentation

12-14/02/2019: Workshop Transport, Mixing and Fluids, Muenster, DE, short talk

3-7/12/2018: Workshop Mathematical Modelling with Measures, Lorentz Center, Leiden, NE, talk

21-22/10/2018: Workshop HydroPDE, Imperial College, London, UK, short talk

24-26/09/2018: Meeting Young Women in Mathematical Physics, HCM, Bonn, DE, participation

3-7/09/2018: MathFlows 2018 (conference on fluid dynamics), Porquerolles, FR, participation

(i) Teaching (at University of Warsaw)

WS + SS 20/21: Interdisciplinary Seminar on PDEs (seminar, jointly with A. Świerczewska–Gwiazda)

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)