

## Curriculum vitae

# Vladimir E. Bobkov

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Univerzitní 8, 301 00, Plzeň, Czech Republic homepage: <http://vladimir-bobkov.ru>

### EDUCATION

2005-2011 (Graduate) **Ufa State Aviation Technical University**, Ufa, Russia

- Major: Applied Mathematics and Informatics
- Diploma thesis (Specialist degree): *Investigation of characteristics of random fields and homogenization of periodic differential operators*

2011-2014 (Postgraduate) **Institute of Mathematics of Russian Academy of Sciences**, Ufa, Russia

- Major: Differential equations
- Scientific adviser: Dr. Phys.-Math. Sci., Prof. **Il'yasov Ya.Sh.**

2015, May 15

Defence of the Candidate-of-sciences dissertation (PhD thesis) "*Critical sets of parameters and special classes of solutions for elliptic equations and systems*".

### RESEARCH INTERESTS

Nonlinear PDEs: elliptic problems, parabolic problems. Existence of solutions, their qualitative properties; critical values of parameters. Variational and topological methods of nonlinear analysis

### REFEREED JOURNAL PUBLICATIONS

1. Bobkov, V., Il'yasov, Y. Asymptotic behaviour of branches for ground states of elliptic systems. *Electronic Journal of Differential Equations*, (212), (2013) 1–21.
2. Bobkov, V. E. On existence of nodal solution to elliptic equations with convex-concave nonlinearities. *Ufa Mathematical Journal*, 5(2), (2013) 18–30.
3. Bobkov, V. Least energy nodal solutions for elliptic equations with indefinite nonlinearity. *Electronic Journal of Qualitative Theory of Differential Equations*, (56), (2014) 1–15.
4. Bobkov, V. E., Takáč, P. A Strong Maximum Principle for parabolic equations with the  $p$ -Laplacian. *Journal of Mathematical Analysis and Applications*, 419(1), (2014) 218–230.
5. Bobkov, V. E. On the existence of a continuous branch of nodal solutions of elliptic equations with convex-concave nonlinearities. *Differential Equations*, 50(6), (2014) 765–776.
6. Bobkov, V., Tanaka, M. On positive solutions for  $(p,q)$ -Laplace equations with two parameters. *Calculus of Variations and Partial Differential Equations*, 54(3), (2015) 3277–3301.
7. Benedikt, J., Bobkov, V. E., Girg, P., Kotrla, L., Takáč, P. Nonuniqueness of solutions of initial-value problems for parabolic  $p$ -Laplacian. *Electronic Journal of Differential Equations*, (38), (2015) 1–7.
8. Bobkov, V., Il'yasov, Y. Maximal existence domains of positive solutions for two-parametric systems of elliptic equations. *Complex Variables and Elliptic Equations*, 61(5), (2016) 587–607.

9. Bobkov, V., Drábek, P. On some unexpected properties of radial and symmetric eigenvalues and eigenfunctions of the  $p$ -Laplacian on a disk. *Journal of Differential Equations*, 263(3), (2017) 1755–1772.
10. Anoop, T. V., Bobkov, V., Sasi, S. On the strict monotonicity of the first eigenvalue of the  $p$ -Laplacian on annuli. *Transactions of the American Mathematical Society*, 370, (2018) 7181-7199.
11. Audoux, B., Bobkov, V., Parini, E. On multiplicity of eigenvalues and symmetry of eigenfunctions of the  $p$ -Laplacian. *Topological Methods in Nonlinear Analysis*, 51(2), (2018) 565-582.
12. Bobkov, V., Tanaka, M. Remarks on minimizers for  $(p,q)$ -Laplace equations with two parameters. *Communications on Pure and Applied Analysis*, 17(3), (2018) 1219-1253.
13. Bobkov, V., Parini, E. On the higher Cheeger problem. *Journal of the London Mathematical Society*, 97(3), (2018) 575–600.
14. Bobkov, V., Tanaka, M. On sign-changing solutions for resonant  $(p,q)$ -Laplace equations. *Differential Equations & Applications*, 20(2), (2018) 197–208.
15. Bobkov, V. On exact Pleijel’s constant for some domains. *Documenta Mathematica*, 23, (2018) 799-813.
16. Bobkov, V., Tanaka, M. On sign-changing solutions for  $(p,q)$ -Laplace equations with two parameters. *Advances in Nonlinear Analysis*, 8(1), (2019) 101-129.
17. Bobkov, V. Asymptotic relation for zeros of cross-product of Bessel functions and applications. *Journal of Mathematical Analysis and Applications*, 472(1), (2019) 1078-1092.
18. Bobkov, V., Drábek, P., Il’yasov, Y. On partially free boundary solutions for elliptic problems with non-Lipschitz nonlinearities. *Applied Mathematics Letters*, 95, (2019) 23-28.
19. Bobkov, V. E., Takáč, P. On maximum and comparison principles for parabolic problems with the  $p$ -Laplacian. *Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. Serie A. Matemáticas*, 113(2), (2019) 1141-1158.

MANUSCRIPTS  
ACCEPTED FOR  
PUBLICATION OR  
AHEAD OF PRINT

1. Bobkov, V., Tanaka, M. On the Fredholm-type theorems and sign properties of solutions for  $(p,q)$ -Laplace equations with two parameters. *Annali di Matematica Pura ed Applicata (1923 -)*, (2019), ahead of print.
2. Bobkov, V., Kolonitskii, S. On a property of the nodal set of least energy sign-changing solutions for quasilinear elliptic equations. *Proceedings of the Royal Society of Edinburgh Section A: Mathematics*, (2019), ahead of print.

PREPRINTS

1. Bobkov, V., Kolonitskii, S. On qualitative properties of solutions for elliptic problems with the  $p$ -Laplacian through domain perturbations. (2017), arXiv:1701.07408.
2. Bobkov, V., Drábek, P., Il’yasov, Y. On full Zakharov equation and its approximations. (2018), arXiv:1801.00803.
3. Bobkov, V., Drábek, P., Il’yasov, Y. Estimates on spectral interval of validity of anti-maximum principle. (2018), arXiv:1807.06804.
4. Bobkov, V., Kolonitskii, S. Second-order shape derivative along Nehari manifold trajectories. (2018), arXiv:1812.05012.
5. Baustian, F., Bobkov, V. On asymptotic behaviour of Dirichlet inverse. (2019), arXiv:1903.12445.

RESEARCH  
EXPERIENCE

**Research Assistant** August 2013 to August 2014  
Institut für Mathematik,  
Universität Rostock

**Researcher** September 2014 to (on hold)  
Department of Computational Mathematics,  
Institute of Mathematics of Russian Academy of Sciences

**Junior Researcher** January 2016 to present  
Department of Mathematics and NTIS,  
University of West Bohemia, Plzeň, Czech Republic

RESEARCH VISITS

Department of Mathematics, University of West Bohemia,  
Pilsen, Czech Republic.  
Responsible: Pavel Drábek 05.03.2014–14.03.2014

Department of Mathematics, University of West Bohemia,  
Pilsen, Czech Republic.  
Responsible: Petr Girg 19.05.2014–01.06.2014

Department of Mathematics, Tokyo University of Science,  
Tokyo, Japan.  
Responsible: Mieko Tanaka 05.10.2015–25.10.2015

Institut de Mathématiques de Marseille, Aix-Marseille University,  
Marseille, France.  
Responsible: Enea Parini 14.03.2017–15.04.2017

Department of Mathematics, Tokyo University of Science,  
Tokyo, Japan.  
Responsible: Mieko Tanaka 16.05.2017–27.05.2017

Institut für Mathematik, Universität Rostock,  
Rostock, Germany.  
Responsible: Peter Takáč, 21.10.2018–3.11.2018

Institut de Mathématiques de Marseille, Aix-Marseille University,  
Marseille, France.  
Responsible: Enea Parini 30.06.2019–14.07.2019

TALKS ON  
CONFERENCES &  
WORKSHOPS

- III International school “Fundamental Mathematics and Applications in Natural Sciences”,  
*Ufa, Russia* October 14–18, 2012
- IV International Conference on differential equations and applications dedicated to Ya.Lopatinsky,  
*Donetsk, Ukraine* November 15–17, 2012
- BMS Intensive Course on Evolution Equations and their Applications,  
*Berlin, Germany* November 27–29, 2013
- The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications,  
*Madrid, Spain* July 7–11, 2014
- XXVII Autumn Crimean Mathematical School (KROMSH 2016),  
*Laspi-Batiliman, Crimea* September 17–29, 2015

- 137 Kagurazaka Seminar on Analysis,  
*Tokyo, Japan* October 24, 2015
- 30th Seminar in Differential Equations,  
*Ostrov, Czech Republic* May 30 - June 3, 2016
- Emerging issues in nonlinear elliptic equations: singularities, singular perturbations  
and non local problems,  
*Bedlewo, Poland* June 18-24, 2017
- Equadiff 2017,  
*Bratislava, Slovakia* July 24-28, 2017
- The 8th International Conference on Differential and Functional Differential Equations  
(DFDE-2017),  
*Moscow, Russia* August 13-20, 2017
- Differential Equations and Applications (DiffEq[&]App-2017),  
*Brno, Czech Republic* September 4-7, 2017
- 31th Seminar in Differential Equations,  
*Velehrad, Czech Republic* May 21-25, 2018
- The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications,  
*Taipei, Taiwan* July 5-9, 2018
- 2019 Nonlinear Analysis,  
*Plzeň, Czech Republic* March 7, 2019
- Conference in honor of Peter Takáč's birthday,  
*Toulouse, France* June 6-8, 2019

TALKS ON  
SEMINARS

- The Analysis Seminar,  
University of West Bohemia, KMA,  
*Plzeň, Czech Republic* December 16, 2013
- Seminar on computational mathematics and related questions,  
Institute of Mathematics of RAS,  
*Ufa, Russia* December 25, 2013
- Applied Analysis Seminar,  
Institut für Mathematik, Universität Rostock,  
*Rostock, Germany* April 7, 2015
- Seminar on differential equations of mathematical physics,  
Institute of Mathematics of RAS,  
*Ufa, Russia* February 10, 2015
- The Analysis Seminar,  
University of West Bohemia, KMA,  
*Plzeň, Czech Republic* April 8, 2016
- The Analysis Seminar,  
University of West Bohemia, KMA,  
*Plzeň, Czech Republic* November 25, 2016
- Seminar on computational mathematics and related questions,  
Institute of Mathematics of RAS,  
*Ufa, Russia* December 26, 2016
- Séminaire Analyse Appliquée (AA),  
Institut de Mathématiques de Marseille,  
*Marseille, France* April 4, 2017
- Seminar on differential equations of mathematical physics,  
Institute of Mathematics of RAS,  
*Ufa, Russia* December 19, 2017
- Mathematisches Forschungskolloquium,  
Institut für Mathematik, Universität Rostock,  
*Rostock, Germany* October 30, 2018
- Seminar on Partial Differential Equations,

RESEARCH  
PROJECTS

- Russian Foundation for Basic Research, Grant No. 13-01-00294 "Development of variational methods for investigation of special classes of solutions for nonlinear boundary value problems".  
Coordinator: Prof. Il'yasov Ya.Sh. 2013 - 2015
- Russian Foundation for Basic Research, Grant No. 14-01-31054 "Stability of resonance effects in nonlinear models".  
Coordinator: Dr. Sultanov O.A. 2013 - 2015
- Czech Ministry of Education, Youth and Sports, Project LO1506 "Podpora udržitelnosti centra NTIS – Nové technologie pro informační společnost". 2016 - 2019
- Grant Agency of the Czech Republic, Grant No. 18-03253S "Diferenciální rovnice se speciálními typy nelinearit".  
Coordinator: prof. RNDr. Pavel Drábek, DrSc. 2018 - 2019

TEACHING

- Higher Mathematics, Analysis 2011-2013  
*(in Ufa State Aviation Technical University)*
- Modern Mathematical Methods, 2016-present  
Selected Topics in Mathematical Analysis and Numerical Methods  
*(in University of West Bohemia, Pilsen, Czech Republic).*