

# MIKHAIL A. LIFSHITS

Date and place of birth: July, 21, 1956, Moscow, USSR.  
Home address Russia, 197372, St. Petersburg,  
Komendantskii prospect 22-2-49.  
Permanent professional St. Petersburg State University,  
address: Math. Mech. Department,  
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web page <http://sites.google.com/site/mlprobability/>  
Marital status: Married.  
Children: son Yuri, born in 1984,  
daughter Vera, born in 1985,  
daughter Liubov', born in 1989.  
Expertise: Probability Theory.

## EDUCATION AND SCIENTIFIC DEGREES

- 1993 Doctor of Mathematical Sciences degree,  
St. Petersburg University. Thesis title: "Investigation  
of the distributions of stochastic functionals".
- 1981 Candidate of Mathematical Sciences (Ph.D.)  
degree. Thesis title: "Some problems of theory  
of random processes related to application of measures".  
Supervisor: Prof. Yu.A. Davydov.
- 1973-1978 Undergraduate and graduate studies in mathematics,  
Leningrad State University, USSR.  
High education degree (M.Sc.). Memoir title: "Local  
times for functions and random processes"

## ACADEMIC AND PROFESSIONAL POSITIONS

- 2000- Full professor at St.Petersburg University.  
2011-2017 Guest professor at Linköping University.  
1998-1999 Associated professor at St.Petersburg University  
1998-2004 Part-time professor at Lille-I University.  
1994-1998 Senior researcher at Mancomtech  
center of professional training  
and part-time professor at Strasburg-I,  
Lille-I, and St.Petersburg Universities.  
1986-1994 Associated Professor at St.Petersburg  
Institute of Finances and Economics,  
St.Petersburg, Russia.  
1986 Director of Laboratory at "Lenelectronmash"  
software company, Leningrad, USSR.  
1982-1986 Senior researcher at "Lenelectronmash".  
1980-1982 Researcher at "Lenelectronmash".  
1978-1980 Engineer at "Lenelectronmash"

## TEACHING ACTIVITY (courses)

Stochastic processes (graduate). Gaussian random functions (graduate). Theory of large deviations (graduate). Introduction to probability theory (college and undergraduate). Mathematical statistics (undergraduate). Processes with independent increments (graduate). Modern limit theorems (postgraduate). Case studies in probability and statistics.  
Operation research (graduate). Databases and computer systems of data management (graduate).

## AWARDS

Prize of St.Petersburg Mathematical Society (1981).  
Prize of St.Petersburg State University (2008).

## GRANTS AWARDED (since 2009)

### Russian Foundation for Basic Research:

- grant 16-01-00258 "Approximation of random processes and their functionals" (2016-2018).

- grant 13-01-00172 "Small deviations and approximation of Gaussian random processes and fields" (2013-2015).
- grant 11-01-12104-ofi-m-2011 "Applications of Probability Theory and Mathematical Statistics to dependence recovery and classification problems based on complete and incomplete data" (2011-2012).
- grant 10-01-00154a "Small and large deviations of stochastic functionals and their applications" (2010-2012).
- grant 09-01-12180-ofi-m "Development of fundamental methods of analysis and approximation of probabilistic distributions with applications" (2009-2010).
- grant 09-01-91331 "Geometry and asymptotics of random structures" (2009-2011, joint with DFG of Germany).

**Russian ministry of education:**

- grant NSh-2504.2014.1 "Leading scientific schools of Russia" (2014-2015);
- grant NSh-4472.2010.1 "Leading scientific schools of Russia" (2010-2011);
- grant NSh-638.2008.1 "Leading scientific schools of Russia" (2008-2009);
- grant NSh-422.2006.1 "Leading scientific schools of Russia" (2006-2007);

**St.Petersburg State University:**

- grant 6.65.37.2017 "Modern problems of Probability and Statistics: Gaussian approximations and small deviations for random processes".
- grant 6.38.672.2013 "Actual problems of Probability and Statistics" (2013-2014).

## **INTERNATIONAL WORKING EXPERIENCE (since 2005)**

2017 Münster University, Germany,  
Darmstadt University, Germany,  
research work

2016 Paris VI University, France,  
invited professor

2015 Münster University, Germany,  
guest researcher

2011-2017 Linköping university, Sweden,  
guest professor

2011 Hausdorff Research Institute for Mathematics,  
Bonn, Germany, guest researcher

2010 F.Schiller University, Jena, Germany,  
Paris-12 University, Creteil, France,  
research work

2008 P.Sabatier University, Toulouse, France,  
research work  
Georgia Institute of Technology, Atlanta, USA,  
invited professor

2007 Paris-12 University, Creteil, France,  
L.Pasteur University, Strasburg,  
P.Sabatier University, Toulouse,  
invited professor

2006 Paris-12 University, Creteil, France,  
invited professor

2005 L.Pasteur University, Strasburg,  
France, invited professor,  
Darmstadt Technische Universität,  
Germany, invited professor

1994-2012 F.Schiller University, Jena, Germany,  
research work and invited lecturing

## **PROFESSIONAL SOCIETIES**

1985- St.Petersburg Mathematical Society  
member,

2001- board member

1996- American Mathematical Society  
member

2011-2015 Bernoulli Society for Mathematical Statistics and Probability,  
Council Member

Associated editor in international journals: JOURNAL OF THEORETICAL PROBABILITY, PROBABILITY AND MATHEMATICAL STATISTICS, THEORY OF PROBABILITY AND ITS APPLICATIONS, THEORY OF STOCHASTIC PROCESSES. Co-editor of ZAPISKI NAUCHNYH SEMINAROV POMI (ser. Probability and Statistics).

Referee for international journals: Annales de l'Institut H.Poincaré, Annals of Probability, Applied and Computational Harmonic Analysis, Bernoulli, Central European Journal of Mathematics, Comptes Rendus Acad. Sci. Paris, Electronic Communications in Probability, Electronic Journal of Probability, ESAIM: Probability and Statistics, Functional Analysis and Applications, Journal of Complexity, Journal of Statistical Physics, Journal of Theoretical Probability, Lithuanian Mathematical Journal, Mathematical Methods of Statistics, Potential Analysis, Probability and Mathematical Statistics, Probability Theory and Related Fields, Proceedings of the American Mathematical Society, Proceedings of St.Petersburg Mathematical Society, Russian Mathematical Surveys (Izvestia RAN), Statistics & Probability Letters, Stochastic Processes and Applications, Studia Math. Sci. Hungarica, Theory of Probability and Applications, Uniform Distribution Theory.

Reviewer for Russian Foundation for Basic Research, National Science Foundation (USA), Council for Physical Sciences (NWO, Netherlands), Binational Science Foundation (USA-Israel), Israel Science Foundation (Israel). Reviewer for "Mathematical Reviews" (since 2003). Chairman of selection committee for Gordin Prize (established by European Mathematical Society, 2018).

Co-organizer of the conferences: "Small deviation probabilities for stochastic processes and their applications", Oberwolfach, 2003, "Small deviations and related topics", St.Petersburg, 2005. "Workshop on small ball inequalities and their applications in analysis, probability, and irregularity of distributions", Palo Alto, 2008. "Northern Triangular Seminars", Helsinki, 2009, 2013, Stockholm, 2010, St.Petersburg, 2011. "Russian-Chinese seminar on Asymptotic Methods in Probability Theory and Mathematical Statistics", St.Petersburg, 2013. "Discrepancy Theory", ICERM, Providence, 2014, "Yu.V. Linnik Centennial Conference", St.Petersburg, 2015, "Symposium on Probability Theory and Random Processes", St.Petersburg, 2017, "Joint China-France-Russia Symposium on Probability Theory", Beijing, 2017.

Section organizer at the 33-rd conference "Stochastic Processes and Their Applications", Berlin, 2009, and 10-th, 11-th Vilnius Conferences in Probability Theory and Mathematical Statistics", 2010, 2014.

Advisor of PhD-students: E. Shmileva (defended in 2004), A. Berlinkov (2006), V. Vysotsky (2008), A. Khartov (2014).

Referee of PhD (candidate) thesis of: A. Baushev, S.B. Makarova, M.V. Petrova, V. Shah, S. Bobkov, Sun Xian Go, O. Lukashenko, I. Malofeev, A. Mikhailov, D. Zaporozhets, S. Kobel'kov, S. Dil'man, M. Gorboulskii, N. Kryzhanovskaya, I. Tiurin (Russia), J.-Ch. Breton, F. Boukhari, J.Hamonier, M. Kaim, A. Lucas, L. Menneteau, O. Moutsinga, J.-R. Pycke, D. Varron, N. Venet (France), N. Gorn (Germany), P. Zareba (Netherlands), M. Görgens (Sweden), Hua Xu, T. Litherland (USA) and of Habilitation (Doctor of science) thesis of S. Bobkov, T. Dudnikova (Russia), A. Ayache, J.-Ch. Breton, Ch. El-Nouty, G. Peccati (France), F. Aurzada (Germany), V.A. Gasanenko, A.M. Kulik (Ukraine).

## **INVITED LECTURES, since 2010**

- Russian–Swiss conference "Stochastic Models I". Lausanne, Switzerland, 2018. "Coding of Poisson random sets".
- XII International Vilnius Conference on Probability Theory and Mathematical Statistics, Vilnius, Lithuania, 2018. "Coding of Poisson random sets: large deviations".
- Joint China-France-Russia Symposium on Probability Theory, Beijing, 2017. "Energy saving approximation of random processes".
- The 2-nd Chinese-Russian Seminar on Asymptotic Methods in Probability Theory and Mathematical Statistics, Changchun, 2017. "On small deviation probabilities related to stationary sequences and processes".
- The 39th Conference on Stochastic Processes and Applications (SPA 2017). Moscow, 2017. "Energy saving approximation of random processes".
- Rhein–Main Kolloquium Stochastik. Darmstadt, 2017. "Energy saving approximation of random processes".
- Conference "Steklov Institute - PDMI winter session in Probability", St.Petersburg, 2016. "Some new results on small deviation probabilities".
- Conference "Modern problems of theoretical and applied probability (dedicated to 85-th anniversary of A.A. Borovkov)", Novosibirsk, 2016. "Energy saving approximation for random processes".

- Second Russian–Indian joint conference in Statistics and Probability. St.Petersburg, 2016. "Energy saving approximation for random processes".
- Conference "Analytic tools in probability and applications", Minneapolis, 2015. "Bifractional Brownian motion: existence and boundary processes".
- Workshop "IBC and Model selection", Paris, 2015. "Approximation complexity of random fields of increasing parametric dimension".
- Conference "Probability theory and its applications" (Yu.V. Prokhorov memorial conference), Moscow, 2015. "Least energy functions accompanying Brownian motion".
- International Congress of Mathematicians, Seoul, Korea, 2014. "Fractional integration operators of variable order: continuity and compactness properties"
- International workshop "Persistence probabilities and related fields". Darmstadt, 2014. "Least energy functions accompanying Wiener process".
- XI international Vilnius conference on Probability Theory and Mathematical Statistics, Vilnius, Lithuania, 2014. "Taut strings accompanying Wiener process".
- Conference "High Dimensional Probability VII", Cargèse, 2014. "Energy of taut strings accompanying Wiener process".
- Conference "Stochastic Geometry Days", Lille, 2014. "Taut strings accompanying Wiener process".
- Conference "Mathematical Statistics and Limit Theorems" in honor of Prof. Paul Deheuvels, Paris, 2013. "Approximation of processes and operators of variable non-smoothness".
- Ehrencolloquium für B.Carl and W.Linde, Jena, 2012.
- Conference "High Dimensional Probability VI", Banff, 2011. "Gaussian summation processes and weighted summation operators on trees"
- 4-th Workshop on High-Dimensional Approximation (HDA11), Bonn, 2011. "Compactness properties of summation operators on trees".

- Workshop on High-Dimensional Aspects of Stochastic PDEs, Bonn, 2011. "Approximation of additive random fields depending on large number of parameters".
- 10-th International Vilnius Conference in Probability Theory and Mathematical Statistics", Vilnius, 2010. "Small Deviations for Smooth Stationary Gaussian Processes".

## **UNIVERSITY SEMINARS, since 2005**

- 2017: Dresden.
- 2016: Linköping, St.Petersburg.
- 2015: Linköping, St.Petersburg.
- 2014: St.Petersburg, Taipei, Göteborg.
- 2013: Paris-13, Göteborg.
- 2012: St.Petersburg, Linköping, Copenhagen, Jena.
- 2011: St.Petersburg (2), Linköping, Umeå.
- 2010: Paris VI, Lille, Jena, Berlin.
- 2008: Atlanta, Newark (Delaware), Knoxville, Columbia (Missouri).
- 2007: Lille, Toulouse, St.Petersburg (2), VU Amsterdam.
- 2006: TU Darmstadt, Paris-12, Strasburg, St.Petersburg.
- 2005: Lille, Paris VI, Strasburg, Jena, Helsinki.

## **LANGUAGE ABILITY**

- Russian - mother tongue.
- English, French - capable of lecturing.
- German - capable of reading.

## **HEALTH STATE**

Normal

## SCIENTIFIC RECORD

Initial topic of my scientific research (from late student years) was the study of local times (densities of occupation measure) of general Gaussian processes. Influenced by a survey paper of D.Geman and J.Horowitz, I solved some problems on the existence and non-existence of local time stated there. In particular, I found a necessary condition for the existence of local time in terms of covariance function and constructed a class of stationary Gaussian processes for which the local time does not exist [7, 8, 10]. More recently, with Yu.Davydov, we investigated the approximation of local time of Gaussian processes for the scheme of discrete observations. We also obtained some lower bounds for convergence rate of local time approximation [62].

In the following series of works my interests were focused on the investigation of the local properties of the distributions of stochastic functionals such as absolute continuity and density properties. In these articles, I developed a fibering method which was initially proposed by my teacher Yu.A.Davydov. In particular, in [11, 13] I proposed an approach to the functionals of the processes with independent increments based on the transformation of their jumps. One may view this method as a kind of weak Malliavin calculus, which works under much weaker assumptions on the process than the classical one. The summary of this research is exposed in our survey [19] and subsequent monograph [2].

In early nineties my research was centered on the theory of Gaussian measures and processes. In particular, I was interested in the behavior of large and small deviation probabilities. For large deviation probabilities, I found some conditions under which their exact asymptotic behavior has a natural form [29, 32]. On the other hand, in [33] a very unusual wave-type asymptotic behavior was discovered.

In the domain of small deviation probabilities, I found in [22] a bound of the corresponding asymptotics for 2-dimensional Brownian sheet (R.Bass obtained the same result independently and ten years later M.Talagrand showed that this estimate was of the right order); for the case of higher time dimension see [46]. In the more recent work in this direction, cf. [57], we studied with W.Linde the small ball probabilities of weighted Brownian motion which have interesting application to the analysis of integral Volterra operators. An account of this research direction is the survey paper [52]. Later on, this study was continued in [74] with T.Simon where we have found a formula for small ball rate for a fairly general class of self-similar processes and norms. Quite delicate cases of small ball problems, mainly related to fractal measures, are considered in [77, 79]. A joint work with S.Dereich [75] deals

with applications of small ball techniques to quantization problems, while with F.Aurzada [84] we explored the metric entropy approach to small deviations. Small deviations of very smooth stationary processes are studied in [85]. These results are interesting for Bayesian statistics. With F.Aurzada we also investigated small deviations for iterated processes [88].

While working in this area, I strongly felt that a comprehensive introduction in Gaussian processes was missing in the literature and wished to fill the gap. The result of five year work is the monograph [1] mainly conceived as a textbook for graduate and postgraduate students.

Some of my recent works deal with fine asymptotic properties of Brownian motion, Kiefer process, and empirical processes [64, 68].

In the works [30, 31],[34]-[38], [41, 42, 44, 45, 51, 63] the subject of the research (mostly joint with P.Deheuvels, M.Weber, or A.V.Bulinskii) was the Strassen functional law of iterated logarithm. In particular, [36] provides necessary and sufficient topological condition under which Strassen law holds. In [38] we found optimal convergence rate in Strassen law for partial sum processes (the interesting feature of the latter result is that the optimal rate is attained on the non-Gaussian process).

In [54] we obtained with M.Weber an important spectral regularization inequality which enables to control the convergence and oscillation of the averaged sequences appearing in ergodic theorem.

Another topic I was involved is the almost sure limit theorem - relatively new field of limit theorems which treats the phenomenon of weak convergence in the language of convergence of empirical measures. Together with I.Ibragimov, we found rather general conditions for such theorems for sums of independent variables and proved the convergence of generalized moments of empirical measures [49, 50]. In [65] the almost sure limit theorem for martingales is established. One of my essential contributions is a series of counter-examples [53, 57] which shows that certain moment conditions are necessary for limit theorems and the corresponding large deviation principle.

Jointly with Z.Shi and with some of my students, I investigated the behavior of one-dimensional stochastic systems of sticky particles with adhesion and gravitation. We studied the different regimes of agglomeration process in [70, 75] and large deviation probabilities for fairly general events in such systems [80].

As for applications, I have some works on stochastic models in econometrics [71, 72] and computer science [91].

# List of Publications

## BOOKS

- [1] **Gaussian Random Functions**, 1995, Kluwer, Dordrecht, 330 p. (in English); 1995, TViMS, Kiev, 256 p. (in Russian).
- [2] **Local Properties of Distributions of Stochastic Functionals** (joint with Yu. A. Davydov and N. V. Smorodina), 1995, Nauka, Moscow (in Russian), 256 p.; 1998, ser. Translations of Mathematical Monographs, v.173, AMS, Providence (in English), 184 p.
- [3] **Lectures on Gaussian Processes**, Springer, 2012, 120 p.
- [4] **Random Processes by Example**, World Scientific, 2014, 230 p.

## THESIS

- [5] Some problems of theory of random processes related with applications of measures. Ph.D. Thesis, Leningrad State University, 1981, 150 p.
- [6] Investigation of the Distributions of Stochastic Functionals. Doctor of phys.-math. science thesis, St.Petersburg University, 1993, 300 p.

## PUBLISHED ARTICLES AND NOTES

- [7] Local times for Gaussian processes. *THEORY PROBAB. APPL.*, 1979, 23, 835–836 (in English) 867–868 (in Russian).
- [8] Shift of a measure by trajectories of a Gaussian stationary process. *THEORY PROBAB. APPL.*, 1980, 24, 437–438 (in English) 432 (in Russian).
- [9] On representation of Lévy fields by indicators. *THEORY PROBAB. APPL.*, 1980, 24, 629–633 (in English) 624–628 (in Russian).
- [10] Local times for functions and Gaussian processes. *J. SOV. MATH.*, 1982, 20, 2181–2186 (in English). *ZAPISKI NAUCHNYH SEMINAROV LOMI*, 1979, 85, 104–112 (in Russian).
- [11] Fiberings method and its application to the investigation of the distributions of functionals of random processes. *THEORY PROBAB. APPL.*, 1982, 27, 69–83 (in English) 67–80 (in Russian).
- [12] On the absolute continuity of distributions of functionals of random processes. *THEORY PROBAB. APPL.*, 1983, 27, 600–607 (in English) 559–566 (in Russian).
- [13] The stratification method for process with independent increments. *THEORY PROBAB. APPL.*, 1984, 28, 832–834 (in English) 797–798 (in Russian).
- [14] Occupation times of Gaussian stationary processes. *J. SOV. MATH.*, 1984, 24, 555–568 (in English) *ZAPISKI NAUCHNYH SEMINAROV LOMI*, 1980, 97, 110–126 (in Russian).
- [15] An application of stratification method to the study of functionals of processes with independent increments. *THEORY PROBAB. APPL.*, 1984, 29, 753–765 (in English) 723–734 (in Russian).

- [16] Absolute continuity of functionals of "supremum" type for Gaussian processes. *J. SOV. MATH.*, 1984, 27, 3103–3112 (in English); *ZAPISKI NAUCHNYH SEMINAROV LOMI*, 1982, 119, 154–166 (in Russian).
- [17] Stratification method for the processes with independent increments. *J. SOV. MATH.*, 1984, 27, 3241–3251 (in English); *ZAPISKI NAUCHNYH SEMINAROV LOMI*, 1983, 130, 109–121 (in Russian).
- [18] Fiberings method in the theory of random processes (joint with Yu. A. Davydov and N. V. Smorodina). In: *REPORTS OF 4TH SOVIET-JAPAN SYMPOSIUM ON PROBABILITY THEORY AND MATHEMATICAL STATISTICS*, Metsniereba, Tbilisi, 1982, 184–186.
- [19] Fiberings method in some probability problems (joint with Yu. A. Davydov). *J. SOV. MATH.*, 1985, 31, 2796–2858 (in English), *Itogi Nauki i Tehniki*, ser. *Teoriya Veroyatnostei*, 1984, 22, 61–158 (in Russian).
- [20] Invariant measures generated by random fields with independent values. *FUNC. ANAL. APPL.*, 1985, 19, 329–330 (in English) 92–93 (in Russian).
- [21] Distribution density of the maximum of Gaussian process. *THEORY PROBAB. APPL.*, 1984, 29, 851–852 (in English) 814–815 (in Russian).
- [22] Small deviations of Gaussian field (joint with B. S. Tsirelson). *THEORY PROBAB. APPL.*, 1986, 31, 557–558 (in English) 632–633 (in Russian).
- [23] On the distribution of the maximum of the Gaussian process. *THEORY PROBAB. APPL.*, 1986, 31, 125–132 (in English) 134–142 (in Russian).
- [24] Division of multidimensional sets. In: *RINGS AND MODULES. LIMIT THEOREMS OF PROBABILITY THEORY*. Leningrad, 1986, 175–178 (in Russian).
- [25] Distribution density of the norm of the stable vector. *J. SOV. MATH.*, 1988, 43, 2810–2816 (in English); *ZAPISKI NAUCHNYH SEMINAROV LOMI*, 1987, 158, 105–114 (in Russian).
- [26] The distribution of the norm of a stable vector (joint with N. V. Smorodina). *THEORY PROBAB. APPL.*, 1989, 34, 266–274 (in English) 304–313 (in Russian).
- [27] Oscillation and lower bound of the distribution of the maximum of Gaussian field. *J. SOV. MATH.*, 1992, 61, 1876–1879 (in English); *ZAPISKI NAUCHNYH SEMINAROV LOMI*, 1989, 177, 78–82 (in Russian).
- [28] On the norm distribution of Gaussian and other stable vectors. In: *PROBABILITY THEORY AND MATH. STATISTICS. PROC. 5TH VILNIUS. CONF.*, 1990, 2, 97–104.
- [29] Gaussian large deviations of a smooth seminorm. In: *PROBABILITY THEORY AND MATHEMATICAL STATISTICS. PROC. 6TH USSR-JAPAN SYMPOSIUM*, Singapore, 1992, 193–201.
- [30] Functional laws for strong topologies. In: *STATISTIQUE DE PROCESSUS EN MILIEU MEDICAL*, PARIS, 1992, 295–302.
- [31] Strassen-type functional laws for strong topologies (joint with P. Deheuvels). *PROBAB. THEORY REL. FIELDS*, 1993, 97, 151–167.

- [32] Computation of the exact asymptotic behavior of certain Gaussian large deviations. *J. MATH. SCI.*, 1994, 68, 531–539 (in English), *ZAPISKI NAUCHNYH SEMINAROV LOMI*, 1990, 184, 189–199 (in Russian).
- [33] Tail probabilities of Gaussian suprema and Laplace transform. *ANN. INST. H. POINCARÉ*, 1994, 30, 163–179.
- [34] On the convergence rate in the functional law of the iterated logarithm for nonstandard normalization (joint with A.V.Bulinskii). *RUSSIAN AKAD. SCI. DOKLADY MATH.*, 1994, 49, 294–297 (in English) 279–280 (in Russian).
- [35] Protuberance effect in generalized functional Révész-Strassen law (joint with P. Deheuvels) *J. MATH. SCI.* 1998, 88, 22–28 (in English); *ZAPISKI NAUCHNYH SEMINAROV POMI*, 1994, 216, 33–41 (in Russian).
- [36] Necessary and sufficient condition for the Strassen law of the iterated logarithm in non-uniform topologies (joint with P. Deheuvels), *ANN. PROBAB.*, 1994, 22, 1838–1856.
- [37] Rate of convergence in the functional law of the iterated logarithm with non-standard normalizing factors (joint with A. V. Bulinskii). *USPEKHI MAT. NAUK*, 1995, 50:5, 83–102 (in Russian); *RUSSIAN MATH. SURVEYS*, 50:5, 925–944 (in English).
- [38] Best convergence rate in the Strassen law for random polygons (joint with A.V. Bulinskii). *VESTNIK MOSKOVSKOGO UNIVERSITETA*, 1995, N 5, 37–42 (in Russian); *MOSCOW UNIVERSITY MATH. BULL.*, v.50, N5, 31–36 (in English).
- [39] First passage probability for Markov chain (joint with G. Haiman). In: *RESEARCH DEVELOPMENTS IN PROBABILITY AND STATISTICS* (M. Puri Festschrift), VSP, 1996, 27–32.
- [40] Regularisation spectrale en théorie ergodique et théorie des probabilités (joint with M. Weber). *COMPTES RENDUS ACAD. SCI. PARIS*, 1997, 324, Ser.I, 99–103.
- [41] Strassen laws of iterated logarithm for partially observed processes (joint with M. Weber). *J. THEOR. PROBAB.*, 1997, 10, 102–115.
- [42] Rates of clustering in Strassen’s law for random polygons (joint with A.V. Bulinskii). *J. MATH. SCI.*, 1999, 93, 287–293 (in English), *ZAPISKI NAUCHNYH SEMINAROV POMI*, 1996, 228, 57–66 (in Russian).
- [43] On the lower tail probabilities of some random series, *ANN. PROBAB.*, 1997, 25, 424–442.
- [44] On the functional law of the iterated logarithm for partially observed sums of random variables (joint with N. L. Gorn). *J. MATH. SCI.*, 2000, 99, 1061–1074 ; *ZAPISKI NAUCHNYH SEMINAROV POMI*, 1997, 244, 73–95 (in Russian).
- [45] On the Hausdorff dimension of the set generated by exceptional oscillations of a Wiener process (joint with P. Deheuvels). *STUDIA SCI. MATH. HUNGARICA*, 1997, 33, 75–110.
- [46] Metric entropy of integration operator and small ball probabilities of Brownian sheet (joint with T. Dunker, T. Kühn, and W. Linde). *COMPTES RENDUS ACAD. SCI. PARIS*, Ser.I, 1998, 326, 347–352. *J. APPROXIMATION THEORY*, 1999, 101, 63–77.
- [47] Oscillations of Gaussian Stein’s elements (joint with M. Weber). In: *PROC. CONF. HIGH DIMENSIONAL PROBABILITY*; Ser. Progress in Probability, v.43, Birkhäuser, 1998, 249–261.

- [48] Small deviations of sums of independent variables (joint with T. Dunker, W. Linde). In: PROC. CONF. HIGH DIMENSIONAL PROBABILITY; Ser. Progress in Probability, v.43, Birkhäuser, 1998, 59-74.
- [49] On the convergence of generalized moments in almost sure limit theorems (joint with I.A. Ibragimov). STATIST. PROBAB. LETTERS, 1998, 40, 343–351.
- [50] On almost sure limit theorems (joint with I. A. Ibragimov). THEORY PROBAB. APPL., 1999, 44, 254–272 (in English) 328–350 (in Russian).
- [51] Chung law and Csáki function (joint with N. Gorn). J. THEOR. PROBAB., 1999, 12, 399–420.
- [52] Asymptotic behavior of small ball probabilities. In: PROBAB. THEORY AND MATH. STATIST. PROC. VII INTERNATIONAL VILNIUS CONFERENCE (1998). Vilnius, VSP/TEV, 1999, 453–468.
- [53] Almost sure limit theorem for sums of random vectors. J. MATH. SCI., 2002, 109, 2166–2178 (in English); ZAPISKI NAUCHNYH SEMINAROV POMI, 1999, 260, 186–201 (in Russian).
- [54] Spectral regularization inequalities (joint with M. Weber). MATH. SCAND., 2000, 86, 75–99.
- [55] Tightness of stochastic families arising from randomization procedures (joint with M. Weber). In: ASYMPTOTIC METHODS IN PROBABILITY AND MATHEMATICAL STATISTICS WITH APPLICATIONS. Birkhäuser, 2000, 143–160.
- [56] Average volumes of sections of convex bodies (joint with A.L. Koldobsky). In: GEOMETRIC ASPECTS OF FUNCTIONAL ANALYSIS. ISRAEL SEMINAR 1996-2000 (editors V.D. Milman, G. Schechtman), Lecture Notes in Math., v.1745, Springer, 2000, 119–146.
- [57] On the large deviation principle for the almost sure CLT (joint with E.S. Stankevich). STATIST. PROBAB. LETTERS, 2001, 51, 263–267.
- [58] Probabilities of hitting of shifted small balls by centered Poisson processes (joint with P.Deheuvels). J. MATH. SCI. 2003, 118(6), 5541–5554 (in English), ZAPISKI SEMINAROV POMI , 2001, 278, 63–85 (in Russian).
- [59] Poisson measures quasi-invariant with respect to multiplicative transformations (joint with E.Yu. Shmileva). THEORY PROBAB. APPL., 2001, 46, 652–666 (in English) 697–712 (in Russian).
- [60] A criterion of quasi-invariance of Poisson measures with respect to "linear" transformations of space (joint with E.Yu.Shmileva), RUSSIAN MATH. SURVEYS, 2001, 56, 1173–1174 (in English); USPEKHI MAT. NAUK, 2001, 56, 159–160 (in Russian).
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