

Paweł Strzelecki

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URL: <http://www.mimuw.edu.pl/~pawelst/>
Born: June 19, 1963—Warsaw, Poland
Nationality: Polish. Married since 1989, two sons.



Current position

Full Professor, Institute of Mathematics, University of Warsaw

Research Interests

Nonlinear PDE, Calculus of Variations, Geometric Analysis.

Employment

2015-	Full Professor, Institute of Mathematics, University of Warsaw
2006-2015	Associate Professor, Institute of Mathematics, University of Warsaw
2002-2003	Humboldt Fellow, Mathematisches Institut der Universität Bonn; 12 months
1999-2001	Humboldt Fellow, Mathematisches Institut der Universität Bonn; 22 months
1994-2006	Assistant Professor, Institute of Mathematics, University of Warsaw
1994	Research Fellow, Laboratoire d'Analyse Numérique, Paris VI; 3 months
1987-1993	Teaching Assistant, Institute of Mathematics, University of Warsaw

Education

2011	Title of Professor (awarded by the President of Poland)
2005	Habilitation in Mathematics (with a honorary distinction), University of Warsaw
1993	PhD in Mathematics, University of Warsaw (thesis advisor: Bogdan Bojarski)
1987	MSc in Mathematics, University of Warsaw (thesis advisor: Bogdan Bojarski)

Awards

2015	Samuel Dickstein Award of the Polish Mathematical Society for achievements for the benefit of mathematical culture
2004	Kuryłowicz Prize for the best Polish translation of scientific literature
2003	Hugo Steinhaus honorary distinction for popularizing mathematics in the media
1999	Alexander von Humboldt Research Fellowship, extended in 2000 and in 2002.

Service to the profession

2016-2024	Dean, Faculty of Mathematics, Computer Science and Mechanics, University of Warsaw
2012-2016	Vice-Dean (research affairs) Faculty of Mathematics, Computer Science and Mechanics, University of Warsaw
2011-2012	Member of the Board of the Polish Mathematical Society
2009-2012	Member of the Jury of the Sierpiński medal
2008-2011	Member of the Senate Committee for student and teaching affairs, University of Warsaw
2005-2008	Vice-Dean (student and teaching affairs) Faculty of Mathematics, Computer Science and Mechanics, University of Warsaw
2003-2005	Vice-Director (teaching affairs) Institute of Mathematics, University of Warsaw

Grants

I. POLISH MINISTRY OF SCIENCE & NATIONAL SCIENCE CENTRE

PROJECT DIRECTOR OR PRINCIPAL INVESTIGATOR:

2017-2020	Grant no. 2016/21/B/ST1/03138, Selected topics on the borderline of nonlinear PDEs and geometric measure theory.
2014-2017	Grant no. 2013/10/M/ST1/00416, Curvature energies for non-smooth subsets of Euclidean spaces (HARMONIA), for German-Polish Cooperation, co-directed with Heiko von der Mosel.
2013-2016	Grant no. 2012/07/B/ST1/03366, Systems of nonlinear elliptic equations: regularity of solutions, structure of singularities and related topics.
2009-2012	Grant no. N N201 397737, Nonlinear PDEs: geometric and variational problems.
2011-2012	Grant no. N N201 611140, Integral Menger curvature for surfaces of arbitrary codimension. (Doctoral grant for Sławomir Kolasiński).
2005-2008	Grant no. PO3A-005-29, Nonlinear geometric and variational problems.
2001-2004	Grant no. PO3A-028-22, Analysis on metric spaces and its applications to nonlinear elliptic equations, probability and calculus of variations.

TEAM MEMBER:

1998-2001	Grant no. PO3A-055-14, Sobolev spaces, nonlinear PDE and calculus of variations: analytic methods in geometric problems. (Project director: Bogdan Bojarski).
1995-1997	Grant no. PO3A-034-08, Sobolev spaces: theory, applications in partial differential equations and numerical simulations. (Project director: Bogdan Bojarski).
1991-1994	Grant no. PO3A-034-08, Analytical and geometrical methods for Sobolev mappings and their applications. (Project director: Bogdan Bojarski).

2. INTERNATIONAL GRANTS

2008-2011	Polish-German joint research project <i>Geometric curvature energies</i> , financed by MNiSzW and DFG, co-directed with Heiko von der Mosel.
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1997-1998

French-Polish joint research project POLONIUM 97204, co-directed with Frédéric Hélein.

Publications

PREPRINTS & SUBMITTED PAPERS

2022 M. Miśkiewicz, B. Petraszczyk, P. Strzelecki. *Regularity for solutions of H -systems and n -harmonic maps with $n/2$ square integrable derivatives.* <https://arxiv.org/abs/2206.13833>.

PUBLISHED ARTICLES

2018b P. Strzelecki, H. von der Mosel. *Geometric curvature energies: facts, trends, and open problems.* In: *New Directions in Geometric and Applied Knot Theory*. Editors: S. Blatt, Ph. Reiter, A. Schikorra. Chapter 2, pages 8-35. Walter de Gruyter, 2018.

2018a S. Kolasiński, P. Strzelecki, H. von der Mosel. *Compactness and isotopy finiteness for submanifolds with uniformly bounded geometric curvature energies.* *Communications in Analysis and Geometry* 26 (2018), 1251-1316.

2017b K. Mazowiecka, P. Strzelecki, *The Lavrentiev gap phenomenon for harmonic maps into spheres holds on a dense set of zero degree boundary data.* *Advances in Calculus of Variations* 10 (2017), 303-314.

2017a A. Schikorra, P. Strzelecki. *Invitation to H -systems in higher dimensions: known results, new facts, and related open problems.* *EMS Surveys in Mathematical Sciences*, 4 (2017), no. 1, 21-42.

2016a K. Kazaniecki, M. Łasica, K. Mazowiecka, P. Strzelecki. *A conditional regularity result for p -harmonic flows.* *Nonlinear Differential Equations and Applications (NoDEA)*, 23 (2016), no. 2, art. 9, 13 pp.

2014 P. Strzelecki, H. von der Mosel. *How averaged Menger curvatures control regularity and topology of curves and surfaces.* *Journal of Physics: Conference Series*, 544 (2014), 12 pages.

2013e P. Strzelecki, H. von der Mosel. *Menger curvature as a knot energy.* *Physics Reports*, 530, no. 3, (2013), 257-290.

2013d P. Strzelecki, M. Szumańska, H. von der Mosel. *On some knot energies involving Menger curvature.* *Topology and its Applications*, 160 (2013), 1507-1529.

2013c P. Strzelecki, H. von der Mosel. *Tangent-point repulsive potentials for a class of non-smooth m -dimensional sets in \mathbb{R}^n . Part I: Smoothing and self-avoidance effects.* *Journal of Geometric Analysis*, 23 (2013), 1085-1139.

2013b S. Kolasiński, P. Strzelecki, H. von der Mosel. *Characterizing $W^{2,p}$ submanifolds by p -integrability of global curvatures.* *Geometric and Functional Analysis*, 23 (2013), 937-984.

2013a P. Goldstein, P. Strzelecki, A. Zatorska-Goldstein. *Weak compactness of solutions for fourth order elliptic systems with critical growth.* *Studia Mathematica*, 214 (2013), 137-156.

2012 P. Strzelecki, H. von der Mosel. *Tangent-point self-avoidance energies for curves.* *J. Knot Theory Ramifications* 21, no. 5 (2012).

2011 P. Strzelecki, H. von der Mosel. *Integral Menger curvature for surfaces.* *Advances in Mathematics* 226 (2011), 2233-2304.

- 2010 P. Strzelecki, M. Szumańska, H. von der Mosel. *Regularizing and self-avoidance effects of integral Menger curvature*. Annali della Scuola Normale Superiore di Pisa 9, no. 1 (2010), 145-187.
- 2009b P. Goldstein, P. Strzelecki, A. Zatorska-Goldstein. *On polyharmonic maps into spheres in the critical dimension*. Annales de l'IHP, Analyse Non-Linéaire 26 (2009), 1387-1405.
- 2009a P. Strzelecki, M. Szumańska, H. von der Mosel. *A geometric curvature double integral of Menger type for space curves*. Annales Acad. Sci. Fenn. 34 (2009), 195-214.
- 2008b P. Hajłasz, P. Strzelecki, X. Zhong, *A new approach to interior regularity of elliptic systems with quadratic Jacobian structure in dimension two*, Manuscripta Math. 127 (2008), 121-135.
- 2008a P. Strzelecki, A. Zatorska-Goldstein. *On a nonlinear fourth order elliptic system with critical growth in first order derivatives*, Advances in Calc. Var 1 (2008), 205-222.
- 2007 P. Strzelecki, H. von der Mosel. *On rectifiable curves with L^p -bounds on global curvature: Self-avoidance, regularity, and minimizing knots*. Math. Z. 257 (2007), 107-130.
- 2006b P. Strzelecki, H. von der Mosel. *Global curvature for surfaces and area minimization under a thickness constraint*, Calculus of Variations and PDE 25 (2006), 431-467.
- 2006a P. Strzelecki. *Gagliardo-Nirenberg inequalities with a BMO term*, Bull. London Math. Soc. 38 (2006), 294-300.
- 2005d P. Strzelecki, H. von der Mosel. *On a mathematical model for thick surfaces*. Chapter 27 in: *Physical and Numerical Models in Knot Theory and their Application to the Life Sciences*, vol. 36, Series "Knots and Everything", World Scientific Publishing, 2005.
- 2005c B. Bojarski, P. Hajłasz, P. Strzelecki. *On Sard's theorem for mappings in Hölder and Sobolev classes*, Manuscripta Math. 118 (2005), 383-397.
- 2005b T. Rivière, P. Strzelecki. *A sharp non-linear Gagliardo-Nirenberg estimate and applications to regularity of nonlinear elliptic systems*, Communications in PDE 30 (2005), 589-604.
- 2005a P. Hajłasz, P. Strzelecki. *How to measure volume with a thread*. Amer. Math. Monthly, 112 (2005), 176-179
- 2004 P. Strzelecki, A. Zatorska-Goldstein. *A compactness theorem for higher dimensional H-systems*, Duke Math. Journal 121 (2004), 269-284.
- 2003c P. Strzelecki. *On regularity of generalized sphere-valued p -harmonic maps with small mean oscillations*, Manuscripta Math. 112 (2003), 473-487.
- 2003b P. Strzelecki. *On biharmonic maps and their generalizations*, Calculus of Variations and PDE 18 (2003), 401-432.
- 2003a P. Strzelecki. *A new proof of regularity of weak solutions of the H-surface equation*, Calculus of Variations and PDE 16 (2003), 227-242.
- 2002 B. Bojarski, P. Hajłasz, P. Strzelecki. *Improved approximation of higher order Sobolev functions in norm and capacity*, Indiana Univ. Math. Journal 51 (2002), 507-540.
- 2001 P. Strzelecki. *Hardy space estimates for higher order differential operators*. Indiana Univ. Math. Journal 50 (2001), 1447-1461.
- 1998 P. Hajłasz, P. Strzelecki. *Subelliptic p -harmonic maps into spheres and the ghost of Hardy spaces*, Mathematische Annalen 312 (1998), 341-362.

- 1996c P. Strzelecki. *Stationary p -harmonic maps into spheres*, in: *Singularities and Differential Equations*, Banach Center Publications vol. 33, 383-393, Warszawa 1996.
- 1996b P. Strzelecki. *Asymptotics for a minimization of a Ginzburg-Landau energy in n dimensions*, Colloquium Math. 70 (1996), 271-289.
- 1996a P. Strzelecki. *Quasilinear elliptic systems of Ginzburg-Landau type*, in: *Free boundary problems and applications. Proceedings of 1995 Zakopane Congress*, pp. 158-165, Pitman Res. Notes Math. Ser., 363, Longman, Harlow, 1996.
- 1994 P. Strzelecki. *Regularity of p -harmonic maps from the p -dimensional ball into a sphere*, Manuscripta Math. 82 (1994), 407-415.
- 1993b P. Strzelecki. *Regularity of p -harmonic functions on a Riemann surface*, Proc. of the 4th Finnish-Polish Summer School in Complex Analysis, edited by Olli Martio and Julian Ławrynowicz, Ber. Univ. Jyväskylä Math. Inst. 55 (1993), 183-190.
- 1993a P. Hajłasz, P. Strzelecki. *On the differentiability of solutions of quasilinear elliptic equations*, Colloquium Math. 64 (1993), 287-291
- 1992b P. Strzelecki. *Pointwise differentiability properties of solutions of quasilinear parabolic equations*, Hokkaido Math. Journal 21 (1992), 543-567.
- 1992a P. Strzelecki. *Pointwise differentiability of weak solutions of parabolic equations with measurable coefficients*, Ann. Acad. Sci. Fenn. 17 (1992), 171-180.

EDITOR OF CONFERENCE PROCEEDINGS

- 2014 R. Latała, A. Ruciński, P. Strzelecki, J. Świątkowski, D. Wrzosek, P. Zakrzewski. *European Congress of Mathematics. Kraków, 2-7 July, 2012*, ISBN 978-3-03719-120-0. European Mathematical Society Publishing House, Zurich, January 2014.
- 1996 M. Niezgódka, P. Strzelecki. *Free boundary problems and applications. Proceedings of 1995 Zakopane Congress*. Pitman Research Notes in Mathematics Series, vol. 363, Addison Wesley Longman, 1996.
- 1995 N. Kenmochi, M. Niezgódka, P. Strzelecki. *Proceedings of the Banach Center Minisemester Nonlinear Analysis and Applications*. Gakuto International Series Mathematical Sciences and Applications, vol. 7, Tokyo 1995.

POPULAR BOOKS, PAPERS & TRANSLATIONS

- 2011 P. Strzelecki, *Modern mathematics for thinking laymen*. (A popular book in Polish). Warsaw University Press.

Author of several Polish translations of textbooks and popular books, including

- *Proofs from the Book* by M. Aigner and G. Ziegler
- *Partial Differential Equations* by L.C. Evans, translated jointly with Piotr Rybka
- *The last recreations* by Martin Gardner
- *Math Hysteria* by Ian Stewart
- *Letters to a young mathematician* by Ian Stewart
- *The Drunkard's Walk: How Randomness Rules our Lives* by Leonard Mlodinow

Author of more than 50 articles popularizing mathematics which appeared mostly in the Polish popular monthly *Delta* but also in other journals and newspapers.

Teaching

- Analysis I and II (the standard two-year course, and the version ‘with honors’)
- Partial Differential Equations I and II
- Several advanced courses on PDE and Calculus of Variations
- Popular lectures on modern mathematics for students of College of Inter-Faculty Individual Studies in the Humanities
- Numerous exercise classes in Analytic Functions, Probability Theory, ODEs, PDEs, Functional Analysis, Calculus, ...

RESULTS OF ANONYMOUS STUDENT POLLS

For the years 2010–2015, my average results for all the 13 classes I taught in Warsaw in that period, are as follows (on the scale 1–7):

- ‘your general opinion on the teacher’: 6,63 with min 6,20 and max 7,00.
- ‘teacher’s preparation for class’: 6,81 with min 6,60 and max 6,93.

Specific examples include:

2012–13	Analysis I, general opinion on the course, winter term: 6.604 out of 7 (average for all the faculty members: 5.52 with $\sigma = 1.485$).
2011–12	Analysis II, general opinion on the course: the best result among all obligatory courses for math undergraduates, 6.554 out of 7 (average for all the faculty members: 5.389 with $\sigma = 1.436$).
2010–11	Analysis I, general opinion on the course: 6.587 out of 7 (average for all the faculty members: 5.339 with $\sigma = 1.427$).
2007–08	Methods of Harmonic Analysis in PDE, general opinion on the course: 6.41 out of 7.