

## CURRICULUM VITAE

### 1. Name: Maria Skopina.

### 2. Place of work:

St. Petersburg State University, Department of Applied Mathematics and Control Processes.  
Position: Full Professor

3. **Work address:** PM-PU, Universitetskii pr.-35, 198504 St. Petersburg, Russia  
Tel/Fax.: (812) 428-71-59 ; e-mail: [skopina@MS1167.spb.edu](mailto:skopina@MS1167.spb.edu)

4. **Main subjects of investigation:** wavelets, Fourier analysis, approximation theory, p-adic harmonic analysis, sampling theory.

5. **Scientific publications:** author of more than 60 papers author of 2 books and more than 70 papers.

### 6. Scientific degrees.

DSc. in Mathematics (2000), from St. Petersburg Department of Steklov Mathematical Institute, RAS. Title of the thesis "Approximation by polynomials and wavelets"

Ph.D. in Mathematics (1980), from Leningrad (St. Petersburg) State University. Title of the thesis: "Some estimation for the deviation of linear summation methods of Fourier series".  
Supervisor: Prof. V. V. Zhuk.

### 7. Teaching and research positions:

Full Professor in St. Petersburg State University (from 2001);  
Associate Professor in St. Petersburg State University (1998-2000);  
Assistant Professor in St. Petersburg State University (1989-1995);  
Researcher in St. Petersburg University (1983-1988);  
Assistant Professor in St. Petersburg Technical University (1979-1983).  
Visiting Professor in Vali Asr University (Iran, January-March, 2006)  
Visiting Professor in Kiev National University (Ukraine, February-March, 2001)  
Visiting Researcher in South Carolina University (USA, April-May, 2000)  
Visiting Professor in Federal University of Seara (Brasil, 1996-1997)

### 8. PhD/DSc Students:

- Irina Maximenko, 2003, PhD degree from St. Petersburg Department of Steklov Mathematical Institute, RAS, titled "Wavelet Systems with Matrix Dilations"
- Aleksnder Krivoshein, 2013, PhD degree from St. Petersburg State University, titled "Frame-like Wavelet Systems"
- Elena Lebedeva, 2017, DSc degree from St. Petersburg Department of Steklov Mathematical Institute, RAS, titled "Wavelet Transform: Time Frequency Localization, Wavelet Expansions, Invertibility"

## 9. Editorship.

International Journal of Wavelets, Multiresolution and Information Processing  
Journal of Mathematical Science

## 10. Participation in international conferences as a plenary/ invited speaker.

- International Conference «Approximation and discretization», Moscow, Aug. 30 - Sept. 3, 2021
- International Conference "Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis X", Rostov-on-Don, 22-27 April 2021.
- Winter School "Contemporary problems of function theory of and related problems", Voronezh, Russia, Jan. 28- Feb. 2, 2021.
  - International Conference "Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis VII", Rostov-on-Don, 23-28 April 2019.
  - International Workshop on Wavelets, Frames III, and Applications, December 14-20, 2017. Delhi, India, Kirori Mal College, University of Delhi.
  - International Conference "Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis VII", Rostov-on-Don, 24-27 April 2017.
  - International Conference on "The Occasion of Silver Jubilee of the Indian Society of Industrial and Applied Mathematics" (ISIAM), Jan. 29-31, 2016, Sharda Univesity, Graitier Noida India
  - 15th International Conference in Approximation Theory, San Antonio, Texas, USA, May 22 - 25, 2016
  - VI Jaen Conference on Approximation, Ubeda, Haen, Spain, June 28-July 3, 2015
  - International Conference on Function Spaces and Approximation Theory dedicated to the 110-th anniversary of S. M. Nikol'skii, Moscow, May 25-28, 2015
  - International Workshop "Wavelets, Frames, and Applications", December 24-30, 2014, Delhi, India, Kirori Mal College, University of Delhi
  - International Conference "Constructive Theory of Fancions", June 9-15, 2013, Sozopol, Bulgaria.
  - International Workshop on p-Adic Methods and Modeling of Complex Systems, April 15-19, 2013, Bielefeld, Germany
  - Winter Mathematical School "Contemporary methods in theory of functions and related problems", Voronezh, Russia, Jan. 27- Feb. 2, 2013
  - International Conference on Mathematical Analysis, Differential Equations and Their Applications, September 04-09, 2012, Mersin – TURKEY
  - Research Workshop of the Israel Science Foundation "New Trends in Approximation Theory, Ein-Gedi, Israel, Jan. 4-7, 2012"
  - 16-th Saratov Winter School "Contemporary problems of theory of functions and thier applications", Saratov, Russia, Jan. 27- Feb. 3, 2012
  - International Workshop "Wavelets, Frames, and Applications", December 15 21, 2011. Delhi, India, Kirori Mal College, University of Delhi
  - The 42-nd Annual Iranian Mathematics Conference, Rafsanjan, Iran, 5-8 September 2011, Vali-e-Asr University of Rafsanjan, Iran
  - International Conference on Applied Harmonic Analysis and Multiscale Computing July 25-28, 2011, University of Alberta, Edmonton, Canada

- Illinois/Missouri Applied Harmonic Analysis Seminar North Illinois University, USA, Sartuday 24, April, 2010 ,
- International Conference “Wavelets and Applications”, June 14-20, 2009, Saint Petersburg, Russia
- International Workshop on Approximations, Harmonic Analysis, Operators and Sequences in Narva-Joesuu, Estonia, October~3-5, 2008.
- V International symposium "Fourier series and their applications", Abrau Durso, Russia, May 27- June 3, 2008,
- Wavelets and Application Semester, EPFL, Lausanne, Switzerland, May 8-15, 2006.
- IV International Symposium "Fourier Series and Their Applications" Abrau Durso, Russia, May 30- June 5, 2005,
- International Conference "Functional Methods in Approximation Theory, Operator Theory, Stochastic Analysis and Statistics", Kiev, Ukraina, October 1-5, 2004
- International Conference "Wavelet Theory and Applications: New Directions and Challenges" Singapore, August 10-14, 2004
- Workshop in Applied Harmonic Analysis and Approximation Theory, Holon, Israel, April 30, 2004.
- Winter Mathematical School "Contemporary methods in theory of functions and related problems", Voronezh, Russia, Jan. 27- Feb. 4, 2003
- Workshop on Wavelets, Rafsanjan, Iran, Jan. 15-22, 2002
- International Conference " Functional methods in approximation theory, stochastic analysis and statistic", Kiev, Ukraine, Oct. 19-22, 2001
- Winter Mathematical School "Contemporary methods in theory of functions and related problems", Voronezh, Russia, Jan. 27- Feb. 4, 2001
- International conference "Methods of Mathematical Simulation", St. Petersburg, Russia, June 14-19, 1999
- International Conference on Approximation Theory, Kiev, Ukraine, May 26-31, 1999.

## **11. Activity in international scientific events**

- Member of Program Committee of the International Conference “Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis VII”, Rostov-on-Don, April 23-28, 2017
- Co-chairman of the International Conference “Wavelets and Applications”, June 18-23, 2015, Saint Petersburg, Russia
- Co-chairman of the International Conference “Wavelets and Applications”, July 8-15, 2012, Saint Petersburg, Russia
- Member of Program Committee of Annual Saratov Winter School "Contemporary problems of theory of functions and their applications"
- Member of Program Committee of International Conference on Mathematical Analysis, Differential Equations and Their Applications, September 04-09, 2012, Mersin – TURKEY
- Member of Program Committee of International Conference on "Contemporary Analysis", June 20-23, 2011, Donsk, Ukraine
- Co-chairman of the International Conference “Approximation Theory”, May 6-8, 2010, Saint Petersburg, Russia
- Member of Program Committee of International Conference “Functional Methods in Approximation Theory and Operator Theory III”, August 22-26, 2009 Camp Hart, Village Svityaz, Shatskyi Region, Volyn, Ukraine
- Chairman of the International Conference "Wavelets and Splines, July 3-8, 2003, Saint Petersburg, Russia"
- Vice-chairman of the International Conference "Optimization of Finite-element Approximations, Splines and Wavelets, June 25-29, 2001, Saint Petersburg, Russia"

- Member of Program Committee of Annual International Symposium "Fourier series and their applications"

## 12. Prizes and awards

2018-2020 Grant of Russian Scientific Foundation, Project 18-11-00055, (leader of the group);

2016-2017 Grant of Volkswagen Foundation for scientific corporation between German Russian and Ukrainian groups. (leader of the group of St. Petersburg State University)

2015 -2017 Grant of the Russian Foundation for Basic Research, RFBR Project 15-01-05796 (coordinator of the team);

2012 -2014 Grant of the Russian Foundation for Basic Research, RFBR Project 12-01-00216 (leader of the group);

2009 -2011 Grant of the Russian Foundation for Basic Research, RFBR Project 09-01-00162 (leader of the group);

2008-2010 - Grant of scientific corporation between German and Russian groups. in the framework of the Agreement on Scientific Cooperation between the Deutsche Forschungsgemeinschaft and the Russian Academy of Sciences, DFG Project 436 RUS 113/951 (leader of the Russian team);

2006 -2008 Grant of the Russian Foundation for Basic Research, RFBR Project 06-01-00457 (leader of the group);

2003 - 2005 Grant of the Russian Foundation for Basic Research, RFBR Project 03-01-00373 (coordinator of the team);

2000 - 2002 Grant of the Russia Foundation for Basic Research RFBR Project 00-01-00467 , (leader of the group);

1993 Grant of the International Science Foundation (individual grant);

## SELECTED LIST OF PUBLICATIONS

### Monographs:

I.Ya.Novikov, V.Yu. Protasov and M.A.Skopina,  
Wavelet theory. M: Fismatlit, 2005 (in Russian).

Novikov, I. Ya.; Protasov, V. Yu.; Skopina, M. A.  
"Wavelet Theory" AMS, Translations Mathematical Monographs, V. 239 (2011).

A.Krivoshein, V. Protasov and M. Skopina,  
Multivariate wavelet frames, Springer, 2016.

### Articles:

Yu.Kolomoitsev and M.Skopina,  
Approximation by multivariate quasi-projection operators and Fourier multipliers.  
Applied Mathematics and Computation, Volume 400, July 2021, 125955

Yu.Kolomoitsev and M.Skopina, Quasi-projection operators in weighted  $L_p$  spaces.  
Applied and Computational Harmonic Analysis, 52 (2021), 165-197

Yu.Kolomoitsev, A. Krivoshein, and M.Skopina, [Approximation by periodic multivariate quasi-projection operators](#). *Journal of Mathematical Analysis and Applications*, 489 (2020), no 2, 124192

Yu.Kolomoitsev and M.Skopina. [Approximation by sampling-type operators in  \$L\_p\$ -spaces](#). *Mathematical Methods in the Applied Sciences*, 43(2020), no 16, 9358-9374

D. Costarelli, A. Krivoshein, M. Skopina, G. Vinti, Quasi-projection operators with applications to differential-difference expansions, *Applied Mathematics and Computations*, Volume 363, 15 December 2019, Article 124623

P.Andrianov and M. Skopina On construction of periodic wavelet frames, *Eur. J. Math.* 5 (2019), no. 1, 241–249.

E.J. King and M.A. [Skopina](#), On biorthogonal p-adic wavelet, *J. Math. Sci.*, 234 (2018), no 2, 158-169

A. Krivoshein, Yu.Kolomoitsev and M.Skopina, Differential and falsified sampling expansions, *J. Fourier Anal. Appl.* 24 (2018), no 5, 1276--1305

### [Around Kotelnikov-Shannon formula](#)

[Yurii Kolomoitsev](#) ; [Maria Skopina](#)

IEEE Xplore, 2017, 279 - 282

Yu.Kolomoitsev and M.Skopina  
Approximation by multivariate Kantorovich–Kotelnikov operators  
*J. Math.Anal.Appl.*, 456 (2017), 195–213

M. Skopina

[On construction of multivariate Parseval wavelet frames](#)  
*Applied Mathematics and Computation*, 301 (2017), 1-11

A.Krivoshein, M. Skopina, Multivariate sampling-type approximation  
*Analysis and Applications*, 15(2017), no. 4, 521-542

P. Andrianov and M. Skopina, [On Jackson-type inequalities associated with separable Haar wavelets](#), *Int. J. Wavelets Multiresolut. Inf. Process.*, 14 (2016), no.3, DOI: 10.1142/S0219691316500053, 1650005

A. Krivoshein, M. Skopina, [Construction of multivariate frames using the polyphase method](#), *Mathematical Notes*, 100 (2016), 3-4, 495-498

Y. Farkov, E. Lebedeva and M. Skopina, [Wavelet frames on Vilenkin groups and their approximation properties](#), *Int. J. Wavelets Multiresolut. Inf. Process.*, 13 (2015), no.5, DOI: 10.1142/S0219691315500368, 1550036

M. Skopina, p-Adic wavelets, *Poincare Journal of Analysis and Applications*, 2 (2015), Special issue (IWWFA-II, Delhi), 53-56.

E. Lebedeva and M. Skopina, Walsh and wavelet methods for differential equations on the Cantor group. *J. Math. Anal. Appl.* 430 (2015), no 2, 593-613.

S. Evdokimov and M. Skopina, On orthogonal  $p$ -adic wavelet bases, *J. Math. Anal. Appl.*, 424 (2015), N 2, 952-965.

M. Skopina, Approximation by Band-limited Scaling and Wavelet Expansions, Proceedings of International Conferences CONSTRUCTIVE THEORY OF FUNCTIONS, Sozopol 2013, dedicated to Blagovest Sendov and to the memory of Vasil Popov, Prof. Marin Drinov Academic Publishing House, Sofia, 2014, 235-251.

M. Skopina, Band-limited scaling and wavelet expansions, *Appl. Comput. Harmon. Anal.* 36 (2014), no 1, 143–157

Nira Dyn and Maria Skopina, Decompositions of trigonometric polynomials with applications to multivariate subdivision schemes, *Advances in Computational Mathematics*, 38 (2013), no 2, 321-349.

S. Albeverio and M. Skopina,  
Haar Basis for  $L^2(Q_2^2)$  generated by one wavelet function,  
*Int. J. Wavelets Multiresolut. Inf. Process.*, 10 (2012), no.5,  
DOI: 10.1142/S0219691312500427

I.Ya. Novikov and M.A. Skopina, Why are Haar bases in various structures are the same?  
*Mathematical Notes* 91 (2012), 5, 895-898

A. Krivoshein, M. Skopina, Approximation by frame-like wavelet systems  
*Appl. Comput. Harmon. Anal.* 31 (2011), no 3, 410-428

S. Albeverio, S. Evdokimov, M. Skopina,  $p$ -Adic multiresolution analysis and wavelet frames, *J. Fourier Anal. Appl.*, 16 (2010), No. 5, 693-714.

E.J. King, M.A. Skopina, Quincunx multiresolution analysis for  $L^2(Q_2^2)$ ,  $P$ -Adic Numbers Ultrametric Anal. Appl., 2 (2010), No. 3, 222-231.

A.Yu. Khrennikov, V.M. Shelkovich, M. Skopina,  
 $p$ -Adic refinable functions and MRA-based wavelets, *Journal of Approximation Theory* 161 (2009) 226–238

Albeverio, S. Evdokimov, and M. Skopina,  $p$ -Adic Nonorthogonal Wavelet Bases, Proceedings of the Steklov Institute of Mathematics, 265 (2009), 1–12.

Shelkovich V. and Skopina M.  $p$ -Adic Haar multiresolution analysis and pseudo-differential operators, *J. Fourier Analysis and Appl.*, 15 (2009), N 3, 366-393 .

M. Skopina, On construction of multivariate wavelet frames,  
*Appl. Comput. Harmon. Anal.* 27 (2009) 55–72 .

A.Yu.Khrennikov, V.M.Shelkovich, M.Skopina,  $p$ -Adic Orthogonal Wavelet Bases,  $p$ -Adic Numbers, Ultrametric Analysis and Applications, 1 (2009), No 2, 145–156.

S.A.Evdokimov and M.A. Skopina, 2-Adic wavelet bases, Proceedings of Institute of Mathematics and Mechanics of the Ural Branch of the Russian Academy of Sciences, 15 (2009), N 1, 135-146 (in Russian).

A.B. Krivososhein and M.A.Skopina. Frame-similar systems. Proceedings of Institute of Mathematics of National Academy of Science of Ukraina, 6 (2009), No 1, 96-115 (in Russian).

S. Karakaz'yan, M. Skopina and M. Tchobanou, SYMMETRIC MULTIVARIATE WAVELETS, Int. Journal of Wavelets, Multiresolution and Information Processing, 3 Vol. 7, No. 3 (2009) 1–28

M. Skopina, Tight wavelet frames. [Doklady Mathematics](#) (2008), 77 (2), 182-185

M. Skopina, On Construction of Multivariate Wavelets with Vanishing Moments, Journal of Applied and Computational Harmonic Analysis, 20 (2006), N 3, 375-390.

A. Askari Hemmat, M.A. Dehghan and M. Skopina, Ridge Wavelets on the Ball. Journal of Approx. Theory 136 (2005), No 2, 129-139.

M.A Skopina. Approximation of continuous functions by quasipolynomial on polyhedrons. In book: Contemporary problems of approximation theory. St. Petersburg Univ. , 2004, 294-306 (in Russian)

A. Askari Hemmat, M.A. Dehghan and M. Skopina, Polynomial wavelet-type expansions on the sphere, Matem. zametki 74 (2003), No. 2, 292-300 (in Russian).

I.E.Maximenko and Skopina M.A., Multivariate Periodic Wavelets, Algebra & Analysis 15 (2003) , No 2, 1-39 (in Russian).

M.A.Skopina Orthogonal Polynomial Schauder Bases for  $C[-1,1]$  of Optimal Degree, Matem. sbornik 192 (2001) , No 3, . 115-136 (in Russian).

S.V.Konyagin and M.A.Skopina On comparing L-norms of full and truncated exponential sums, Matem. Zametki 69 (2001), No. 5, 699-709 (in Russian).

M. Skopina, Wavelet approximation of periodic functions, Journal of Approx. Theory 104 (2000), 302-329.

Skopina M.A. On polynomial bases in the space  $C[-1,1]$  . Zap. Nauchn. Sem. POMI, 262 (1999), 223-226.

Skopina M. Localization principle for wavelet expansions. In book: "Self-Similar Systems", Proceedings of the International Workshop (July 30 - August 7, 1998, Dubna, Russia). JINR, E5-99-38, Dubna, 1999, 125-130

M. Skopina, Local convergence of Fourier series with respect to periodized wavelets, *Journal of Approx. Theory* 94 (1998), 191-202.

Liflyand E. and Skopina M.A., Square linear means with hyperbolic factors, *Analysis* VI (1998), 333-343

Skopina M., Multiresolution analysis of periodic functions, *East Journal of Approximation*, 3 (1997), No 2, 203-224

Skopina M. Convergence of periodic wavelet expansions. [J] *Z. Angew. Math. Mech.* 76, Suppl. 2, [ISSN 0044-2267]. 1996, 679-680.

Skopina M.A., On the norms of polynomials with respect to systems of periodic wavelets in the spaces  $L_p$ , *Matem. zametki* 59 (1996), No 5, 780-783 (in Russian)

Baron S., Liflyand E. and Skopina M.A., On the summability of double Fourier series at a point. *Analysis*, 18 (1996), 195-205

Skopina M.A., Two-dimensional analog of the improvement effect of approximation near the ends of interval, *Vestn. SPb. Univ.*, Ser.1 (1994), No 15, 54-59 (in Russian)

Skopina M.A., Approximation of functions by quasipolynomials on convex sets, *Dokl. RAN* 322 (1993), No 4, 422-423 (in Russian)

Skopina M.A., On the order of growth of square partial sums of double Fourier series, *Matem. zametki* 51 (1992), No 6, 69-79 (in Russian)

Skopina M.A. On almost everywhere convergence of Marcinkiewicz sums of double Fourier series, *Zap. nauchn. seminarov LOMI*, 190 (1991), 148-156 (in Russian)

Skopina M.A. On the divergence of linear summation methods of Fourier series, *Analysis mathematica*, 17 (1991), N2, 173-182

Skopina M.A. The generalized Lebesgue sets of functions of two variables. *Proceedings. Colloquia Math. Societ. Janos Bolyai. V. 58*, Conference on Approximation Theory. Hungary. Kecskemet. August 6-11, 1990, 615-625

Skopina M.A. The localization principle for multi-dimensional Riesz-Marcinkiewicz sums. In book: *Problems of Mechanics and Control Processes*, V. 12, 1989, L.: Izdat. Leningr. Univer, 154-160 (in Russian)

Skopina M.A. The localization principle for Marcinkiewicz sums in the two-dimensional case. *Sibirskii matematicheskii zhurnal*, XXX (1989), N1, 145-153 (in Russian)



Skopina M.A. On the localization principle for double trigonometric Fourier series. Vestn. Leningrad.Univ., Ser. 1, 1988, N 2, 49-54. (in Russian)

Bashmakova I.B., Skopina M.A. Tauber theorem for Fourier-Jakobi Series. Vestn. Leningrad.Univ., Ser. 1, 1988, N 4, 3-9 (in Russian)

Skopina M.A. On the lack of localization for trigonometric Fourier series in the two-dimensional case. In book: Mezhevuz. sb. nauchn. trudov, Vologda, 1987, 170-176 (in Russian)

Skopina M.A. Lebesgue constants of multiple Vallee Poussin sums over polyhedra. Proceedings of International Conference on Approximation Theory, Kiev. 31.05-05.06, 1983, M.: Nauka, 1987, 404-405 (in Russian)

Skopina M.A. Lebesgue constants of linear summation methods over polyhedra. In book: Math Methods for analysis of Signal Processes. L.: Izdat. Leningr. Univer., 1986, 171-180 (in Russian)

Skopina M.A. On the Lebesgue constants of the conjugate Fourier sums in the multi-dimensional case. Matem. zametki, 36 (1984), N.3, p.359-368 (in Russian)

Skopina M.A. Lebesgue constants of multiple de la Vallee Poussin sums over polyhedra. Zap. nauchn. seminarov LOMI, 135 (1983), 154-165 (in Russian)

Skopina M.A. To the problem on convergence factors. Vestn. Leningrad. Univ., Ser. 1, 1978, N 13, 58-62 (in Russian)

Skopina M.A. Approximation of functions by Fourier-Jacobi sums. Vestn. Leningrad. Univ., 1978, N 19, 58-76 (In Russian)

Skopina M.A. On the asymptotic formulas for the deviations of linear summation methods of Fourier series. Zap.nauchn. seminarov LOMI, 80 (1978), 189-196 (in Russian)