

# CURRICULUM VITAE

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**Degrees:**

Degree	Major	University	Year
Ph.D., M.S.	Mathematics	California Institute of Technology	June 1995
B.Sc., M.S.	Mathematics	St.-Petersburg State University	June 1988

Ph. D. Thesis: Cauchy Integrals and Spectral Theory  
Advisor: Prof. Nikolai Makarov

Masters Thesis: On Approximation by Inner Functions  
Advisor: Prof. Alexei Alexandrov

**Professional Experience:**

- September 2006 - present, Texas A&M University, College Station, Texas, Professor
- September 2002 - September 2006, Texas A&M University, College Station, Texas, Associate Professor
- September 1998 - September 2002, Texas A&M University, College Station, Texas, Assistant Professor
- September 1995 - June 98, Massachusetts Institute of Technology, Cambridge, Massachusetts, C. L. E. Moore Instructor
- September 1992 - June 1995, California Institute of Technology, Pasadena, California, graduate student
- September 1988 - August 1992, St.-Petersburg State University, St.-Petersburg, Russia, Assistant

## Research Publications:

### Book:

- Toeplitz Approach to Problems of the Uncertainty Principle, Conference Board of the Mathematical Sciences (CBMS) series, AMS/NSF, 2015.

### Ten significant journal publications in the last 15 years:

- Determinacy of Measures, with M. Mitkovski, *Invent. Math.* (2015), 202: 1241-1267
- A problem on completeness of exponentials, *Annals of Math.*, Volume 178 (2013), 983-1016
- Spectral gaps for sets and measures, *Acta Math.*, Volume 208, Issue 1 (2012), pp 151-209.
- Bernstein's problem on weighted polynomial approximation, proceedings of Abel Symposium, Oslo 2012; Vol. 9, Springer 2014, pp 147-171
- Beurling-Malliavin Theory for Toeplitz Kernels, with N. Makarov, *Invent. Math.*, Vol. 180, Issue 3 (2010), 443-480.
- Toeplitz kernels and Polya sequences, with M. Mitkovski, *Advances in Math.*, 224 (2010), pp. 1057-1070.
- Reflectionless Herglotz functions and Jacobi matrices, with C. Remling, *Comm. Math. Phys.*, Vol 288, 3, 2009, 1007-1021.
- Meromorphic Inner Functions, Toeplitz Kernels and Uncertainty Principle, with N. Makarov, *Perspectives in Analysis: Essays in Honor of L. Carleson's 75th Birthday*, 185–252, *Math. Phys. Stud.*, 27, Springer, Berlin, 2005.
- Asymptotic behavior of Cauchy Integrals, with P. W. Jones, *Ann. Acad. Sci. Fenn. Math.* 29 (2004), no. 1, 99–120.
- Maximal properties of the normalized Cauchy transform, *J. Amer. Math. Soc.* 16 (2003), no. 1, 1–17.

### Other publications:

- Type alternative for Frostman measures, preprint
- Toeplitz methods in completeness and spectral problems, Proceedings of ICM 2018, to appear

- Toeplitz Order, *J. of Functional Analysis*, to appear
- Two-Spectra Theorem with Uncertainty, with N. Makarov, *J. of Spectral Theory*, to appear
- De Branges functions for Schroedinger equations, with A. Baranov and Yu. Belov, *Collectanea Mathematica* (2017), Vol. 68 (2), pp 251-263
- Restricted interpolation by meromorphic inner functions, with R. Rupam, *Concrete Operators* (2016), Vol. 3 (1), pp 102-111
- Cyclicity in rank-one perturbation problems, with E. Abakumov and C. Liaw, *J. London Math. Soc.* (2013) 88 (2): 523-537.
- Approximation results for reflectionless Jacobi matrices, with C. Remling, *Internat. Math. Res. Notices*, 2011, no.16. 3575-3617.
- The Hilbert transform of a measure, with B. Simon and M. Zinchenko, *J. d'Anal. Math.*, Vol. 111, No. 1 (2010), 247-265.
- Uniqueness Theorems for Cauchy Integrals, with M. Melnikov and A. Volberg, *Publ. Mat.* Volume 52, Number 2 (2008), 289-314.
- Boundary convergence of vector-valued pseudocontinuable functions, with V. Kapustin, *J. Funct. Anal.* 238 (2006), no. 1, 313–326.
- Asymptotic behavior of arguments of Cauchy integrals, Special volume devoted to the 75th birthday of V.P. Havin, *Amer. Math. Soc. Transl.* (2) vol. 226, 2009, 133-153
- Cyclicity and pseudocontinuation of random power series, with Y. Abakumov, *J. Inst. of Math. Jussieu* (2008), 7, 413-424.
- Aleksandrov-Clark measures, with D. Sarason, *Recent advances in operator-related function theory*, 1-14, *Contemp. Math.*, 393, Amer. Math. Soc., Providence, RI, 2006.
- Images of non-tangential sectors under Cauchy transforms, *J. d'Anal. Math.*, 89 (2003), 385 –395.
- Coexistence of spectra in rank-one perturbation problems, with R. Del Rio and S. Fuentes, *Bol. Soc. Mat. Mexicana* (3) 8 (2002), no. 1, 49–61.
- Survival probability in rank-one perturbation problems, *Comm. Math. Phys.*, 203 (2001), No. 1, 205-222.
- Integral representations and uniqueness sets for star-invariant subspaces, *Systems, approximation, singular integral operators, and related topics*, 425–443, *Oper. Theory Adv. Appl.*, 129, Birkhuser, Basel, 2001.
- Families of spectral measures with mixed types, with R. Del Rio and S. Fuentes, *Operator methods in ordinary and partial differential equations* (Stockholm, 2000), 131–140, *Oper. Theory Adv. Appl.*, 132, Birkhuser, Basel, 2002.

- Equivalence up to a rank one perturbation, *Pacific J. of Math.*, 194, 1, 2000, pp 175–188.
- Properties of exposed points in the unit ball of  $H^1$ , *Indiana U. math. J.*, 50 (2001), 1789-1806.
- Spectral measures and category, With R. Del Rio, *Operator Theory: Advances and Applications*, Birkhauser, “Mathematical Problems in Quantum Mechanics”, 1999, pp. 149-159.
- Finite rank perturbations of singular spectra, *Internat. Math. Res. Notices* 1997, no. 9,421–436.
- Canonical systems and finite rank perturbations of spectra, MSRI preprint 1996-050.
- The Krein spectral shift and rank one perturbations of spectra, *St. Petersburg Math. J.*, 10 (1999), pp 833-859.
- On the Distribution of the Boundary Values of Cauchy Integrals, *Proc. Amer. Math. Soc.*, (1996), no. 8, 2455–2463.
- The Boundary Behavior of Pseudocontinuable Functions, *St.-Petersburg Math. J.*, Vol. 5 (1994), No 2, pp 389-406.
- The Marshall Theorem for Almost Everywhere Continuous functions, *Vestnik Leningrad Univ. Math.* 24 (1991), no. 1, 70–78.
- On an Analogue of the Douglas-Rudin Theorem, *Vestnik Leningrad Univ. Math.* 22 (1989), no. 4, 40–44.

### **Selected recent presentations: mini-courses and special courses**

- Special CIMI semester in Analysis at University of Toulouse, 9-hour minicourse on Toeplitz Order in the Area of Uncertainty, October 2016
- Lectures on the Uncertainty Principle, Brown University, Fall semester of 2015
- CBMS conference on Uncertainty Principle in Harmonic Analysis, principle speaker, Clemson University, 10 lectures, 8/2013
- Ten lectures on Completeness Problems and Spectral Theory, internet seminar at Georgia Tech, written and published online in the spring of 2013
- Summer School in Complex Analysis in Seville, Spain, 3 hours, 6/2013.
- Minicourse on Krein-de Branges theory in spectral problems, University of Helsinki, 10 hours, 11/2012

- Minicourse on Toeplitz kernels and completeness problems, CRM, Barcelona, 4 hours, 06/2011.
- Minicourse on Gap and Type problems in Harmonic Analysis, Chebyshev Laboratory, St. Petersburg University, Russia, 8 hours, 10/2011
- Advanced course on Krein-de Branges spaces of entire functions, jointly with N. Makarov and M. Sodin, at CRM, Barcelona; gave 6 out of 18 one-hour lectures, 05/2011

**External funding:**

**NSF grants:**

Continuous NSF support through individual grants since 1999

- Toeplitz Order and Spectral Theory, NSF grant DMS-1665264, 2017-2020
- Toeplitz Approach to the Uncertainty Principle, NSF grant DMS-1362450, 2014-2017
- Completeness Problems in Harmonic Analysis and Spectral Theory, NSF grant DMS-1101278, 2011-2014
- Uniqueness and Convergence of Analytic Integrals in Harmonic and Spectral Analysis, NSF grant DMS-0800300, 2008-2011
- Asymptotics of Analytic Integrals and the Beurling-Malliavin Theory, NSF grant DMS-0500852, 2005-2008
- Boundary Behavior of Analytic Functions, NSF grant DMS-0200699, 2002-2005
- Asymptotic behavior of Cauchy-Stieltjes Integrals, NSF grant DMS-9970151, 1999–2002

**Other grants:**

- Spaces of Analytic Functions and Singular Integrals, Russian Science Foundation Advanced Grant in Mathematical Sciences, RSF 14-41-00010, 2014-2019 (only 3 such grants given in 2014 in math and computer science)

**Recent honors:**

- Invited Speaker at ICM2018, Rio de Janeiro, Analysis and Operator Algebras section
- Fellow of the American Mathematical Society
- Brown University Distinguished Visiting Professor, Fall 2015
- Honorary Editor for the 150th anniversary issues of the oldest Russian mathematical journal, Mat. Sbornik, 2015-17