

## VLADIMIR N. TEMLYAKOV

Department of Mathematics, University of South Carolina, Columbia, SC 29208

### EDUCATION.

1976 M.S. Moscow Institute of Physics and Technology  
1978 Ph.D. Steklov Institute of Mathematics  
1981 Dr. Hab. Steklov Institute of Mathematics

### PROFESSIONAL EXPERIENCE.

2007-present USC, Dept. of Mathematics, Carolina Distinguished Professor  
1995-2007 USC, Dept. of Mathematics, Professor  
1992-1995 USC, Dept. of Mathematics, Associate Professor  
1992-present Steklov Institute of Mathematics, Associate member  
1986-1992 Steklov Institute of Mathematics, Leading Scientist  
1986-1992 Moscow Inst. of Physics and Technology, Professor (part-time position)  
1978-1986 Steklov Institute of Mathematics, Scientist  
1979-1986 Moscow Inst. of Physics and Technology, Assistant, Associate Professor (part-time position)

### HONORS AND AWARDS.

Gold Medal for Best Student Paper in USSR, 1976.  
Outstanding Publication Award: Steklov Institute (Moscow, USSR), 1979, 1982, 1986, 1998.  
Outstanding Publication Award: Soviet Academy of Science, 1989.  
Silver Medal in the Exhibition of the National Economic Achievement, 1989.  
Premium for Research in Mathematics, Soviet Academy of Science, 1990.  
Best Paper Award from J. Complexity, 1998.  
Invited Hour Speaker, American Mathematical Society, Birmingham, AL, November 12, 2000.  
USC Educational Foundation Award for Research in Science, Mathematics and Engineering, 2003.  
Invited Hour Speaker, Foundations of Computational Mathematics, Santander, Spain, July 8, 2005.  
Invited Hour Speaker, Curves and Surfaces, Avignon, France, June 29, 2006.  
Invited forty-five minutes lecture in the section Analysis of the International Congress of Mathematicians, Madrid, Spain, August 2006.  
Carolina Distinguished Professor, August 15, 2007.  
Invitation to visit the Institute for Mathematics and its Applications to participate in the year program on Mathematics of Informatics, Spring semester of 2012.

### **EDITING AND REFEREEING.**

Member, Editorial Board of Constructive Approximation, Editorial Board of Journal of Approximation Theory, Editorial Board of East Journal on Approximations, Editorial Board of Vietnam Mathematical Journal, Editorial Board of Advances in Computational Mathematics, Editorial Board of Journal of Fourier Analysis and Applications. Guest Editor for the Special Issue for Matrix Functions and Sparse Approximate Solution of Linear Systems of the journal Linear Algebra and its Applications. Referee for 10 professional journals.

### **MAJOR SERVICE TO THE UNIVERSITY OF SOUTH CAROLINA.**

Assessment Committee, 2010-2011,  
Grant Mentoring Committee, 2010-2011,  
Peer Review of Teaching Committee, subcommittee F1 (chair), 2008-2011,  
University Committee on Named and Distinguished Professorships, 2007-2010;  
Faculty Grievance Committee, 2008-2009.  
University Committee on Tenure and Promotion, 2004-2007;  
University Award Committee for Research in Science, Mathematics and Engineering, 2004-2007;  
Committee of Tenured Full Professors Chair, 1996;  
Hiring Committee, 1995-1996; 1999-2000; 2001-2002; 2002-2003 (chair); 2007-2008;  
IMI Executive Committee, 1998-2002; 2005-2009;  
Colloquium Talks Committee Chair, 1994-1995;  
Candidacy Examination Chair, 1993, 1996;  
Physical Facilities, 1992-2003;  
Undergraduate Adviser, 1992-1999;

### **MAJOR PROFESSIONAL SERVICE.**

Chair of the Organizing Committee of International Conference on Approximation and Computation (celebrating the 60<sup>th</sup> birthday of Ron DeVore), Charleston, South Carolina, May 12–17, 2001.

Organizer of Special Sessions of the AMS Meetings: Nonlinear Approximation, Birmingham, AL, November 10–12, 2000; Approximation and Wavelets, Columbia, SC, March, 16–18, 2001.

Organizer of Minisymposiums: Nonlinear Approximation, Fourth International Conference on Curves and Surfaces, July 1–7, 1999, Saint-Malo, France; Nonlinear Approximation, SIAM Annual Meeting 2000, Puerto Rico, July 10–14, 2000; Greedy Approximation, Fifth International Conference on Curves and Surfaces, Saint-Malo, France, June 27 – July 3, 2002; Learning Theory, 13th International conference on Approximation Theory, San Antonio, Texas, March 4–8, 2007.

Member of the Organizing or Programming Committee: International Conference on Harmonic Analysis and Approximations, Ambert, Armenia, September, 1998; International Conference on Approximation Theory, May 25–30, 1999, Kiev, Ukraine; International Conference on Harmonic Analysis and Approximations, Ambert, Armenia, September 11–18, 2001; Internatinal Conference on Differential Equations and Approximation Theory, Hanoi, Vietnam, December 10–15, 2001; Workshop on Nonlinear Approximations in Numerical

Analysis, Moscow, June 22–25, 2003; International conference on Theory of Functions (celebrating the 100<sup>th</sup> birthday of S.M. Nikol'skii), Moscow, May 24–30, 2005; International conference on Analysis and Computations (celebrating the 60<sup>th</sup> birthday of N.Temirgaliev, Astana, Kazakhstan, June 5–9, 2007). International conference on Harmonic Analysis and Approximations, V, Tsaghadzor, Armenia, September 10–17, 2011. Research Semester on Approximation Theory and Fourier Analysis, Barcelona, Spain, September 1 – December 31, 2011.

#### **SUPERVISION OF GRADUATE STUDENTS.**

Master's Students:

Alexander Pavlov, 1986;

Vladimir Dubinin, 1990;

Valerii Razgonyaev, 1993.

Doctoral Students:

Alexander Pavlov, 1989;

Nikolai Pustovoitov, 1992;

Vladimir Dubinin, 1996;

Alexander Andrianov, 2000;

Xiteng Liu, 2006;

Daniel Savu, 2009;

Pavel Zheltov, 2010;

Entao Liu, 2011;

Mingrui Yang, 2011;

Jessica Nelson, 2011.

#### **RECENT COLLABORATORS.**

Dr. Ronald A. DeVore, University of South Carolina;

Dr. Boris S. Kashin, Steklov Institute of Mathematics;

Dr. Sergei V. Konyagin, Moscow State University;

Dr. David Donoho, Stanford University;

Dr. Miki Elad, Technion;

Dr. Dominique Picard, University Paris VII;

Dr. Gerard Kerkyacharian, University Paris X;

Dr. Albert Cohen, University Paris VI;

Dr. Wolfgang Dahmen, Institute for Geometry and Applied Mathematics.

Dr. Dmitriy Bilyk, University of South Carolina;

Dr. Entao Liu, University of South Carolina;

Dr. Jessica Nelson, University of South Carolina;

Dr. Mingrui Yang, University of South Carolina;

Rui Yu, University of South Carolina;

Dr. Evgenii D. Livshitz, Moscow State University;

Dr. Stephen Dilworth, University of South Carolina;

Dr. Denka Kutzarova, University of South Carolina;

Dr. Nigel Kalton, University of Missouri-Columbia;

Dr. Guergana Petrova, Texas A& M University;  
Dr. Adam Lutoborski, Syracuse University;  
Dr. Dany Leviatan, Tel Aviv University;  
Dr. Peter Binev, University of South Carolina,

#### **GRANT SUPPORT.**

1. NSF, Multivariate approximation, PI: V. Temlyakov, 5/16/96–5/15/99, 64,668.00
2. DOD/EPSCoR, Wavelet Based on Image Processing for Military and Commercial, PI: R.A. DeVore, 6/1/96–5/31/99, 515,047.00
3. ONR, Highly Nonlinear Algorithms for Wavelet Based Image Processing with Military Applications, PI: R.A. DeVore, 11/14/97–11/13/00, 583,000.00
4. NSF, Algorithms in Nonlinear Approximation, PI: V. Temlyakov, 5/15/99–5/15/02, 82,328.00
5. DOD/DEPSCoR, Advanced Wavelet Methods for Image and Signal Processing, PI: R.A. DeVore, 3/15/99–3/14/02
6. NSF, Greedy Approximation, PI: V.N. Temlyakov, 7/01/02–6/30/03, 33,500.
7. NSF, Greedy Approximation, PI: V.N. Temlyakov, 7/01/03–6/30/04, 34,499.
8. NSF, Greedy Approximation, PI: V.N. Temlyakov, 7/01/04–6/30/05, 35,501.
9. DOD/EPSCoR, Nonlinear Methods for Supervised Learning: Defense Applications, PI: R.A. DeVore and V.N. Temlyakov, 7/01/05–6/30/08, 700,000.
10. NSF, Greedy Approximations and Expansions, PI: V.N. Temlyakov, 6/30/06–6/29/09, 116,917.
11. NSF, Application of Greedy Approximations in Numerical Integration and Learning Theory, PI: V.N. Temlyakov, 2009–2012, 196,567.
12. NSF Grant, CMG COLLABORATIVE RESEARCH: Advanced Computational Models for Geological Storage of Carbon Dioxide, 2009–2012, 300,000.00 (with A. Celia and Hong Wang).

#### **GRANTS APPLIED FOR.**

NSF, Greedy Approximation in Banach Spaces and Compressed Sensing, PI: V.N. Temlyakov, \$232,252, Period: 07/01/12 – 06/30/15.

NSF, Compressed Sensing in Banach Spaces, PI: V.N. Temlyakov \$232,252, Period: 07/01/12 – 06/30/15.

#### **BOOKS.**

1. Approximation of Functions with Bounded Mixed Derivative Proc. Steklov Inst. Math., 1989, No. 1, pgs. 1-122.
2. Approximation of Periodic Functions Nova Science Publishers, Inc., 1993, 302 pgs.
3. Greedy Approximation, Cambridge University Press, 2011, 418 pgs.

#### **PUBLICATIONS.**

1. "On Uniqueness of the Polynomial of Best Approximation of the Function  $\cos kx$  by Trigonometric Polynomials in the L Metric", Math Notes 15 (1974), 436-441.
2. "Best Approximations for Functions of Two Variables", Soviet Math. Dokl. 16 (1975), 1051-1055.

- 3.** "On the Asymptotic Behavior of Best Approximations of Continuous Functions", Soviet Math. Dokl. 17 (1976), 739-743.
- 4.** "On Best Approximation of Functions of Two Variables", Analysis Mathematica 2 (1976), 231-234.
- 5.** "Asymptotic Behavior of Best Approximations of Continuous Functions", Math USSR Izvestija 11 (1977), 551-569.
- 6.** "On Localized Approximation of Functions by Trigonometric Polynomials", Analysis Mathematica 3 (1977), 151-169 (in Russian).
- 7.** "Order of Growth of the Degrees of a Polynomial Basis of a Space of Continuous Functions", Math Notes 22 (1977), 888-898.
- 8.** "On the Question of the Asymptotic Behavior of Best Approximations of Continuous Functions", Math USSR Sb. 38 (1981), 365-380.
- 9.** "Approximation of Periodic Functions of Several Variables with Bounded Mixed Derivative", Soviet Math. Dokl. 20 (1979), 1032-1035.
- 10.** "On the Approximation of Periodic Functions of Several Variables with Bounded Mixed Difference", Soviet Math. Dokl. 22 (1980), 131-135.
- 11.** "Approximation of Periodic Functions of Several Variables with Bounded Mixed Differences", Math. USSR Sb. 41 (1982), 53-66.
- 12.** "Approximation of Periodic Functions of Several Variables with Bounded Mixed Derivative", Proc. Steklov Inst. Math. (1983), 255-283.
- 13.** "Relations Between Best Approximations of Functions of Two Variables", Math Notes 29 (1981), 51-58.
- 14.** "Approximation of Functions from the Lipschitz Class by Algebraic Polynomials", Math Notes 29 (1981), 306-309.
- 15.** "Approximation of Continuous Functions by Trigonometric Polynomials", Proc. Steklov Inst. Math. (1983), 213-228.
- 16.** "Widths of Some Classes of Functions of Several Variables", Soviet Math Dokl. 26 (1982), 619-622.
- 17.** "Approximation of Functions with a Bounded Mixed Difference by Trigonometric Polynomials, and the Widths of Some Classes of Functions", Math. USSR Izvestija 20 (1983), 173-187.
- 18.** "On Absolute Summation of Fourier Series by Subsequences", Analysis Math. 8 (1982), 71-77.
- 19.** "On Relations Between Best Approximations of Functions Analytic in the Bidisk", Proc. Stekov Inst. Math. 2 (1985), 217-224.
- 20.** "On the Approximation of Periodic Functions of Several Variables", Soviet Math. Dokl. 30 (1984), 659-662.
- 21.** "On the Approximate Reconstruction of Periodic Functions of Several Variables", Soviet Math. Dokl. 31 (1985), 246-249.
- 22.** "Quadrature formulas and recovery from the values at the knots of number-theoretical nets for classes of functions with small smoothness", Uspekhi Matem. Nauk, 40 (1985), 203-204.

- 23.** "Approximate Recovery of Periodic Functions of Several Variables", Math. USSR Sb. 56 (1987), 249-261.
- 24.** "On the Asymptotic Behavior of Best Approximations of Individual Functions", Proc. Steklov Inst. Math. 3 (1987), 341-352.
- 25.** "Approximation of Periodic Functions of Several Variables by Trigonometric Polynomials, and Widths of Some Classes of Functions", Math. USSR Izvestija 27 (1986), 285-322.
- 26.** "On Best Bilinear Approximations of Periodic Functions of Several Variables", Soviet Math. Dokl. 33 (1986), 96-99.
- 27.** "On Reconstruction of Multivariate Periodic Functions Based on Their Values at the Knots of Number-Theoretical Nets", Analysis Mathematica 12 (1986), 287-305 (in Russian).
- 28.** "Approximation of Periodic Functions of Several Variables by Combinations of Functions Depending on Fewer Variables", Proc. Steklov Inst. Math. 4 (1987), 263-272.
- 29.** "Approximation of Periodic Functions of Several Variables by Bilinear Forms", Math. USSR Izvestija 28 (1987), 133-150.
- 30.** "On Estimates of the Best Bilinear Approximations of Periodic Functions and Singular Numbers of Integral Operators", Proc. Steklov Inst. Math 3 (1989), 252-253.
- 31.** "On Widths of Function Classes", Soviet Math. Dokl. 35 (1987), 636-642.
- 32.** "Estimates of the Best Bilinear Approximations of Functions of Two Variables and Some of Their Applications", Math. USSR Sb. 62 (1989), 95-109.
- 33.** "Best Bilinear Approximation and Connected Questions", Constructive Theory of Functions '87 (1988), 448-454.
- 34.** "On Estimates of  $\epsilon$ -Entropy and Widths of Classes of Functions with Bounded Mixed Derivative or Difference", Soviet Math. Dokl. 38 (1989), 84-87.
- 35.** "Estimates of Best Bilinear Approximation of Periodic Functions", Steklov Inst. Math. 4 (1989), 275-293.
- 36.** "Approximation by Elements of a Finite-Dimensional Subspace of Functions from Various Sobolev or Nikol'skii Spaces, Math Notes 43 (1988), 444-454.
- 37.** "Error Estimates of Quadrature Formulas for Classes of Functions with Bounded Mixed Derivative", Math Notes 46 (1989), 663-668.
- 38.** "Approximation of Functions of Several Variables by Trigonometric Polynomials with Harmonics from Hyperbolic Crosses", Ukrainian Math. J. 41 (1989), 451-456.
- 39.** "Bilinear Approximation and Applications", Proc. Steklov Inst. Math. 3 (1990), 221-248.
- 40.** "Estimates of the Asymptotic Characteristics of Classes of Functions with Bounded Mixed Derivative or Difference", Proc. Steklov Inst. Math. 4 (1990), 161-197.
- 41.** "On a Problem of Estimating Widths of Classes of Infinity Differentiable Functions", Math Notes 47 (1990), 155-157.
- 42.** "On Universal Cubature Formulas", Soviet Math. Dokl 43 (1991), 39-42.
- 43.** "On a Way of Obtaining Lower Estimates for the Errors of Quadrature Formulas", Math. USSR Sb. 71 (1992), 247-257.
- 44.** "On Estimates of Approximation Numbers and Best Bilinear Approximation", Constructive Approximation 8 (1992), 23-33.

- 45.** "On the Behavior of the Partial Sums, Over Hyperbolic Crosses, of Fourier Series of Periodic Functions of Several Variables", Proc. Steklov Inst. Math. 3 (1992), 209-218.
- 46.** "Estimates of Best Bilinear Approximations of Functions and Approximation Numbers of Integral Operators", Math. Notes 51 (1992), 510-517.
- 47.** "Bilinear Approximation and Related Questions", Proc. Steklov Inst. of Math., 4 (1993), 245-265.
- 48.** "Error Estimates for Fibonacci Quadrature Formulas for Classes of Functions with Bounded Mixed Derivative", Proc. Steklov Inst. of Math. 2 (1993), 359-367.
- 49.** "Universality of the Fibonacci Cubature Formulas", Methods of Approximation Theory in Complex Analysis and Mathematical Physics (Leningrad, 1991), Lecture Notes in Math., vol. 1550, Springer, Berlin, 1993, pp. 178-184.
- 50.** "On Error Estimates for Cubature Formulas", Trudy Mat. Inst. Steklov, V. 207 (1994), 326-338; Proceedings of Steklov Inst. Math. 6(1995), 299-302.
- 51.** "On Approximate Recovery of Functions with Bounded Mixed Derivative", J. Complexity 9 (1993), 41-59.
- 52.** (with R. A. DeVore) "Nonlinear Approximation by Trigonometric Sums", The Journal of Fourier Analysis and Applications, 2(1995), 29-48.
- 53.** (with R. A. DeVore and P. P. Petrushev) "Multivariate Trigonometric Polynomial Approximation with Frequencies from the Hyperbolic Cross", Math Notes, V. 56, No. 3, (1994), 36-63 (in Russian).
- 54.** (with R. DeVore) "The role of approximation and smoothness spaces in compression and noise removal", Information Theory and Statistics, 1994. Proceedings., 1994 IEEE-IMS Workshop on Statistics, 52.
- 55.** "An Inequality for Trigonometric Polynomials and its Applications for Estimating the Entropy Numbers", J. Complexity, v. 11 (1995), 193-307.
- 56.** (with B. S. Kashin) "On the Best  $m$ -Terms Approximation and the Entropy of Sets in the Space  $L_1$ ", Math. Notes, v. 56 (1994), No. 5-6, 1137-1157.
- 57.** "Some Inequalities for Multivariate Haar Polynomials", East Journal on Approximations, v. 1 (1995), No. 1, p. 61-72.
- 58.** (with R.A. DeVore) "Some Remarks on Greedy Algorithms", Advances in Computational Mathematics, v. 5 (1996), 173-187.
- 59.** (with B.S. Kashin) "On Estimating Approximative Characteristics for Classes of Functions with Bounded Mixed Derivative", Math. Notes, v. 58 (1995), No. 6, 922-925.
- 60.** "An Inequality for Trigonometric Polynomials and its Application for Estimating the Kolmogorov Widths", East Journal on Approximations, v. 2 (1996), 253-262.
- 61.** (with S.A. Telyakovskii) "On Convergence of Fourier Series of Multivariate Functions of Bounded Variation", Math. Notes, v. 61, No. 4 (1997), p. 583-595 (in Russian).
- 62.** (with A.A. Andrianov) "On Two Methods of Generalization of Properties of Univariate Function Systems to Their Tensor Product", Proc. Steklov Inst. Math., v. 219 (1997), 25-35.
- 63.** (with R.A. DeVore) "Nonlinear Approximation in Finite Dimensional Spaces", J. Complexity, v. 13 (1997), 489-508.

- 64.** (with R.A. DeVore and S.V. Konyagin) "Hyperbolic Wavelet Approximation", *Constr. Approx.*, v. 14 (1998), 1–26.
- 65.** "The Best  $m$ -term Approximation and Greedy Algorithms", *Advances in Comp. Math.*, v. 8 (1998), 249–265.
- 66.** "Nonlinear Kolmogorov Widths", *Math. Notes*, v. 63 (1998), 891–902 (in Russian).
- 67.** "Non-linear  $m$ -term Approximation With Regard to The Multivariate Haar System", *East J. Approx.*, v. 4(1998), 87–106.
- 68.** "Greedy Algorithms and  $m$ -term Approximation With Regard to Redundant Dictionaries", *J. Approx. Theory*, 98(1999), 117–145.
- 69.** "Greedy Algorithms With Regard to Multivariate Systems With Special Structure", *Constr. Approx.*, 16(2000), 399–425.
- 70.** (with A.A. Andrianov) "Best  $m$ -term Approximation of functions from classes  $MW_{q,\alpha}^r$ ", *Approximation Theory IX*, 7–14.
- 71.** "On Two Problems in The Multivariate Approximation", *East J. Approx.*, v. 4 (1998), 505–514.
- 72.** "Greedy Algorithm and  $m$ -term Trigonometric Approximation", *Constr. Approx.*, v. 14 (1998), 569–587.
- 73.** (with B.S. Kashin) "On one norm and related applications", *Matem. Zametki*, 64(1998), 637–640 (in Russian).
- 74.** (with B.S. Kashin) "On one norm and approximative characteristics of classes of multivariate functions", in the book "Metric theory of functions and related questions", Moscow, AFC, 1999, 69–99.
- 75.** "Weak greedy algorithms", *Advances in Comp. Math.*, 12(2000), 213–227.
- 76.** (with S.V. Konyagin) "A remark on greedy approximation in Banach spaces", *East J. Approx.* 5(1999), 365–379.
- 77.** "Universal bases and greedy algorithms for anisotropic function classes", *Constructive Approximation* 18(2002), 529–550.
- 78.** (with S.V. Konyagin) "Rate of convergence of Pure Greedy Algorithm", *East J. Approx.* 5(1999), No. 4, 493–499.
- 79.** (with V.E. Maiorov and K.I. Oskolkov) "Gridge approximation and Radon compass", *APPROXIMATION THEORY: A volume dedicated to Blagovest Sendov*, DARBA, Sofia, 2002, 284–309.
- 80.** "Greedy algorithms in Banach spaces", *Advances in Comp. Math.* 14(2001), 277–292.
- 81.** (with E.D. Livshitz) "On the convergence of Weak Greedy Algorithms", *Tr. Mat. Inst. Steklova* 232(2001), 236–247.
- 82.** "A criterion for convergence of Weak Greedy Algorithms", *Advances in Computational Mathematics* 17(2002), 269–280.
- 83.** "Nonlinear methods of approximation", *Found. Comput. Math.* 3(2003), 33–107.
- 84.** (with E.D. Livshitz) "Two lower estimates in Greedy Approximation", *Constr. Approx.* 19(2003), 509–523.
- 85.** (with S.J. Dilworth and D. Kutzarova) "Convergence of some Greedy Algorithms in Banach spaces", *The Journal of Fourier Analysis and Applications* 8(2002), 489–505.



- 86.** "Nonlinear Approximation with regard to bases", Approximation Theory X, Vanderbilt University Press, Nashville, TN, 2002, 373–402.
- 87.** (with S.J. Dilworth, N.J. Kalton and D. Kutzarova) "The Thresholding Greedy Algorithm, Greedy Bases, and Duality", *Constr. Approx.* 19(2003), 575–597.
- 88.** (with R. DeVore and G. Petrova) "Best basis selection for approximation in  $L_p$ ", *Found. Comput. Math.* 3(2003), 161–185.
- 89.** "Cubature formulas, discrepancy, and nonlinear approximation", *J. Complexity* 19(2003), 352–391.
- 90.** (with S.V. Konyagin) "Convergence of Greedy Approximation I. General Systems", *Studia Mathematica* 159(1)(2003), 143–160.
- 91.** (with S.V. Konyagin) "Convergence of Greedy Approximation II. The Trigonometric System", *Studia Mathematica* 159(2)(2003), 161–184.
- 92.** (with A. Lutoborski) "Vector Greedy Algorithms", *J. Complexity* 19(2003), 458–473.
- 93.** (with S.V. Konyagin) "Greedy Approximation with Regard to bases and General Minimal Systems", *Serdica Math. J.* 28(2002), 305–328.
- 94.** "Greedy Type Approximations in Banach Spaces and Applications", *Constr. Approx.* 21(2005), 257–292.
- 95.** (with A. Kamont) "Greedy Approximation and the Multivariate Haar system", *Studia Mathematica* 161(3)(2004), 199–223.
- 96.** (with B.S. Kashin) "The volume estimates and their applications", *East J. Approx.* 9(2003), 469–485.
- 97.** "A remark on simultaneous greedy approximation", *East J. Approx.* 10(2004), 17–25.
- 98.** (with S.V. Konyagin) "Some error estimates in Learning Theory", *APPROXIMATION THEORY: A volume dedicated to Borislav Bojanov, Marin Drinov Acad. Publ. House, Sofia, 2004*, 126–144.
- 99.** (with D. Leviatan) "Simultaneous greedy approximation in Banach spaces", *J. Complexity* 21(2005), 275–293.
- 100.** (with S.V. Konyagin) "Convergence of greedy approximation for the trigonometric system", *Analysis Mathematica*, 31(2005), 85–115.
- 101.** "Greedy Algorithms with restricted depth search", *Proceedings of Steklov Inst. Math.* 248(2005), 255–267.
- 102.** (with P. Binev, A. Cohen, W. Dahmen and R. DeVore), "Universal Algorithms for Learning Theory Part I: piecewise constant functions", *J. Machine Learning Research* 6 (2005), 1297–1321.
- 103.** (with R. DeVore, G. Kerkyacharian and D. Picard) "On mathematical methods for supervised learning", *Found. Comp. Math.* 6(2006), 3–58.
- 104.** (with D. Donoho and M. Elad) "Stable recovery of sparse overcomplete representations in the presence of noise", *IEEE Transactions on Information Theory* 52(2006), 6–18.
- 105.** "Optimal estimators in Learning Theory", *Approximation and Probability, Banach Center Publications, Volume 72, Inst. Math. Polish Academy of Sciences, Warsaw, 2006*, 341–366.

- 106.** (with G. Kerkyacharian and D. Picard) "Some inequalities for the tensor product of greedy bases and weight-greedy bases", *East J. Approx.* 12(2006), 103–118.
- 107.** "Greedy Approximations", *Foundations of Computational Mathematics*, Santander 2005, London Mathematical Society Lecture Notes Series 331, Cambridge University Press, 2006, 371–394.
- 108.** "Greedy approximations with regard to bases", *Proceedings of the International Congress of Mathematicians, Madrid, August 22–30, 2006*, 1479–1504.
- 109.** (with D. Leviatan) "Simultaneous Approximation by Greedy Algorithms", *Advances in Comput. Math.*, 25(2006), 73–90.
- 110.** (with S.V. Konyagin) "The entropy in Learning Theory. Error estimates", *Constr. Approx.* 25 (2007), 1–27.
- 111.** "Greedy Expansions in Banach Spaces", *Advances in Comput. Math.* 26(2007), 431–449.
- 112.** "Approximation in learning theory", *Constr. Approx.* 27(2008), 33–74.
- 113.** "On universal estimators in learning theory", *Proceedings of the Steklov Inst. Math.* 255(2006), 244–259.
- 114.** (with D. Donoho and M. Elad) "On the Lebesgue type inequalities for greedy approximation", *J. Approximation Theory* 147(2007), 185–195.
- 115.** "Relaxation in greedy approximation", *Constr. Approx.* 28(2008), 1–25.
- 116.** "Greedy algorithms with prescribed coefficients", *J. Fourier Analysis and Applications* 13(2007), 71–86.
- 117.** "Universality in Approximation and Estimation", *Proceedings, Curves and Surfaces VI*, Nashboro Press, Brentwood, TN, 2007.
- 118.** "Greedy Approximation in Banach Spaces", *Proceedings of the conference dedicated to N. Kalton, 60, Banach Spaces and their Applications in Analysis, de Gruyter 2007*, 193–208.
- 119.** (with S.J. Dilworth, Denka Kutzarova, Karen L. Shuman, P. Wojtaszczyk) "Weak Convergence of Greedy Algorithms in Banach Spaces", *J. Fourier Analysis and Applications* 14(2008), 609–628.
- 120.** (with B.S. Kashin) "A remark on compressed sensing", *Matem Zametki*, 82(2007), 821–830.
- 121.** "Greedy approximation", *Acta Numerica* (2008), 235–409.
- 122.** "Convergence of greedy approximation with regard to the trigonometric system", *Topics in Classical Analysis and Applications in Honor of Daniel Waterman*, World Scientific, 2008, 161–172.
- 123.** (with Mingrui Yang and Peixin Ye) "Greedy approximation with regard to non-greedy bases", *Adv. Comput. Math.*, published online: 08 June 2010, 2011, Vol. 34, 319–337.
- 124.** "Greedy approximation of characteristic functions", *Proceedings of Steklov Inst. Math.*, 2010, Vol. 269, 247–258.
- 125.** (with P. Zheltov) "On performance of greedy algorithms", *J. Approximation Theory*, 2011, Vol. 163, 1134–1145.

**126.** (with Mingrui Yang and Peixin Ye) "Lebesgue-type inequalities for greedy approximation with respect to quasi-greedy bases", East J. Approximation, 2011, Vol 17, 127–138.

**127.** (with S.V. Konyagin and Yu. V. Malykhin) "On basis sets in Banach spaces", East J. Approximation, 2011, Vol 17, 221–226.

**128.** (with J. Nelson) "On the size of incoherent systems", J. Approximation Theory, 2011, Vol 163, 1238–1245.

#### **PAPERS SUBMITTED FOR PUBLICATION.**

**129.** (with E. Liu) "Orthogonal Super Greedy Algorithm and Applications in Compressed Sensing", IEEE, Transactions in Information Theory (accepted).

**130.** (with D. Bilyk and Rui Yu) "Fibonacci Sets are good for discrepancy and numerical integration", J. Complexity (accepted).

**131.** (with Entao Liu) "Super Greedy Type Algorithms", Advances in Computational Mathematics (accepted).

#### **INVITED CONFERENCE ADDRESSES.**

1975 – International Conference on Approximation Theory, Kaluga, USSR. Talk : "Best Approximations for Functions of Two Variables".

1976 – All-Union Conference on Function Theory, Ufa, USSR. Talk : "Asymptotic Behavior of Best Approximations of Continuous Functions".

1977 – All-Union Conference on Function Theory, Baku, USSR. Talk : "On Localized Approximation of Functions by Trigonometric Polynomials".

1981 – International Conference on Constructive Approximation, Varna, Bulgaria. Talk on Approximation of Periodic Functions with Bounded Mixed Derivative.

1983 – International Conference on Approximation Theory, Kiev, USSR. Talk on Approximation of Periodic Functions with Bounded Mixed Derivative.

1983 – Semester on Function Theory of Stephan Banach International Math. Center, Warsaw, Poland. Talk on Best Approximations for Functions of Two Variables.

1983 – All-Union Conference on Function Theory, dedicated to N. N. Lusin (100th birthday), Kemerovo, USSR. Talk on Embedding Theorems for Multivariate Functions Classes.

1984 – International Conference on Constructive Approximation, Varna, Bulgaria. Talk on Orthowidths of Function Classes.

1985 – All-Union Conference on Function Theory and Approximation Theory dedicated to S. M. Nikolskii on his 80th birthday, Dnepropetrovsk, USSR. Talk on Estimates for Eigenvalues and Singular Numbers of Integral Operators.

1985 – Conference on Analysis and Differential Equations dedicated to I. N. Vekua, Tbilissi, USSR. Talk on Approximation With Constrains.

1985 – International Conference on Function Theory dedicated to A. Haar (100th birthday), Budapest, Hungary . Talk on Number-Theoretical Cubature Formulas.

1986 – Semester on Approximation Theory of Stephan Banach International Math. Center, Warsaw, Poland. Talk on the Theory of Widths for Multivariate Approximation.

1986 – All-Union Conference on Function Theory, Saratov, USSR. Talk on Bernstein's and Nikol'skii's Inequalities for Trigonometric Polynomials With Frequencies from Hyperbolic Crosses.

- 1986 – All-Union Conference on Function Theory and Approximation Theory, Tiberda, USSR. Talk on the Universal Method of Approximation.
- 1987 – International Conference on Constructive Approximation, Varna, Bulgaria. Talk on Best Bilinear Approximations.
- 1987 – International Conference on Approximation and Optimization, Havana, Cuba. Talk on Orthowidths of Classes of Functions With Bounded Mixed Derivative.
- 1987 – All-Union Conference on Function Theory and Approximation Theory, Erevan, USSR. Talk on Best Bilinear Approximation.
- 1988 – All-Union Conference on Number Theory, Minsk, USSR. Talk on Optimal Cubature Formulas and Discrepancy.
- 1989 – Semester on Function Theory and Measure of Stephan Banach International Math. Center, Warsaw, Poland. Talk on Singular Numbers of Integral Operators.
- 1990 – International Conference on Approximation Theory dedicated to N. P. Korneichuk on his 70th birthday, Kiev, USSR. Talk on Best Bilinear Approximations and Applications.
- 1991 – Semester on Function Theory of Stephan Banach International Math. Center, Warsaw, Poland. Talk on the Entropy Numbers for Classes of Functions With Bounded Mixed Derivative.
- 1991 – The Second USA-USSR Conference on Approximation Theory, Leningrad, USSR. Talk on the Fibonacci Cubature Formulas for Classes of Functions With Bounded Mixed Derivative.
- 1991 – All-Union Conference on Function Theory, Odessa, USSR. Talk on Widths of Classes of Functions With Bounded Mixed Derivative.
- 1991 – International Conference on Continuous Algorithms and Complexity, Dagstuhl, Germany. Talk on Optimal Cubature Formulas for Classes of Functions With Bounded Mixed Derivative.
- 1992 – All-Union Conference on Function Theory and Approximation Theory, Saratov, Russia. Talk on Approximation of Functions of Several Variables.
- 1992 – International Conference on Continuous Algorithms and Complexity, Dagstuhl, Germany. Talk on Best Bilinear Approximations and Approximation Numbers of Integral Operators.
- 1993 – International Conference on Approximation Theory, Dnepropetrovsk, Ukraine. Talk on Multivariate Wavelets and Hyperbolic-Cross Approximation.
- 1993 – The Second Gauss Congress, section "Computing and Information", Munich, Germany. Talk on Universal Cubature Formulas .
- 1993 – International Conference on Constructive Approximation, Obervolfach, Germany. Talk on Universal Methods of Approximation for Anisotropic Sobolev Classes.
- 1994– International Conference on Function Spaces, Edwardsville, Illinois, USA. Talk on Approximation Numbers of Integral Operators.
- 1994 – International Conference on the Interaction Between Function Analysis, Harmonic Analysis, and Probability, Columbia, Missouri, USA. Talk on Nonlinear Trigonometric Approximation.
- 1994 – International Conference on Continuous Algorithms and Complexity, South Hadley, Massachusetts, USA. Talk on Estimates of Entropy Numbers for Multivariate Function

Classes.

1994 – International Conference on Continuous Algorithms and Complexity, Dagstuhl, Germany. Talk on Multivariate Approximation.

1994 – Southeastern Conference in Approximation Theory, Nashville, Tennessee Talk on Trigonometric Hyperbolic Cross Approximation.

1994 – International Conference in Statistics, Alexandria, Virginia Talk on the Role of Approximation and Smoothness Spaces in Compression and Noise Removal.

1995 – International Conference on Functional Spaces, Approximation Theory, Nonlinear Analysis, Moscow, Russia. Talk on The Nikol'skii Inequalities for Hyperbolic Trigonometric and Haar Polynomials.

1995 – International Conference on Continuous Algorithms and Complexity, Park City, Utah. Talk on Nonlinear Methods of Approximation.

1996 – International Conference on Approximation Theory, Kaluga, Russia. Talk on Some Open Problems in Approximation of Periodic Functions.

1996 – International Conference on Continuous Algorithms and Complexity, Dagstuhl, Germany. Talk on Hyperbolic Wavelet and Trigonometric Approximation.

1997 – International Conference on Foundations of Computational Mathematics, Rio-de-Janeiro, Brasil. Talk on Nonlinear  $m$ -term approximations.

1998 – International Conference on Harmonic Analysis and Approximations, Armenia. Plenary talk on Greedy Algorithms and  $m$ -term approximation.

1999 – International Conference on Approximation Theory, May 25–30, Kiev, Ukraine, Plenary talk on Open problems in multivariate approximation.

1999 – Fourth International Conference on Curves and Surfaces, July 1–7, Saint-Malo, France, Talk on Greedy bases.

1999 – Foundations of Computational Mathematics, July 18–28, Oxford, UK, Two talks: on Greedy algorithms (seminary) and on  $\epsilon$ -entropy and volume estimates for multivariate function classes.

1999 – Ideal Data Representation Workshop, October 22–24, AT&T Labs, Plenary talk on Greedy algorithms in nonlinear approximation.

1999 – Wavelets and Approximation Workshop (FoCM), November 29–December 3, Hong Kong, China, Plenary talk on Greedy algorithms with regard to redundant dictionaries.

2000 – Multivariate approximation and the entropy numbers (4 one hour talks) in School in Siegmundsburg, Germany, October 19–23.

2000 – Greedy Algorithms in Nonlinear Approximation, SIAM Annual Meeting 2000, Puerto Rico, July 10–14.

2000 – Greedy Algorithms in Nonlinear Approximation (one hour invited talk), AMS meeting, Birmingham, AL, November 10–12.

2001 – A criterion for convergence of Weak Greedy Algorithms, AMS Session on Approximation and Wavelets, Columbia, SC, March, 16–18;

2001 – Nonlinear Approximation with regard to bases (a plenary talk), 10th International conference on Approximation Theory, St. Louis, Missouri, March 26–29;

2001 – Some remarks on Nonlinear Approximation, International Conference on Approximation and Computation (celebrating the 60<sup>th</sup> birthday of Ron DeVore), Charleston, South

Carolina, May 12–17.

2001 – Greedy Algorithms in Nonlinear Approximation (a plenary talk), Ambert, Armenia, September 11–18;

2001 – Multivariate numerical integration and related problems, Oberwolfach, Germany, November 18–24;

2001 – Nonlinear Approximation with regard to bases (a plenary talk), International Conference on Differential Equations and Approximation Theory, Hanoi, Vietnam, December 10–15.

2002 – Nonlinear  $m$ -term approximation and the entropy numbers, International Conference on Approximation Theory (celebrating the 60<sup>th</sup> birthday of Dany Leviatan), Tel-Aviv, Israel, February 21–25.

2002 – The Thresholding Greedy Algorithm, Greedy Bases, and Duality, Fifth International Conference on Curves and Surfaces, Saint-Malo, France, June 27 – July 3.

2002 – Greedy Approximation, Foundations of Computational Mathematics, The Learning Theory section, Minneapolis, Minnesota, USA, August 5–7.

2002 – Cubature formulas and related questions, Foundations of Computational Mathematics, The Approximation Theory section, Minneapolis, Minnesota, USA, August 8–10.

2002 – Vector Greedy Algorithms, Foundations of Computational Mathematics, The Image and Signal processing section, Minneapolis, Minnesota, USA, August 12–14.

2002 – Some open problems in the multivariate approximation, International Conference on Multivariate Approximation, Witten-Bommerholz, Germany, September 22–27.

2002 – Cubature formulas and Nonlinear Approximation, Algorithms and Complexity for Continuous Problems, Dagstuhl, Germany, September 29 – October 4.

2003 – Nonlinear approximation and numerical integration, Constructive approximation: a meeting honoring Carl de Boor, Dagstuhl, Germany, May 26–30.

2003 – Greedy expansions in Banach spaces, Applicable Harmonic Analysis, Banff, Canada, June 7–12.

2003 – Nonlinear methods in the trigonometric approximation, International conference in harmonic analysis honoring Y. Meyer, R. Coifman, Paris, France, June 16–20.

2003 – Greedy approximation in Banach spaces and applications, Workshop on nonlinear approximations in numerical analysis, Moscow, Russia, June 22–25.

2003 – Nonlinear methods in the trigonometric approximation, International conference on wavelets and approximation, St-Petersburg, Russia, July 3–10.

2003 – Greedy approximation and applications, International conference Mathematics in Armenia: Advances and Perspectives, Tsahkadzor, Armenia, September 30 – October 7.

2004 – Error estimates in Learning Theory, Oberwolfach, Germany, July 11–17.

2004 – Greedy Algorithms in Stable Recovery of Sparse Overcomplete Representations, International workshop on sparse representations, Singapore, August 9 – 19.

2004 – Optimal estimators in Learning Theory, International conference on Approximation and Probability dedicated to 70th birthday of Z. Ciesielski, Bedlewo, Poland, September 20–24, 2004.

2004 – Entropy in Learning Theory. Error estimates, International conference on Approximation and Extremal problems dedicated to 70th birthday of V.M. Tikhomirov, Moscow

State University, Moscow, Russia, December 16–18.

2005 – Greedy algorithms with restricted depth search, International workshop on signal processing, University of Maryland, Park City, May 18.

2005 – On optimal estimators in learning theory, International workshop on learning theory, Toyota Technological Institute, Chicago, May 24.

2005 – Simultaneous Greedy Approximation, International workshop on redundant approximation, Schrödinger Institute, Vienna, Austria, June 23.

2005 – Greedy approximations, International conference on Foundations of Computational Mathematics, Santander, Spain, June 30 – July 9.

2005 – The volume estimates and their applications, International workshop on breaking complexity, Bad Honnef, Germany, December 16.

2006 – On Lebesgue type inequalities for greedy approximation, SIAM conference on Imaging Sciences, Minneapolis, May 15–17.

2006 – On optimal estimators in learning theory, Mathematical Foundations of Learning Theory, Paris, France, May 30 – June 4.

2006 – Greedy approximations in Banach spaces, International conference on Functional Analysis dedicated to 60th birthday of N. Kalton, Oxford, Ohio, May 22–28.

2006 – On universality in approximation and learning, Sixth International Conference "Curves and Surfaces", Avignon, France, June 29 – July 5.

2006 – Greedy approximation with regard to bases, ICM, Madrid, Spain, August 22–30.

2006 – The entropy in learning theory, Workshop on Metric Entropy and Applications in Analysis, Learning Theory and Probability, Edinburgh, UK, September 11–15.

2007 – On optimal estimators in learning theory, 13th International conference on Approximation Theory, San Antonio, Texas, March 3–8.

2007 – Greedy algorithms with regard to the trigonometric system, International conference on harmonic analysis (celebrating 80<sup>th</sup> birthday of D. Waterman), Fort-Lauderdale, US, April 30 – May 2.

2007 – Greedy algorithms with regard to the trigonometric system, International conference on harmonic analysis and sparsity, Strobl, Austria, June 17–23.

2007 – Lebesgue type inequalities in greedy approximation, AMS Von Neumann Symposium on Sparse Representations and High Dimensional Geometry, Snowbird, Utah, July 8–12.

2008 – Greedy Approximation, Series of 10 lectures at the Gumilev's University, Astana, Kazakhstan, June 8 –16.

2008 – On universal estimators in learning theory, Learning Theory and Application, Oberwolfach, Germany. June 29 – July 05.

2008 – Greedy Approximation and Applications, Probability and Approximation in Applications, USC, November 22.

2008 – On widths and Compressed Sensing, Dagstuhl, Germany, November 30 – December 5.

2008 – Some progress and open problems in discrepancy theory, Palo-Alto, California, USA, December 8–12.

2009 – Cubature formulas, discrepancy and nonlinear approximation, University of Arkansas, April 16-18.

2009 – Greedy approximation in Banach spaces, Workshop Nonlinear and Adaptive Approximation, Ulm, Germany, September 30 – October 4.

2010 – Super Greedy Algorithms, Workshop on sparsity and compressed sensing, Bonn, Germany, June 7–11.

2011 – Greedy Approximation in Compressed Sensing, International Seminar Series: "New Frontiers in Imaging and Sensing", Columbia, SC, February 17–22.

2011 – Lebesgue type inequalities for greedy approximation, Workshop "Sparse and Low Rank Approximation", Banff, Canada, March 6–11.

2011 – Greedy approximation with respect to bases, International conference "From Abstract to Computational Harmonic Analysis", dedicated to Hans Feichtinger's 60th birthday, Strobl, Austria, June 13–19.

2011 – Lebesgue-type inequalities for greedy approximation with respect to bases, series of 3 talks (50 min each) at the workshop "Greedy Algorithms in Banach Spaces and Compressed Sensing", Texas A& M University, College Station, Texas, July 18–22.

2011 – Lebesgue-type inequalities for greedy approximation with respect to redundant systems, The Informal Regional Functional Analysis Seminar (SUMIRFAS), Texas A& M University, College Station, Texas, July 29–31.

2011 – Greedy approximation with respect to bases, International conference "Harmonic Analysis and Approximations, V", Tsaghadzor, Armenia, September 10–17.

2011 – Greedy approximation in compressed sensing, IMA Annual Program Workshop "High Dimensional Phenomena", Minneapolis, Minnesota, September 26–30.

2011 – Greedy approximation, series of 4 talks (1 hour each) at the workshop "Advanced Course on Approximation Theory", The Centre de Recerca Matemàtica, Barcelona, Spain, November 7–11.

#### **INVITED TALKS.**

I participated and regularly delivered talks (1974-1992) in the seminars at Steklov Institute of Mathematics:

On Function Theory, chairs: S. M. Nikol'skii, S. L. Sobolev, L. D. Kudryavtsev, O. V. Besov.

On Approximation Theory, chairs: S. B. Stechkin, S. A. Telyakovskii.

On Approximation Theory and Finite Geometry, chairs: B. S. Kashin, V. N. Temlyakov; and at the Moscow State University:

On Function Theory, chairs: D. E. Men'shov, P. L. Ul'yanov.

On Number Theory, chair: A. A. Karatsuba.

In addition to these I had the following talks:

1989 – University of Alberta, Edmonton, Alberta, Canada. Several talks on Approximation of Functions With Bounded Mixed Derivative.

1991 – Dalhousie University, Halifax, Nova Scotia, Canada. Several talks on Optimal Cubature Formulas.

1991 – Toronto University, Toronto, Canada. Talk on Number-Theoretical Cubature Formulas.



- 1991 – Queen’s University, Kingston, Ontario, Canada. Talk on Fibonacci Cubature Formulas.
- 1991 – University of South Carolina, Columbia, SC Talk on Numerical Integration.
- 1991 – University of South Florida, Tampa, Florida. Talk on Kolmogorov’s and Linear Widths and Orthowidth of Function Classes.
- 1991 – Columbia University, New York, NY. Talk on Optimal Recovery of Functions.
- 1992 – University of Warsaw, Warsaw, Poland. Talk on Widths of Multivariate Function Classes.
- 1993 – Columbia University, New York, NY. Talk on Number-Theoretical Methods in Numerical Integration.
- 1995 – Universidad de Autonoma, Madrid, Spain. Talk on Hyperbolic Wavelet Approximation.
- 1996 – Steklov Institute of Mathematics Talk on Nonlinear Approximation.
- 1996 – Indiana University, Bloomington, Indiana. Talk on Greedy Algorithm and  $m$ -term Trigonometric Approximation.
- 1997 – Steklov Institute of Mathematics, Moscow, Russia. Talk on Greedy Algorithms and  $m$ -term approximation.
- 1998 – Steklov Institute of Mathematics, Moscow, Russia. Talk on Greedy Algorithms and best  $m$ -term approximation.
- 1999 – Steklov Institute of Mathematics, Moscow, Russia. Talk on Weak Greedy Algorithms with regard to redundant dictionaries.
- 2000 – Institute for Geometry and Applied Math., RWTH Aachen, Germany, October 16. Talk on Greedy Algorithms.
- 2000 – Friedrich-Schiller University of Jena, Jena, Germany, October 24, Talk on Nonlinear Approximation.
- 2000 – Normal University of Beijing, Beijing, China, June 1–8. Two talks on Multivariate Approximation.
- 2001 – Steklov inst. Math., Moscow, Russia, September 20. Talk on Greedy Algorithms.
- 2001 – Institute Henri Poincare, Paris, France, June. Four one hour talks on Nonlinear approximation and related topics in frame of ”Odyssey of Statistics”.
- 2001 – University Autonoma de Madrid, Madrid, Spain, July 6. Talk on Nonlinear Approximation with regard to bases.
- 2001 – Inst. Math. Vietnam Acad. Sciences, Hanoi, Vietnam, December 7. Talk on Greedy Algorithms in Nonlinear Approximation.
- 2002 – Greedy Algorithms in Nonlinear Approximation (4 hours series of talks), University Paris X, Paris, France, June 1–26.
- 2004 – Error estimates in Learning Theory, University Paris VI, VII, Paris, France, May 24.
- 2004 – Entropy estimates of multivariate function classes, Steklov Inst. Math., Moscow, Russia, December 23.
- 2005 – On optimal estimators in learning theory, University Paris X, Paris, France, November 24.
- 2005 – Approximation in Learning Theory, University of Cambridge, UK, December 2.

- 2005 – Cubature formulas, discrepancy, and nonlinear approximation, Oxford University, UK, December 6.
- 2005 – Some problems of learning theory, Steklov Inst. Math., Moscow, Russia, December 22.
- 2006 – Nonlinear approximations and numerical integration, Max Planck Institute, Leipzig, June.
- 2006 – On Universal Estimators, Universita degli Studi di Genova, June.
- 2007 – On Lebesgue type inequalities in greedy approximation, Courant Inst. of Mathematics, April 30.
- 2007 – On Lebesgue type inequalities in greedy approximation, University of Vienna, Austria, July 26.
- 2009 – Lebesgue type inequalities in Compressed Sensing, Moscow State University, December 4.
- 2009 – Compressed Sensing, Steklov Institute of Mathematics, Moscow, Russia, December 10.
- 2010 – Greedy Approximation, Steklov Institute of Mathematics, Moscow, Russia, December 23.
- 2011 – Lebesgue-type inequalities in greedy approximation, Steklov Institute of Mathematics, Moscow, Russia, June 23.
- 2011 – Compressed Sensing in Banach spaces, Steklov Institute of Mathematics, Moscow, Russia, September 8.