

# Dr. Iryna Ryzhkova-Gerasymova

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Address: Moskovskiy ave 131b apt. 137 Kharkiv 61001 Ukraine

born: 06.08.1979

sex: female.

## Skills

- *Infinite-dimensional dynamical systems.* Dissipativity, attractors, Lyapunov functions, stability/stabilization, finite dimensionality of limit regimes. Non-autonomous processes.
- *Evolution PDEs.* Linear and nonlinear problems. Well-posedness, trace regularity, semigroup theory methods, microlocal analysis, monotone operators methods, interpolation spaces methods.
- *Numerical mathematics* Matlab/Octave
- *Other Commercial WEB Programming: full stack developer (PHP, HTML/CSS/JavaScript, AJAX).*

## Employment

- May 2014 - Present Associate professor, Department of Mathematics and Mechanics Kharkiv Karazin National University, Kharkiv, Ukraine.
- Jan. 2016 - Present Senior research fellow, Department of Mathematics and Mechanics Kharkiv Karazin National University, Kharkiv, Ukraine.
- 2010-2013 Lecturer, Department of Mathematics and Mechanics Kharkiv Karazin National University, Kharkiv, Ukraine.
- 2007-2010 Assistant professor, Department of Mathematics and Mechanics Kharkiv Karazin National University, Kharkiv, Ukraine.
- 2011-2014 Senior research fellow, Department of Mathematics and Mechanics Kharkiv Karazin National University, Kharkiv, Ukraine.
- 2007-2011 Research fellow, Department of Mathematics and Mechanics Kharkiv Karazin National University, Kharkiv, Ukraine.
- 2002-2007 Junior research fellow, Department of Mathematics and Mechanics Kharkiv Karazin National University, Kharkiv, Ukraine.
- 2001-2002 Assistant professor, Department of Mathematics and Mechanics Kharkiv Karazin National University, Kharkiv, Ukraine.

## Education

2008 Ph.D. in mathematics, Kharkiv Karazin National University.

2006 School on Nonlinear Differential Equations, The Abdus Salam International Center for Theoretical Physics, Trieste, Italy Supervisor: Prof. I. Chueshov.

2001 M.Sc. in mathematics, Kharkiv Karazin National University.

## Grants and awards

2005 Leonhard-Euler-Scholarship Program, DAAD, Goethe University, Frankfurt am Main, Germany

2006 N.I. Akhiezer Foundation Grant 2006, USA-Ukraine

2016-2018 Volkswagen grant Trilateral Partnership 'Modeling, Analysis, and Approximation Theory toward applications in tomography and inverse problems' [http://www.math.uni-luebeck.de/mitarbeiter/prestin/Trilateral\\_Partnership/](http://www.math.uni-luebeck.de/mitarbeiter/prestin/Trilateral_Partnership/)

Invited/supported research visits

- 01.05.2005-31.05.2005 Goethe University, Frankfurt am Main, Germany
- 23.05.2017-23.06.2017 Humboldt University, Berlin, Germany
- 22.01.2018-22.02.2018 TU Braunschweig, Germany
- 19.08.2018-04.09.2018 Humboldt University, Berlin, Germany

## Research articles

- Iryna Ryzhkova-Gerasymova, Long time behaviour of strong solutions to interactive fluid-plate system without rotational inertia, DCDS-B, May 2018, 23(3): 1243-1265.
- Chueshov I. and Ryzhkova I. On the interaction of an elastic wall with a Poiseuille-type flow // Ukrainian Mathematical Journal. 2013. Vol. 65, Issue 1, 158–177.
- Igor Chueshov and Iryna Ryzhkova, Unsteady interaction of a viscous fluid with an elastic shell modeled by full von Karman equations // J. Differential Equations. 2013. Vol. 254, 1833-1862.
- Igor Chueshov and Iryna Ryzhkova, A global attractor for a fluid-plate interaction model // Commun. Pure Applied Analysis. 2013. Vol. 12, p. 1635–1656.

- Ryzhkova I. On Trace Regularity of Solutions to a Wave Equation with Homogeneous Neumann Boundary Conditions // Journal of Mathematical Physics, Analysis, Geometry. 2007. V. 3, 4. p. 468489.
- Ryzhkova I. Dynamics of a thermoelastic von Karman plate in a subsonic gas flow // Zeitschrift fur Angewandte Mathematik und Physik. 2007. Vol. 58. P. 246261.
- Ryzhkova I. On a retarded PDE system for a von Karman plate with thermal effects in the flow of gas // Matematicheskaja fizika, analiz, geometrija. 2005. Vol. 12, 2. P. 173186.
- Ryzhkova I. Stabilization of von Karman plate in the presence of thermal effects in the subsonic flow of gas // J. Math. Anal. Appl. 2004. Vol. 294/2. P. 462481.

#### **Review articles**

- I. Chueshov, T. Fastovska, I. Ryzhkova-Gerasymova, Quasistability method in study of asymptotical behaviour of dynamical systems. To appear in Journal of Mathematical Physics, Analysis, Geometry.

#### **Conference proceedings**

- Igor Chueshov and Iryna Ryzhkova, Well-Posedness and Long Time Behavior for a Class of Fluid-Plate Interaction Models, in: In: Hmberg D., Trltzsch F. (eds) System Modeling and Optimization. CSMO 2011. IFIP Advances in Information and Communication Technology, vol 391. (2013) pp. pp 328-337.

#### **Conference talks**

- I. Ryzhkova, A survey of nonlinear models for fluid-structure interaction. Workshop "Dynamics of dissipative PDEs" 10-14 September 2018, University of Surrey, Guildford, UK
- I. Ryzhkova-Gerasymova, A. Danilin, On numerical study of attractors of ordinary differential equations. Workshop of the project "Modeling, Analysis, and Approximation Theory toward applications in tomography and inverse problem". 20-21 August 2018, Berlin
- I. Ryzhkova-Gerasymova, Quasistability method for study of uniform attractors of non-autonomous equations. 28TH IFIP TC 7 CONFERENCE ON SYSTEM MODELLING AND OPTIMIZATION July 2327, 2018. Universitt Duisburg-Essen, Essen
- I. Ryzhkova-Gerasymova, Modification of quasistability method for application in study of non-autonomous processes, VI International Conference "ANALYSIS AND MATHEMATICAL PHYSICS" KHARKIV, Ukraine, June 18-22, 2018

- I. Ryzhkova-Gerasymova, Olena Naboka, Uniform attractors of a non-autonomous nonlinear wave equation. Final conference in the project, founded by VolkswagenStiftung. Modeling, analysis, and approximation theory toward applications in tomography and inverse problems. 3-7 Feb. 2018, Braunschweig, Germany.
- Tamara Fastovska, Iryna Ryzhkova-Gerasymova, Fluid-structure interaction problems with application to photoacoustic models. Project 'Modeling, Analysis, and Approximation Theory toward applications in tomography and inverse problems', Summer School in Lbeck, July 31 - August 4, 2017
- Iryna Ryzhkova-Gerasymova: Uniform stability of the interactive system of full Karman equation and viscous fluid equation. Women in Control: New Trends in Infinite Dimensions, July 16th to July 21st, 2017, Bannf, Canada.
- Ryzhkova-Gerasymova I., Strong solutions for interactive system of full Karman and linearized NavierStokes equation, International conference Analysis and mathematical physics, Kharkiv, Ukraine, 16-19 June 2014.
- Ryzhkova I., Chueshov I. On a model of interaction of a shallow shell with a fluid. // Spectral theory and differential equations international conference in honor of Vladimir A. Marchenko's 90th bithday. 20-24 August 2012, Kharkiv
- Ryzhkova I., Chueshov I. Well-posedness and asymptotical behaviour for a fluid-plate interaction model. // 25th IFIP TC7 conference on system modeling and optimization. 12-16 September 2011, Berlin.
- Ryzhkova I. Qualitative behaviour of von Karman thermoelastic plate in a gas flow // International conference on differential equations. Lviv (Ukraine). 2006
- Ryzhkova I. Nonlinear oscillations of a plate in a potential gas flow in the presence of thermal effects // 1st Annual Conference of EUNetwork "Phenomena in High Dimentions": Conference on Convex Geometry and High Dimesional Phenomena. Proceedings. Vien(Austria). 2005
- Ryzhkova I., Stabilization of thermoelastic von Karman plate in a subsonic gas flow. // 10th International conference honoring M. Kravchuk. Kyiv, Ukrane. 2004.

#### **Referee for**

- Mathematica Slovaca
- Discrete and Continuous Dynamical Systems

- Journal of Mathematical Analysis and Applications
- Mathematische Nachrichten

**Reviewer for** Mathematical Reviews (AMS)

**Teaching**

- Partial Differential Equations, Bachelor, teaching assistance
- Sobolev Spaces, Bachelor, lectures
- Distribution theory, Bachelor, lectures
- Numerical Mathematics, Bachelor, lectures and labs.
- Introduction to Hydrodynamics, Master, lectures
- Interpolation Theory, Master, lectures

References

- Dmytro Shepelskiy  
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