

CURRICULUM VITAE

LAST NAME: Konakov

FIRST NAME: Valentin

DATE OF BIRTH: 27 march 1946

PLACE OF BIRTH: Moscow, Russia

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PROFESSIONAL ADDRESS: National Research University Higher School of Economics, Faculty of Economics, 28 Shabolovka, building 1, room 1119. Tel.: +7-495-772-95-90*26234

FAMILY STATUS: married, two sons

LANGUAGES: Russian, English, French.

EDUCATION: Lomonosov Moscow State University, diploma of Mathematician

THESIS:

1974 - "Methods of Multivariate Analysis in Nonparametric Statistics" (Russian degree: Candidate of Physico-Mathematical Sciences (PhD)),

1992 - "Asymptotic methods of the theory of random processes and fields in non-parametric statistics" (Russian degree: Doctor of Physico-Mathematical Sciences (Habilitation)).

PROFESSIONAL EXPERIENCE:

1972-78 - Scientific Researcher, Central Economics Mathematical Institute, Academy of Sciences of the USSR, Moscow.

1978-92 - Leading Scientific Researcher, Central Economics Mathematical Institute, Academy of Sciences of Russia, Moscow.

1992-2011 – Main Researcher, Central Economics Mathematical Institute, Academy of Sciences of Russia, Moscow.

2010 / present - professor, Department of Probability Theory, Lomonosov Moscow State University.

2011 / present - professor, Department of Statistics, National Research University Higher School of Economics.

2014 / present - Head of the international Laboratory of stochastic analysis and its applications

2016 / present - tenured professor NRU HSE

RESEARCH ACTIVITY :

- *Statistics* : non-parametric curve estimation, application of high level excursion probability estimates to the problems of non-parametric statistics.
- *Probability*: high level excursions for Gaussian Processes and Fields. Discretisation schemes for stochastic differential equations. Local limit theorems for Markov Chains converging to diffusion. Local limit theorems for random walks, diffusion approximations.
- Probability and Riemannian geometry: Parametrix for SDE on manifolds, Transport

process on a complete Riemannian manifold, approximation of the Brownian motion on a hyperbolic space.

TEACHING ACTIVITY:

Last 20 years I lectured the following courses:

- «Markov Chains» (Moscow State University, 1997).
- «Mathematical Analysis» (Moscow State University of Humanitarian Sciences, 1998).
- «Probability» (University of Strasbourg I, France, 1999, level Master 1).
- «Applied Statistics » (University of Paris 6, France, 1999, level Master 2).
- "Non-parametric statistics" (University of Paris 6, France, 1999-2000, ISUP).
- « Applied Statistics», « Probability » (University of Paris 10, France, 2001, level DEUG).
- «Linear Algebra» (University of Paris VI, France, 2002, 2004, level DEUG).
- «Applied Statistics» (University of Paris 6, France, 2005, level Master 1). «Calculus» (University of Paris 5, France, 2007, level DEUG).
- «Data analysis and Regression» (University of Paris 6, France, 2007, level Master 1). «Analysis 2» (University of Lille 1, France, 2008, level DEUG).
- “Introduction in Statistics” (University of North Carolina at Charlotte , USA, 2008, level M1),
- “Theory of weak convergence” (University of North Carolina at Charlotte, USA, 2008, level M2).
- “Introduction in Statistics” (University of Paris 6, 2009, level Master 1).
- “Stochastic processes and simulation” (University of Paris 6, 2009, level L3).
- “Statistical learning theory” (University of Paris X, 2009, level Master 1).
- “Probability and Statistics” (University of Paris 6, 2010, level L2, L3).
- “Introduction in Statistics” (University of Paris 6, 2010, level Master 1).
- “Introduction to the parametrix method for diffusions and Markov chains” (Moscow State University, 2011-2012)
- “Mallavin calculus for diffusion processes” (Moscow State University, 2016-2017)

ADMINISTRATION ACTIVITY:

From 1998 until 2006 I held a chair in mathematics at the Moscow State University of Economic Education.

From 2014 I am a Head of the international laboratory of stochastic analysis and its applications of the HSE.

OTHER PROFESSIONAL ACTIVITY:

Associate Editor of the International Journal «Mathematical Methods of Statistics», Springer, (from 1992)

Member of the Moscow Mathematical Society (1983) and American Mathematical Society (AMS) (from 1992).

Recipient of the State Stipend for Outstanding Researchers (Russian Academy of Sciences, 1996)

LONG TERM INVITATIONS (Inviting Professor)

University of Potsdam (1994) -3 months
University of Paris VI (1995) - 1 month
University of Heidelberg (1996) - 3 months
University of Heidelberg (1998) - 3 months
University of Strasbourg I (1999) - 5 months
University of Paris VI (1999) - 6 months
University of Paris X (2001) - 6 months
University of Paris VI (2002) - 6 months
Leiden University (2003) - 3 months
University of Paris VI (2004) - 6 months
University of Bretagne Sud (2005) - 2 months
University of Aix-Marseille- II (2005) - 1 month
University of Paris VI (2005) - 6 months
University of Bretagne Sud (2006) - 2 months
University of Paris VI (2007) - 6 months
University of Lille 1 (2008) - 3 months
University of North Carolina at Charlotte (2008) - 4 months
University of Paris VI (2009) - 6 months
University of Paris X (2009) - 3 months
University of Paris VI (2010) - 6 months
University of Mannheim (2012) - 1 month
University of Mannheim (2013) - 1 month
University of Mannheim (2014) - 1 month

RECENT INVITED TALKS:

1. Workshop on Numerics and Stochastics. Helsinki, Finland.
August 25-29, 2008.
Talk: «Parametrix and local limit theorems for some degenerate diffusion processes»
(with S. Menozzi and S. Molchanov)
<http://math.tkk.fi/numericsyear/numstoch/speakers.html>
2. 33-rd Conference on Stochastic Processes and Their Applications,
Special session: Stochastic Numerics and Calculus of Variations.
Berlin, Germany. 27 – 31 July 2009.
Talk: «Small time Edgeworth-type expansions for weakly convergent non -homogeneous
Markov chains» (with E. Mammen)
<http://www.math.tu-berlin.de/SPA2009/pages/program/special-sessions.php>
3. International Conference « Kolmogorov equations in physic and finance », Italy, Modena,
September 8-10, 2010.
Talk: «Discrete parametrix method and its applications»
<http://kolmogorov-2010.dm.unibo.it/>

4. International Symposium «Asymptotic Statistics, Risk and computations in Finance and Insurance», Tokyo, 14-18 December 2010.
Talk: «Discrete parametrix method and its applications».
http://www.math.ritsumei.ac.jp/crest/Workshop/workshop_book.pdf
5. International Conference “Structural Nonparametric Modelling” in the honor of Professor Enno Mammen 60-th Anniversary. Berlin, 4-6 June, 2015. Talk: Parametrix method: revue and recent results”
<http://wias-berlin.de/workshops/SNM2015/>
6. International Conference «Modern problems of stochastic analysis and statistics» in the honor of Professor Valentin Konakov 70-th Anniversary, Moscow, 30/05 - 02/06 2016.
Talk: Random walk in non-homogenous Poissonian environment.
7. International Workshop «Kolmogorov-Fokker-Planck equations; theoretical issues and applications», Modena, Italy, April 10-11, 2017.
Talk: Random Walks in non-homogeneous Poisson Environment.
8. 1-st Moscow - UK Workshop «Wasserstein calculus and related topics». Edinburgh, UK, November 19-23, 2018,
Talk: Local limit theorems for the Robbins-Monroe procedure».

Organization of international conferences

1. Organizing of a special session “Perturbation technique in stochastic analysis” for 12 - th AIMS International Conference on Dynamical Systems and Differential Equations held in Taipei, Taiwan, July 5 - 9, 2018.
2. Organizing of the 1-st Moscow - UK Workshop «Wasserstein calculus and related topics». Edinburgh, UK, November 19-23, 2018, Talk: Local limit theorems for the Robbins-Monroe procedure».
3. Organizing of the International conference “Perturbation technique in stochastic analysis” , CIRM, Luminy. France, March 11-15, 2019.

LIST OF PUBLICATIONS:

1. Konakov V.
Nonparametric density estimate. Theory Prob. App.

XYII, 2, 1972.

2. Konakov V.

Nonparametric density and regression estimates.
In: "Matematicheskii apparat planovykh rascetov",
Moscow, Nauka, 1972.

3. Konakov V.

Application of nonparametric estimates in
regression analysis. "Zavodskaya laboratoriya", 5, 1973. (with
N. Aprausheva)

4. Konakov V.

On asymptotic normality of the sample mode of
multivariate distributions. Theory Prob. App. XYIII, 4, 1973.

5. Konakov V.

Nonparametric estimation of conditional and
marginal moments. Theory Prob. App. XYIII, 2, 1973.

6. Konakov V.

Asymptotic Properties of Some Functions
of Nonparametric estimates of a Density Function.
JMA, v.3, No 4, 1973, Academic Press.

7. Konakov V.

Limit theorems for regression estimates.
International Conf. on Prob. Theory and Math.
Stat., Vilnius, 1973.

8. Konakov V.

Some Hajek-Renyi type inequalities. Theory
Prob. Appl. XYIII, 2, 1973.

9. Konakov V.

Asymptotic properties of some functions of
nonparametric density estimates. Theory Prob.
App. XYIII, 3, 1973.

10. Konakov V.

Some problems of nonparametric estimation in
multivariate statistical analysis. Thesis Ph.D.,
Moscow, 1973.

11. Konakov V.

Complete asymptotic expansions for the maximal deviation of the empirical density function.
Int. Conf. on Prob. Th. and Math.Stat., Vilnius, v.1, 1977.

12. Konakov V.
On a global deviation measure for an estimate of the regression line. Theory Prob. App. XXII, 4, 1977.

13. Konakov V.
Large deviations theorem for empirical density function constructed from a sample with random Sample size. Preprint CEMI, 1977.

14. Konakov V.
Complete asymptotic expansions for the maximal deviation of the empirical density function.
Theory Prob. App. XXII, 3, 1977.

15. Konakov V.
Complete asymptotic expansions for the maximal deviation of the empirical density function. II.
Theory Prob.Appl. XXIII, 1978.

16. Konakov V.
High level excursions of Gaussian processes and empirical densities (with V.Piterberg). Theory Prob. App. XXIV, 3, 1979.

17. Konakov V.
Rate of convergence estimate for the maximal deviation distribution of one class of Gaussian processes. Theory Prob. Appl. XXIV, I, 1979.

18. Konakov V.
Asymptotic expansions for the probabilities of high level excursions for Gaussian stationary sequences. Preprint CEMI, 1979.

19. Konakov V.
Rate of convergence estimate for the maximum modulus distribution for a nondifferentiable Gaussian process. Preprint CEMI, 1979.

20. Konakov V.
Some problems in nonparametric density estimation. Seminar dedicated to the memory of L.N.Bol'shev. Theory Probab.Appl. XXV, 3, 1980.
21. Konakov V.
Invariance principle for statistical kernel density estimates. Theory Probab. Appl. XXVII, 4, 1982.
22. Konakov V.
Rate of convergence for the maximal deviation distributions of Gaussian processes and empirical densities. I.(with V.Piterbarg). Theory Probab.Appl. XXVII, 4, 1982.
23. Konakov V.
Rate of convergence for the maximal deviation distributions for Gaussian processes and empirical density functions.(with V.Piterbarg). Theory Probab. Appl. XXVIII, 1, 1983.
24. Konakov V.
Accompanying Gaussian fields for the "deviations" of a multivariate nonparametric regression. Theory Probab.Appl. XXVII, 4, 1982.
25. Konakov V.
On maximal deviations of empirical density and regression. Some general methods of investigation. Proc. 6-th Inter. Summer School, Humboldt Univ. zu Berlin, 1983.
26. Konakov V.
Corrected confidence bands for unknown density. (with A. Khalileev). Preprint CEMI, 1983.
27. Konakov V.
On the convergence of Markov chains to diffusion processes (with S.A. Molcanov). Prob. Theory and Math. Stat. v. 31, Kiev Univ., 1984.
28. Konakov V.
On the Structure and Content of The statistical Software Package "Statistical Investigation of Dependencies". In: Software for Applied Multivariate Statistical Analysis. Moscow, Nauka, 1980.

29. Konakov V.
Approximations of Some Nonparametric Statistical
Estimates by Gaussian Fields, Invariance
Principles, Lecture Notes in Mathematics, 1983, vol. 1021,
p. 302-314.

30. Konakov V.
The theorem on deviation of empirical measure
and its applications. Theory Probab. Appl. XXIX,
1, 1984.

31. Konakov V.
Spectral density estimation as stochastic ill-
posed problem. In "Statistics. Probability.
Economics". Moscow, Nauka, 1985.

32. Konakov V.
Local limit theorems on the convergence of Markov
chains to diffusion processes. In: "Probability
Distributions and Mathematical Statistics",
Tashkent, FAN, 1986.

33. Konakov V.
On the Convergence Rate of Maximal Deviation
Distribution for Kernel Regression Estimates
(with V. Piterbarg), Journal of Multivariate
Analysis, 15, 3, 1984.

34. Konakov V.
Extrema of Some Gaussian Processes with Large
Trends and Density Estimation in L_{∞}
norm, Probability Theory and Related fields, 86,
3, 1990.

35. Konakov V.
Maximal Deviations of Gaussian Processes and
Empirical Density Functions, Proc. of the 1- th
World Congress of Bernoulli Society , vol.2, 1987.

36. Konakov V.
High Level Excursions for Smooth Gaussian Fields,
CEMI, Acad., Sci., Preprint, 1988, 66p.

37. Konakov V.
Asymptotic Methods of Random Processes and Fields
in nonparametric statistics problems. Thesis.

Doctor of Math. Moscow State University, 1992.

38. Konakov V.

Local limit theorem on convergence of Markov chains to diffusion processes, In: "Frontiers in Pure and Applied Probability", 1, H.Niemi et al. (Eds.), 1993, VSP/TVP, Proc. of the Third Finnish-Russian Symp. On Prob. Th. and Math. Stat.

39. Konakov V.

Extrema of some nonstationary Gaussian processes and the optimal asymptotic confidence regions for density functions. 5-th Japan-USSR Symp. on Probability Theory. Abstracts of commun. Kyoto, Univ. of Kyoto. 1986.

40. Konakov V.

Nonparametric density estimation: L_{∞} Approach Proc. Second Inter.Tampere Conf. in Stat. Univ. Tampere, 1987.

41. Konakov V.

LOG classes for the increments of empirical Process. Proc.of 5-th Conf."Application of MSA in economics and quality control", Moscow, 1993.

42. . Konakov V.

Local limit theorems on the convergence of Markov chains to diffusion processes. Journal of Mathematical Sciences, vol. 38, n.6, 1987.

43. Konakov V.

On convergence rates of suprema in the presence of non-negligible trends, Preprint No.103, Berlin 1994, Institut fur Angewandte Analysis und Stochastik.

44. Konakov V.

Gaussian fields with large Trends and the Optimal choice of the bandwidth Parameter (with V. Piterbarg).3-rd World Congress of the Bernoulli Society and 57 Annual Meeting of the IMS. Univ. North Caroline at Chapel Hill, Abstracts, 1994.

45. Konakov V.

High level excursions of Gaussian fields and the weakly optimal choice of the smoothing parameter,

I, Mathematical Methods of Statistics, Allerton Press, Inc., vol. 4, n. 4, 1995.

46. Konakov V.
Nonparametric versus parametric goodness of fit
(with Lauter H. and Liero H.) Institut für
Mathematik, Universität Potsdam,
Preprint 95/2, 1995, 35 p.

47. Konakov V.
Optimal Reporting of Predictions. Economics and
Mathematical Methods, vol.37, n.4, 1995.

48. Konakov V.
LOG-classes for the increments of multidimensional
empirical process. In: "Statistical Methods of
estimation and hypothesis testing", Perm University,
1995.

49. Konakov V.
High level excursions of Gaussian fields and the
weakly optimal choice of the smoothing parameter
(with V. Piterbarg) II, Math. Methods of Statistics,
Allerton Press, vol 6, n.1, 1997.

50. Konakov V.
The Shape of Kernel Density Estimates in Higher
Dimensions, (with E.Mammen). Discussion Paper, 41. 1996,
Humboldt-Universität zu Berlin, Preprint, 26 p.

51. Konakov V.
The Shape of Kernel Density Estimates in Higher
Dimensions (with E.Mammen). Mathematical Methods
of Statistics, vol. 6, n.4, 1997.

52. Konakov V.
Some simulation results on the Shape of Kernel
Density Estimates In Higher Dimensions (with
E.Mammen). Revue of applied and industrial mathematics. Ser.
Probability and Statistics. v.4, n.4, 1997.

53. Konakov V. Nonparametric versus parametric goodness of
fit (with Lauter H. and Liero H.). Statistics,
vol. 31, 1998, pp. 115-149.

54. Konakov V.

LOG-classes for the increments of a multivariate empirical process. Journal of Mathematical Sciences. vol. 88, n.6, 1998.

55. Konakov V.

Local Limit Theorems for Transition Densities of Markov Chains Converging to Diffusions (with E.Mammen). Probability Theory and Related Fields, 117, 551-587 (2000).

56. Konakov V.

Local approximations of Markov random walks by diffusion. (with E.Mammen). Stoch. Proc. and Appl. 96, 2001, 73-98.

57. Konakov V. Edgeworth type expansions for the Euler

scheme for stochastic differential equations. (with E.Mammen). Prepublicatons de l'Universite Paris 10 Nanterre. 2001. 1-28.

58. Konakov V. Edgeworth type expansions for Euler schemes for stochastic differential equations. (with E.Mammen). Monte Carlo Methods and Applications, 8, 2002, 271-286.

59. Konakov V. Local limit theorems for transition densities of Markov chains converging to diffusions with unbounded drift. (with Sara van de Geer). Mathematical Institute of Leiden. Report no. MI 2003-07, April.

60. Konakov V. Edgeworth type expansions for transition densities of Markov chains converging to diffusions. (with E.Mammen). Prépublication PMA - 923, juillet 2004. 47 p.

61. Konakov V. Edgeworth type expansions for transition densities of Markov chains converging to diffusions. (with E.Mammen). Bernoulli, vol.11, 4,2005, 591-641.

62. Konakov V. Small time asymptotics in local limit theorems for Markov chains converging to diffusions. Prépublication PMA – 1052, février 2006. 17 p.

63. Konakov V. Accuracy of diffusion approximations for high frequency Markov data. (with E.Mammen). Prépublication PMA – 1053, février 2006. 60 p.

64. Konakov V. Small time Edgeworth-type expansions for weakly convergent nonhomogeneous Markov chains. (with E.Mammen). Prépublications PMA -1050, mai 2007. 58 p.

65. Konakov V. Small time Edgeworth-type expansions for weakly convergent nonhomogeneous Markov chains. (with E.Mammen). Probability Theory and Related Fields, 143,1, 137-176, 2009.

66. Konakov V. Explicit parametrix and local limit theorems for some degenerate diffusion processes. (with S.Menozzi and S.Molchanov). Prepublications PMA -1204, février 2008. 37 p.
67. Konakov V. Explicit parametrix and local limit theorems for some degenerate diffusion processes. (with S.Menozzi and S. Molchanov). Annales de l'Institut Henri Poincaré (B) Probability and Statistics, vol.46,4, 2010,908-923.
68. Konakov V. Weak error for stable driven SDES: expansion of the densities. (with S.Menozzi). Prépublication PMA -1248, 20/10/2008. 30 p.
69. Konakov V. Weak error for stable driven SDES: expansion of the densities. (with S. Menozzi). Journal of Theoretical Probability, vol.24, 2, 2011, 454-478.
70. Konakov V. The diffusion processes on the solvable groups of 2×2 upper triangular matrices and their approximations. (with S. Menozzi and S. Molchanov) Doklady Akademii Nauk, vol. 439, № 5, 2011, 585-588.
71. V. Konakov. Parametrix Method for Diffusions and Markov chains, 2012, 93 p. Moscow State University.
72. Konakov V., Markova A. Local limit theorems for Markov chains with trend component of linear growth. Working papers by Cornell University. Series math "arxiv.org". 2014. No. 1412.1607v1.
73. Konakov V., Mammen E., Woerner J. Statistical convergence of Markov experiments to a diffusion limit. *Bernoulli: a journal of mathematical statistics and probability*. 2014. Vol. 20. No. 2. P. 623-644.
74. Konakov V., Panov V. Convergence rates of maximal deviation distribution for projection estimates of Levy densities. Working papers by Cornell University. Series math "arxiv.org". 2014. No. 1411.4750.
75. Kelbert M., Konakov V., Menozzi S. Weak Error for Continuous Time Markov Chains Related to Fractional in Time P(I)DE(s). Working papers by Cornell University. Series math "arxiv.org". 2015. No. 1505.04610.
76. . Konakov V., Kozhina A., Menozzi S. Stability of densities for perturbed Diffusions and Markov Chains. Working papers by Cornell University. Series ArXive "math". 2015. No. 1506.08758
77. Коцаков В. Д., Мозгунов П.А. Limits of Kalman Filter application in heavy tailed problems. Working paper by Cornell University. Серия math "arxiv.org". 2015. № 1505.07981.
78. Konakov V., Markova A. The procedure of excluding of the nonlinear trend for the models described by stochastic differential and difference equations. Cornell University. Series math "arxiv.org". 2016. No. 1610.08715.

79. Konakov V., Menozzi S. Weak error for the Euler scheme approximation of diffusions with non-smooth coefficients. Cornell University. Series math "arxiv.org". 2016. No. 1604.00771v2
80. Kelbert M., Konakov V., Menozzi S. Weak error for Continuous Time Markov Chains related to fractional in time P(ID)s. Stochastic Processes and their Applications. 2016. Vol. 126. P. 1145-1183.
81. Konakov V., Panov V. Sup-norm convergence rates for Levy density estimation. Extremes. 2016. Vol. 19. No. 3. P. 371-403.
82. Konakov V., Kozhina A., Menozzi S. Stability of densities for perturbed Diffusions and Markov Chains. Working papers by Cornell University. Series ArXive "math". 2015. No. 1506.08758
83. Davydov Y., Konakov V. Random walks in non-homogeneous Poissonian environment, in: Modern problems of stochastic analysis and statistics - Selected contributions in honor of Valentin Konakov / Ed. by V. Panov. Heidelberg: Springer, 2017. p. 3-24.
84. Konakov V., Markova A. The procedure of excluding of the linear trend for the models described by stochastic differential and difference equations. Cornell University. (in Russian), Avtomatika i telemekhanika. 2017. № 8. p. 100-112.
85. Konakov V., Menozzi S. Weak error for the Euler scheme approximation of diffusions with non-smooth coefficients. Electronic Journal of Probability. 2017. Vol. 22. p. 1-47.
86. Konakov V., Menozzi S., Molchanov S. The Brownian motion of Aff (R) and quasi-local theorems. Cornell University. Series ArXive "math". 2017. No. 1709.06411
87. Konakov V., Kozhina A., Menozzi S. Stability of Densities for Perturbed Diffusions and Markov Chains. ESAIM: Probability and Statistics. 2017. Vol. 21. p. 88-112.
88. Konakov V., Menozzi S. Weak error for the Euler scheme approximation of diffusions with non-smooth coefficients. Electronic Journal of Probability. 2017. Vol. 22. p. 1-47.
89. Konakov V., Menozzi S., Molchanov S. The Brownian motion of Aff (R) and quasi-local theorems. Cornell University. Series ArXive "math". 2017. No. 1709.06411.
90. Konakov V., Menozzi S. Molchanov S. Approximation of diffusion processes on solvable Lie groups by random walks. Local and quasi-local theorems., in: Analytical and computational methods in probability theory and its applications (ACMPT) 2017). Proceedings of the International Scientific Conference. M. : RUDN, 2017. P. 202-206.