

Curriculum Vitae

Irina Pettersson

Date of birth: 11 October 1981

Marital status: Married, two children

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Work address: Höskolan i Gävle, 80176 Gävle, Sweden

Education

PhD in Applied Mathematics, Ecole Polytechnique, France 2011

Thesis "*Homogenization of singular convection-diffusion equations and indefinite spectral problems*"

Research advisors: Andrey Piatnitski, Gregoire Allaire

PhD in Mathematics, Luleå University of Technology, Sweden 2009

Thesis "*Homogenization of elliptic equations in thin cylinders and related qualitative problems*"

Research advisors: Andrey Piatnitski, Lars-Erik Persson

MSc in Applied Mathematics 2005

V.N. Karazin Kharkiv National University, Ukraine

Thesis "*Homogenized boundary conditions in electrodynamic problems of the net structure*"

Research advisor: Eu. Khruslov.

Professional Experience

Associate Professor in Mathematics, University of Gävle Aug 2016 – present

Associate Professor in Mathematics, Tromsø University Jan 2016 – Jul 2017

Associate Professor in Mathematics, Narvik University College 2011 – Dec 2015

PhD student, Narvik University College 2006 – 2011

Research Engineer, Radio-astronomical Institute, Academy of Sciences of Ukraine 2005 – 2006

Leave of absence

August 2015–May 2016 parental leave.

Talks and posters at conferences

- (May 2007) Petrovskii Conference (22-d meeting) "Differential equations and related topics", Moscow State University, Moscow, Russia (talk).
- (October 2007) Multiscale problems in science and technology. Challenges to mathematical analysis and perspectives; Dubrovnik, Croatia (talk).
- (June 2008) Journée des Doctorants du CMAP, Ecole Polytechnique, Paris, France (talk).
- (June 2008) Geometric Analysis, Elasticity and PDE; Heriot Watt University, Edinburgh, UK (poster).
- (July 2008) The Tenth International Conference on Integral Methods in Science and Engineering, Santander, Spain (poster)
- (May 2009) Congrès SMAI 2009, La Colle sur Loup, France (talk)
- (December 2009) Mini-conference of the Chair of Differential Equations, Mechanical and Mathematical Department, Moscow State University (talk).
- (May 2010) Joint Mathematics-Physics Workshop on Asymptotic Analysis and related topics, University of Gothenburg (talk).
- (September 2010) Second workshop on thin structures, Naples (poster).
- (November 2010) Journée de recherche en homogénéisation; St-Etienne, France (talk).
- (May 2011) Petrovskii Conference "Differential equations and related topics", Moscow State University, Moscow, Russia (talk).
- (October 2011) "International Workshop on the Multiscale Modelling and Methods", Saint-Etienne, France (talk).
- (March 2013) Mini-workshop "Pseudogroups and Differential Equations", Tromsø, Norway (talk).
- (September 2018) "Fifth workshop on thin structures", Naples, Italy (poster).

Seminar presentations

- Seminar of Mathematical Department, Polytechnic University of Turin, Italy (2006).
- Seminar of the Institute of Applied Mathematics, University of Heidelberg, Germany (2007).
- Seminar of Institute of Mathematics, Bath University, UK (2007).
- Mathematical Seminar of IDER, Narvik University College, Norway (2007).
- Seminar of Applied Mathematics Department, University of Pau, France (2008).
- Seminar "Homogenization and Multiple Scale", Paris 6, Paris, France (May 2009).
- Journée des Doctorants du CMAP, Ecole Polytechnique, Paris, France (June 2008).
- Seminar of the Mathematical Department, University of Cavilha, Portugal (July 2009).
- Seminar of Applied Mathematics Department, University of Cantabria, Spain (July 2009).
- Seminar "Homogenization and Multiple Scale", Paris 6, Paris, France (May 2010).
- Nonlinear Analysis and PDE seminar (organized by the ENS, University Paris 6 and University Paris 7), IHP, Paris, France (January 2011).
- "Homogenization day" at Politecnico di Torino, Italy (April 2011).
- Mathematical seminar at UiT The Arctic University of Norway (December 2016).
- Mathematical seminar at the Pontifical Catholic University of Chile, Santiago, Chile (April 2017).
- Mathematical seminar at the University of Gävle, Gävle, Sweden (September 2017).
- Mathematical seminar at Politecnico di Torino, Italy (January 2018).
- Mathematical seminar at the Pontifical Catholic University of Chile, Santiago, Chile (April 2018).

Publications, I. Pettersson (née Pankratova)

1. E. Khruslov, I. Pankratova, Homogenization of Maxwell's equations, Proceedings of 2006 International Conference on Mathematical Methods in Electromagnetic Theory, IEEE Conference Proceedings, p.239–241, 2006.
2. I. Pankratova, A. Piatnitski, On the behaviour at infinity of solutions to stationary convection-diffusion equation in a cylinder, DCDS-B, 11 (4), 935–970 (2009).
3. G.Panasenko, I.Pankratova, A.Piatnitski, Homogenization of convection-diffusion equation in thin rod structure, Integral Methods in Science and Engineering, Volume 1, Birkhäuser Boston, p.279–290 (2010).
4. S.Nazarov, I.Pankratova, A.Piatnitski, Homogenization of spectral problem for periodic elliptic operators with sign-changing weight function, Arch. Rational Mech. Anal. 200 (2011) 747–788.
5. I.Pankratova, A.Piatnitski, Homogenization of convection-diffusion equation in infinite cylinder, Networks and Heterogeneous Media 6 (1), 111–126 (2011).
6. I.Pankratova, A.Piatnitski, Spectral problem for a locally periodic elliptic operator with sign-changing weight function, J. Differential Equations 250 (2011) 3088–3134.
7. G. Allaire, I. Pankratova, A.Piatnitski, Homogenization and concentration for a diffusion equation with large convection in a bounded domain, Journal of Functional Analysis 262 (2012) 300–330.
8. G. Allaire, I. Pankratova, A.Piatnitski, Homogenization of a nonstationary convection-diffusion equation in a thin rod and in a layer, SeMA Journal, 58, pp.53-95 (2012).
9. V. Chiado-Piat, I.Pankratova, A.Piatnitski, Localization effect for a spectral problem in a perforated domain with Fourier boundary conditions, SIAM J. Math. Anal., 45(3),1302–1327 (2013).
10. I. Pankratova and K. Pettersson. "Spectral asymptotics for an elliptic operator in a locally periodic perforated domain." *Applicable Analysis* 94.6 (2015): 1207–1234.
11. A. Chechkina, I. Pankratova, and K. Pettersson. "Spectral asymptotics for a singularly perturbed fourth order locally periodic elliptic operator." *Asymptotic Analysis* 93.1-2 (2015): 141–160.
12. I. Pettersson. "Two-scale convergence in thin domains with locally periodic rapidly oscillating boundary". *Differential Equations & Applications*, 9(3), 393–412 (2017).
13. I. Pettersson, A. Piatnitski. "Stationary convection-diffusion equation in an infinite cylinder". *J. Differential Equations* 264 (2018) 4456–4487.

Referee work

Journal de l'École polytechnique – Mathématiques
Applicable analysis
Equadiff 13
Birkhäuser series, Trends in Mathematics/Research Perspectives
Zeitschrift für angewandte Mathematik und Physik
Math Reviews, AMS

Courses taken

- Project managing and financial reporting course by Europa Media Trainings, February 2017, Tromsø, Norway.
- Basic pedagogical competence for higher education by Result (Ressurscenter for undervisning, læring og teknologi), Feb 2017 – Dec 2017.
- Research supervision, Sep 2017–Dec 2017, University of Gävle.

Conference organization

Co-organizer of the following conferences:

- Journée des Doctorants du CMAP, Ecole Polytechnique, Paris, France (June 2008).
- Congrès SMAI 2009, La Colle sur Loup, France (May 2009).

Other activities

- Lecturer at "Kleindagarna" (<https://kleindagarna.se>), Mittag-Leffler Institute, Stockholm, June 2018.

Grants awarded

2018	STINT INITIATION GRANT (IB 2017-7370) MODELING OF ELECTRICAL NERVE STIMULATION Principal Investigator , budget 150K SEK	SWEDEN/CHILE
2017 – 2018	REGIONAL RESEARCH FUNDS IN NORWAY (RFF, 269739) NOISE BARRIERS: ONE STEP TOWARDS SILENCE Principal Investigator , budget 500K NOK	NORWAY
2013 – 2014	YGGDRASIL MOBILITY PROGRAM (227254/F11) LOCALIZATION EFFECTS IN SPECTRAL PROBLEMS OF MATHEMATICAL PHYSICS Principal investigator , budget 196K NOK	NORWAY/RUSSIA