

SEROV VALERY SERGEJEVICH

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EDUCATION

Doctor Nauk Degree, 1997, Moscow State University, Moscow, Russia. Thesis title: *Some problems of the spectral theory of elliptic differential operators with singularities.*

Kandidat Nauk Degree (PhD), 1979, Moscow State University, Moscow, Russia. Thesis title: *Absolute convergence of spectral expansions and fractional degrees of elliptic operators.*

Diploma, Applied Mathematics, 1975, Moscow State University, Faculty of Computational Mathematics and Cybernetics, Moscow, Russia.

EXPERIENCE

1.07.2009-present, Professor of Applied Mathematics at the University of Oulu, Department of Mathematical Sciences

1.07.2008-30.06.2009, Acting Professor at the University of Oulu, Department of Mathematical Sciences

1.09-31.12.2007, Acting Professor at the University of Oulu, Department of Mathematical Sciences

1.09-31.12.2003, Acting Professor at the University of Oulu, Department of Mathematical Sciences

2002-30.06.2009, Senior Assistant at the University of Oulu, Department of Mathematical Sciences

1999-2002, Professor at Moscow State University, Faculty of Computational Mathematics and Cybernetics.

1988-1999, Associate Professor at Moscow State University, Faculty of Computational Mathematics and Cybernetics.

1978-1988, Assistant Professor at Moscow State University, Faculty of Computational Mathematics and Cybernetics.

1970-1978, Student and post-graduate student at Moscow State University, Faculty of Computational Mathematics and Cybernetics.

TEACHING EXPERIENCE

1977-2002 I have been teaching at Moscow Lomonosov State University. The average number of teaching hours per year is 400. Among the lectures courses are calculus, complex analysis, generalized functions, Fourier transforms, spectral theory of self-adjoint operators. The list of practical courses: calculus, analysis II, complex analysis, functional analysis. I have been involved in teaching elementary mathematics for high school, occupying in particular a part-time at the A.N. Kolmogorov's School. In 1990-2002 I was the Head of the Entrance Exam Commissions.

2002-2019 I prepared and I have been teaching at the University of Oulu 6 new courses: "Fourier transform, distributions and applications to the Schrödinger operator", "Spectral theory for elliptic differential operators", "Introduction to partial differential equations", "Fourier series and the discrete Fourier transform", "Operator theory and integral equations", "Complex Analysis" and "Ordinary differential equations". We (together with Prof. Kinnunen) organized the scientific seminar on Analysis and Inverse Problems. Since 2008 this is the scientific seminar on Inverse Problems (under my guidance).

I have supervised 14 PhD works:

- 1) L.A. Zhornitskaya - 1995;
- 2) N.S. Buzurnjyk - 1998;
- 3) A.G. Razborov - 1999;
- 4) M.K. Sagyndykov - 2001;
- 5) A.D. Chernova - 2003;
- 6) E.D. Svetogorova (together with Professor Schürmann) - 2004;
- 7) J. Nickel (together with Professor Schürmann) - 2006 ;
- 8) Markus Harju (together with Professor Päivärinta)- 2010;
- 9) Hanna Kiili (together with Professor Päivärinta) - 2011;
- 10) Kadriya Yuskaeva (together with Professor Schürmann) - 2012;
- 11) Georgios Fotopoulos (together with PhD Harju) - 2015;
- 12) Lassi Roininen (together with Professor Lehtinen) - 2015;
- 13) Urpo Kyllönen (together with PhD Harju) - 2017;
- 14) Teemu Tyni (together with PhD Harju) - 2018.

I have supervised 17 Diploma works.

In 2002 I was accepted as the member of the Finnish Inverse Problems Society.

Since 2006 I am a Senior Researcher of Finnish Center of Excellence in Inverse Problems granted by Academy of Finland for the period 2006-2011 and for the period 2012-2017 (principle investigator), and a Principle Investigator of Finnish Center of Excellence in Inverse Modeling and Imaging for period 2018-2025.

VISITING PROFESSOR

2018, two weeks, Lomonosov Moscow State University, Faculty of Computational Mathematics and Cybernetics, Moscow, Russia.

2016, two weeks, Steklov Mathematical Institute, Moscow, Russia.

2015, three weeks, University of Delaware and University of Washington, USA.

2013, two weeks, Mittag-Leffler institute, Stockholm, Sweden.

2011, one week, Autonoma University of Madrid, Spain.

2010, two months, MSRI at Berkeley, USA.

2008, one week, University of Athens, Greece.

2005-2006, six months, University of Washington, USA.

2002, two weeks, University of Osnabrück, Germany.

2002, one week, Autonoma University of Madrid, Spain.

1999-2000, six months, University of Oulu, Finland.

1998, 2000, 2001 one month, University of Oulu, Finland.

1995-1996, two months, Universities of Oulu and Helsinki, Finland.

1995, three weeks, University of Hildesheim, Germany.

1993, three weeks, Lund University of Technology, Sweden.

1993, one month, Politecnico di Milano, Italy.

1991, one month, University of Delaware, USA.

LANGUAGES

a) Russian-native, b) English-good.

RESEARCH WORK

1988-1989, ten months, University of Helsinki, Finland.

1997-1999, participation in the Research project granted by Deutsche Forschungsgemeinschaft (DFG) in cooperation with Prof. H.W. Schürmann and Prof. Yu.V. Shestopalov.

1996, 1999, 2000, 2002, 2006, participation in the Research-in-Pairs project, Mathematisches Forschungsinstitut Oberwolfach, Germany.

1992-2002, co-supervisor of the Bilateral scientific program on direct and inverse scattering supported by the Universities of Moscow and Helsinki.

1993, participation in the Research project The optical waveguide design problem using time domain inverse scattering technique, in cooperation with the Department of Electromagnetic Theory, Lund University of Technology, supported by The Royal Swedish Academy of Sciences.

2006-present, Senior Researcher of Finnish Center of Excellence granted by Academy of Finland.

RESEARCH INTERESTS

- 1) Inverse Problems,
- 2) Spectral Theory,
- 3) Nonlinear Equations.

Since 1990 participated in more than 100 International conferences, seminars and symposiums.

SCIENTIFIC PRESENTATIONS

2016

INVITED TALK: *Inverse scattering problems for the perturbed bi-harmonic operator*, AIP International Conference "Numerical Computations: Theory and Algorithms (NUMTA-2016)", Pizzo Calabro, Italy, June 19-26.

INVITED TALK: *Inverse scattering problems for the perturbed bi-harmonic operator*, International Conference "Contemporary Problems of Mathematical Physics and Computational Mathematics", Moscow, Russia, October 31- November 03.

2015

PLENARY TALK: *Inverse spectral problems for elliptic operators*, International Conference "Contemporary methods in theory boundary value problems", Voronezh, Russia, May 03-09.

Borg-Levinson theorem for elliptic operators, International Conference on Modern Mathematical Methods in Science and Technology, Kalamata, Greece, August 29-September 01.

PLENARY TALK: *Borg-Levinson theorem for elliptic operators*, International Workshop on Inverse and Ill-Posed Problems, Moscow, Russia, November 19-21.

2014

INVITED TALK: *On the Borg-Levinson type theorems*,
7th International Conference "Inverse problems: modeling and simulation", Antalya (Turkey),
May 26-31.

Inverse backscattering Born approximation for the magnetic Schrödinger operator,
8th International Conference "Inverse problems in engineering", Krakov (Poland), May 12-15.

2013

Transmission eigenvalues for non-regular cases,
International Conference "Inverse problems and applications", Linköping (Sweden), April 2-6.

INVITED TALK: *Inverse problems for two-dimensional nonlinear Schrödinger operator*,
International Conference on "Novel Directions in Inverse Scattering", Honoring David Colton,
Delaware (USA), July 29-August 2.

INVITED TALK: *Borg-Levinson theorem for magnetic Schrödinger operator*,
International Conference "Mathematical Physics, Valadimirov-90", Moscow (Russia), November
13-15.

2012

Inverse problems for nonlinear Schrödinger operator,
6th International Conference "Inverse problems: modelling and simulation", Antalya (Turkey),
May 21-26.

INVITED TALK: *Inverse backscattering Born approximation for the magnetic Schrödinger operator*,
A conference on Inverse Problems in honour of Gunther Uhlmann, University of California, Irvine,
USA, June 18-22.

Inverse backscattering Born approximation for the magnetic Schrödinger operator,
International Conference on Modern Mathematical Methods in Science and Technology, Kalamata,
Greece, August 26-28.

LIST OF PUBLICATIONS: includes more than 130 items; among them, 6 textbooks.

Full list of publications at the page <http://www.fips.fi/taskforce2016/> and at the page
<http://www.oulu.fi/inverse>

February, 2019