Curriculum Vitae

Rybko Alexander Nikolaevich

BORN: 1948, Moscow, Russia
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CITIZENSHIP: Russia

EDUCATION
School: September 1955 – June 1965
Student of Lomonosov University (Moscow), Department of Mathematics and Mechanics: September 1965 – June 1971. Diploma in Mathematics (June 1971)
PhD student at Mathematical Laboratory of Institute for Information Transmission Problems of the Russian Academy of Sciences (Kharkevich Institute): October 1975 – October 1977. Thesis advisor: Prof. R.L.Dobrushin

PROMOTIONS
PhD in Mathematics, Institute of Electronic Engineering, January 1984. First (candidate) dissertation: Capacity Region of Communication Queuing Networks.
Doctor of Science degree in Mathematics, Institute for Information Transmission Problems of Russian Academy of Sciences, December 2009. Second (doctoral) dissertation: Asymptotic Properties of Stationary Distributions of Communication Networks.

PROFESSIONAL EXPERIENCE:
1978-1989: Researcher at IITP RAS.
1989-1995: Senior Researcher at the IITP RAS.
1995-present: Leading Researcher at the IITP RAS
1993-1995: Researcher at Moscow International Mathematical Institute,
2007-present: Research Fellow of French-Russian Mathematical Laboratory (J.-V. Poncelet Laboratory)

MAIN SCIENTIFIC INTERESTS:
a) Mathematics: Theory of Probability, Random Processes, Mathematical Physics, Theory of Interacted Particle Systems.

b) Queuing Theory: Queuing Networks, application of the Theory of Markov Processes with Local Interactions to Networks with a large number of queues, Asymptotical Properties of Queuing Networks.

c) Dynamical Systems: KAM – theory.

DISTINCTIONS:

1977: IITP premium for the best result of young mathematician

1993: winner of mathematical stipendium of Academy of Natural Sciences and of International Science Foundation.

1995-present: member of the Editorial Board of "Markov Processes and Related Fields".

2004-2005: Invited Fellow of Statistical Laboratory of Cambridge University, supported by Leverhulme Trust Award

GRADUATE COURSES

“Mean-field Models and Poisson Hypothesis for Queuing Networks”, Beijing Normal University, 1998

“Fluid and Thermodynamic Limit for Stochastic Networks”, C.I.R.M., Luminy University, Marseille 2003

“Asymptotic Properties of Queuing Networks”. Cambridge University 2005

SELECTED INVITATIONS:

Guest of London Mathematical Society 2001 (two months).

Guest of EURANDOM 2001.

Guest of IPAM (UCLA, two months), 2002

Guest of Institute of Theoretical Physics, Leuven, 2002, 2003

Invited Researcher at Cornell University, 1991.

Invited researcher on Weierstrass Institute, Berlin, 1993, 1995 (two + two months).

Invited Professor at Heidelberg University, support from the Volkswagen Foundation, 1996, (two months).

Invited Researcher in Leiden University, 1996, two months

Invited Professor at Marseille University, Luminy, 1998 (two months), 2006, 2007, 2008, 2010 (1-2 months each time).

Invited Professor at Beijing Normal University (China) 1998 (one month).

Invited Researcher at INRIA, Roquencourt, Sophia Antipolis 1991, 1993, 1995, 1998.

Invited Fellow at University of Cambridge, Department of Pure Mathematics and Mathematical Statistics, 2004-2005, ten months, support from Leverhulme Trust.

Invited Professor at National University of Singapore, 2003, 2005, one month and two months.

Invited Fellow of Newton Mathematical Institute (Cambridge, semester in "Probability and Stochastic Networks" 2010)

SELECTED FELLOWSHIPS AND GRANTS

Russian Foundation for Basic Research, Grants 93-01-01470_a (1993-1994); 96-00-00150_l (1996); 96-01-100020-GFEN_a (1996-1997); 99-01-0003_a (1999-2001); 02-01-00068_a (2002-2004); 02-01-01276_a (2002-2004); 06-01-72556-NTSNIL_a (2006-2009 with CNRS); 07-01-93114-NTSNIL_a (2007-20010 with CNRS); 10-01-93114-NTSNIL_a (2010-2012 with CNRS)

Soros Grant

Grant of Volkswagen Foundation

INTAS Grants (3 times)

CRDF Grants (2 times)

Invited Fellow at University of Cambridge, Department of Pure Mathematics and Mathematical Statistics, 2004-2005, support from grant of Leverhulme Trust.

PROFESSIONAL SERVICE

Referee work:

- at Russian Foundation of Fundamental Research

-at "Problems of Information Transmission"

-at "Queuing Systems"

-at "Automatics and Telemechanics"

Member of Committee for Evaluation of Dissertations in Institute for Information Transmission Problems of Russian Academy of Sciences.

SELECTED LECTURES ON CONFERENCES AND WORKSHOPS

3-International Seminar in Teletraffic, Moscow 1984

1-th Bernoulli International Congress, Tashkent 1986

French-Russian Workshop in Applied Probability, Paris, INRIA-Roquencourt 1988

5-th International Vilnus Conference on Probability and Statistics, 1989

International Conference on Applied Probability in Engineering Computer and Communication Sciences, Paris 1993

Third Czechoslovac-Soviet-Hungarian Seminar on Information Theory, Prag 1980

International Colloquium on Information Theory, Budapest 1981

Workshop on Stochastic Networks, Oberwolfach, 1995

German – Russian Mathematical Conference concluding Volkswagen Foundation grants, Berlin, Technical University 1996

16-th European Conference on Operation Research, Brussels, July 1998

International Conference on Applied Probability, Eindhoven, EURANDOM 2001

International Workshop on the Probability Theory and Stochastic Networks, IPAM, March 2002

International Congress on Applied Probability, Stanford University, June 2002

International Conferences on Applied Probability, Edinburgh, Heriot-Watt University, 2002, 2003, 2004, 2005, 2006, 2007, 2008

International Workshop on Stochastic Networks, Leiden University, March 1996

French – Russian Colloquium on Modern Problems in Mathematical Physics, University Paris-Sud, January 2006

Probability and Statistical Mechanics, C.I.R.M., Marseille – Luminy, March 2003,

International Conference “Kolmogorov and Contemporary Mathematics”, Moscow, June 2006

IV-International Conference “Limit Theorems in Probability and Their Applications”, Novosibirsk, August 2006

International Mathematical Conference dedicated to V.Arnold, Moscow, MIAN August 2007

International Symposium “Model 35”, INRIA Paris-Roquencourt, April 2008,

Dobrushin International Conference, IITP, Moscow, July 2009,

French – Russian Seminar “Stochastic Processes in Physics and Biology (organizer), Independent University, Moscow, July 2009

International Workshop on Mathematical Physics and Probability, University of Warwick, January 2010

Semester “Probability and Stochastic Networks”, Newton International Mathematical Institute, Cambridge, January-June 2010

International Conference “Extreme Statistics in Mathematics and Physics” Lorentz Center, Leiden July 2011

International Conference “50 Years of IITP”, Moscow July 2011

V-International Conference “Limit Theorems in Probability and Their Applications,” Novosibirsk, August 2011

“Information Technologies and Systems”, Gelendgik, October 2011

SELECTED PUBLICATIONS

1.F.I.Karpelevich, V.A.Malyshev, A.N.Rybko. “Stochastic Evolution of Neural Networks”, Markov Processes and Related Fields, 1995, v.1, no.1, pp.141-161 .

2. A.N.Rybko, A.L.Stolyar, “Ergodicity of Stochastic Processes Describing the Operations of Open Queuing Networks”, Problemy Peredachi Informatsii (in Russian), 1992, v. 28, pp. 3-26 .

3. R.L.Dobrushin, M.Y.Kel’bert, A.N.Rybko, Y.M.Suhov, “Qualitative Methods in the Theory of Queuing Networks”, in “Stochastic Cellular Systems'' , Manchester Univ. Press, 1990.

4. M.Y.Kel’bert, M.L.Kontsevich, A.N.Rybko, “Infinite Jackson Networks”, Teorija Veroyatnostey i yeyo Primenenija (in Russian), 1988, v. 33.

5. F.Baccelli, F.I.Karpelevich, M.I.Kel'bert, A.A.Puhalskii, A.N.Rybko, Y.M.Suhov, "A Mean Field Limit for a Class of Queuing Networks", Journal of Statistical Physics, 1992, v.6, no. 3/4, pp. 803-825 .

6. V.A.Michailov, A.N.Rybko, "Capacity Region of Channel Switching Networks with Queues", Problemy Peredachi Informatsii (in Russian), 1986, N 1, pp.65-84.

7. A.N.Rybko, "Stationary Distributions of Markov Processes Modeling Queuing Networks". Problemy Peredachi Informatsii (in Russian), V.27, N1, pp.-71-89.

8. A.N.Rybko, "Conditions of the Existence of the Stationary Mode for Two Classes of Communication Networks". Problemy Peredaci Informatsii (in Russian), V.28, N 1, pp.94-103.

9. R.L.Dobrushin, A.N.Rybko, "Capacity Region of Communication Networks". Fundamentals of teletraffic theory. Proc. of 3-Int. Sem. on Teletraffic Theory. Moscow 1984.

10. M.Y.Kel'bert, M.L.Kontsevich, A.N.Rybko, "Ergodicity of Infinite Jackson Networks". Proc. of the 1-th Bernoulli Congress. Tashkent 1986

11. F.I.Karpelevich, A.N.Rybko, "On One New Class of Markov Processes with Interaction Modeling Absorption". Fifth International Vilnius Conference on Probability Theory and Mathematical Statistics V.3, p.277, 1989.

12. A.N.Rybko, A.L.Stolyar, "On the Ergodicity of Markov Processes Corresponding to the Open Message Switching Networks". Conference on Applied Probability in Engineering Computer and Communication Sciences, pp.-142-143, Paris 1993

13. S.G.Foss, A.N.Rybko, "Stability of Multi-class Jackson-Type Networks", Markov Processes and Related Fields, V.2, N 3, 1996.

14. A.N.Rybko, A.N.Tretyakov, "Hydrodynamic Limit and Existence of Stationary Measure for Open Queuing Networks with Different Types of Customers". (In Russian)."Advanced Methods in Telecommunication Systems" Russian Academy of Science. IITP.1992, pp.90-120

15. R.L.Dobrushin, M.Y.Kel'bert, A.N.Rybko, Y.M.Suhov, "Qualitative Methods in the Theory of Queuing Networks" (in Russian), . Preprint IITP.1986

16. A.N.Rybko, "Capacity region of Communication Networks and Ergodicity of Markov Processes with Countable Set of States". (in Russian) Proceedings of the Third Czechoslovak-Soviet-Hungarian Seminar on Information Theory. 1980. pp.71-78.

17. A.Puhalskii, A.Rybko, “Non-Ergodicity of Queuing Networks Under Non-Stability of Their Fluid Models”, University of Colorado at Denver, UCD/CCM Report No.141, April 1999.

18. Karpelevich F.I., Rybko A.N., “Thermodynamic limit for symmetrical closed queuing networks”, On Dobrushin’s way. From probability to statistical mechanics, Ed. R.Minlos, S.Shlosman, Yu.Suhov. Providence: AMS, 2000.

19. Karpelevich F.I., Rybko A.N., “Asymptotical behavior of Symmetrical Closed Queuing Network in Thermodynamic Limit”, Problemy Peredachi Informatsii (in Russian), 2000, V.36, N2, pp. 1-27.

20. F.I. Karpelevich, A.N. Rybko, “Thermodynamic Limit for the Mean Field Model of Simple Symmetrical Closed Queuing Network”, Markov Processes and Related Fields, 2000, V.6, N.1.

21. A.Rybko, “Weak Poisson Hypothesis for Thermodynamic Limit of Symmetrical Networks”. International Conference on Applied Probability, Ulm 1998.

22. A.N.Rybko, A.L.Stolyar, Yu.M.Suhov, “Stability of Global LIFO Networks”, Memory book of F.I. Karpelevich, Providence, AMS, ser.2, vol.207, 2002, pp. 177-184.

23.A.Puhalskii, A.Rybko. “Non-Ergodicity of Queuing Networks Under Non-stability of Their Fluid Models”. Problemy Peredachi Informacii (in Russian) 2000,V.36, N1.

24.A.Rybko, K.Khanin, D.Khmelev, A.Vladimirov, “Steady Solutions of Fluid Dynamics for FIFO Networks”. Moscow Mathematical Journal,V.1, N.3, 2001, pp.407-419.

25 A.N.Rybko, F.I.Karpelevich, A.A.Petrov, S.A.Pirogov, V.A.Malyshev, “Context Free Evolution of Words”. Preprint INRIA #4413, January 2002.

26 A.N.Rybko, F.I.Karpelevich, A.A.Petrov, S.A.Pirogov, V.A.Malyshev, “Context Free Evolution of Words”, Memory book of F.I. Karpelevich, Providence, AMS, ser.2, vol.207, 2002, pp.91-114.

27.V.A.Malyshev, A.A.Pirogov, A.N.Rybko. “Random Walks and Chemical Networks”. Preprint INRIA, April 2002.

28.A.Vladimirov, V.Oseledets, A.Rybko, K.Khanin, D.Khmelev. “Nonlinear Generalization of Perron Theorem”. D.A.N., vol.389, N.4, pp.452-456, 2003

29. V.A.Malyshev, A.A.Pirogov, A.N.Rybko. “Random Walks and Chemical Networks”. Moscow Mathematical Journal, vol.4, N.2, pp.441-453, 2004.

30. A.N.Rybko, S.B.Shlosman. “Poisson Hypothesis for information networks (A study in non-linear Markov processes)”. Part I, Moscow Mathematical Journal, 2005, V.5, N3, pp. 679-704 (this volume dedicated to Ya.G.Sinai)

31.A.Rybko, S.B.Shlosman, “Poisson Hypothesis for Queuing Networks – Combinatorial Aspects”. Problemy Peredachi Informatsii 2005, V41, N3, pp. 51-57

32.E.I.Dinaburg, C.Maes, S.A.Pirogov, F.Redig, A.N.Rybko “The Potts Model Built on Sand “ SPOR-Report 2004-02. Technische Universiteit Eindhoven

33. A.N.Rybko, S.B.Shlosman “Poisson Hypothesis for Information Networks. 2.Cases of Violations and Phase Transitions.” Moscow Mathematical Journal, 2008, V.8, N.1, pp.159 -180.

34. E.Dinaburg, C.Maes, S.Pirogov, F.Redig, A. Rybko “The Potts Model Built on Sand” Journal of Statistical Physics, Vol. 117, N.1/2, pp.179-198

35. A.Rybko, S.Shlosman “Poisson Hypothesis for Information Networks (a study in non-linear Markov Processes), Part II, Moscow Mathematical Journal, 2005, V.3, N.4 (this volume dedicated to M.Tsfasman)

36. A.Rybko, S.Shlosman, A.Vladimirov “Self - averaging Property of Queuing systems” Problemi Peredachi Informacii (in Russian) 2006, V42, N4, pp.91-103

37. A.Rybko, S.Shlosman “Poisson Hypothesis for Information Networks with Complex Graphs” In preparation

38.A.Rybko, S.Shlosman, A.Vladimirov, “Spontaneous Resonances and the Coherent States of the Queuing Networks”, Journal of Statistical Physics. 2009, V.134, N.1, pp.105 – 126.

39. V.Michaylov, A.Rybko, “The Sufficient Conditions for Existence of Stationary Mode in Channel Switching Networks with Queues. Abs. of Intern. Coll. On Information Theory, Budapest 1981,p 58.

40. A.N.Rybko, “ The Unstable Behavior of Fluid Models and Transience of Corresponding Stochastic Processes Modeling Open Queuing Networks” Abs. of 16-th European Conference on Operational Research, Brussels, July 1998, p.87.

41.A.Rybko, S. Shlosman, “Poisson Hypothesis for Large Information Networks: the Study of Non-linear Markov Processes”, Abs. of Intern. Conference “Kolmogorov and Contemporary Mathematics”, Moscow, June 2003., Moscow, Part 2, pp. 956 – 957.

42. A.Rybko, S.Shlosman, “Poisson Hypothesis for Information Networks (a Study in Non-linear Markov Processes)” http://arxiv.org/PS_ cache/math/arxiv/pdf/0406/04066.110v1.pdf.204. pp.1 – 77

43. A.Rybko, S.Shlosman, “Poisson Hypothesis for Information Networks. II. Cases of violation and Phase Transitions”. http://arxiv.org/PS_cache/arxiv/math-ph/pdf/0410/0410.053v1.pdf.204, pp. 1 - 27.

44. A.Rybko, S.Shlosman, A.Vladimirov, “Self-averaging Property of Queuing Systems”. http://arxiv.org/PS_cache/arxiv/math/pdf/0510/0510.046v.2pdf.2005. pp.1 – 18

45. A.N.Rybko, “Poisson Hypothesis for Information Networks (a Study in Non-linear Markov Processes)”. Abs.of IV Intern. Conf. “Limit Theorems in Probability and their Applications”, Novosibirsk, August 2006, p.28.

46. A.Rybko, S.Shlosman, A.Vladimirov, “Absence of Breakdown of the Poisson Hypothesis. I. Closed Networks at Low Load”. http://arxiv.org/PS_cache/arxiv/math/pdf/0811/0811.3577v.1pdf2008. pp. 1-18.

47.A.Rybko, S.Shlosman, A.Vladimirov, “Spontaneous Resonances and the Coherent States of the Queuing Networks”. http://arxiv.org/PS_cache/arxiv/math/pdf/0708/0708.3073v.2pdf2007. pp.1-53

48. A.Rybko, S.Shlosman, A.Vladimirov, “Spontaneous Resonances and the Coherent States of the Queuing Networks”. Abs. of Symposium on Perspectives in Modeling and Performance of Computer Systems “Model 35”, INRIA, Paris – Roquencourt. April 2008, p.13

49. A.N.Rybko “Poisson Hypothesis for Large Symmetrical Communicated Networks” (in Russian). Globus mathematical seminars, N.4, Ed. M.A.Tsfasman and V.V.Prasolov, Moscow 2009, pp. 105 – 126.

50. A.Rybko, S.Shlosman, A.Vladimirov, “Spontaneous Resonances and the Coherent States of the Queuing Networks” Proc. Of Dobrushin International Conference, Moscow. July 2009. IITP RAS, pp.149-156.

51. A.Rybko, S.Shlosman, A.Vladimirov, “Absence of Breakdown of the Poisson Hypothesis. I. Closed Networks at Low Load”. Markov Processes and Related Fields, 2010, V. 16, N. 2, pp. 267-286.

52. A.N.Rybko, “Sinai Switched Dynamical Systems on the Plane”. V International Conference “Limit Theorems in Probability Theory and Their Applications”, Novosibirsk, August 2011, p. 40

52. M.D.Arnold, E.I.Dinaburg, G.B.Dobrushina, S.A.Pirogov, A.N.Rybko, “On Products of Skew Rotations” http://arxiv.org/abc/1106.5914v.1 pp.1-13.

53. M.D.Arnold, E.I.Dinaburg, G.B.Dobrushina, S.A.Pirogov, A.N.Rybko, “On Products of Skew Rotations”. Accepted in “Moscow Mathematical Journal”.

54. M.D.Arnold, E.I.Dinaburg, G.B.Dobrushina, S.A.Pirogov, A.N.Rybko, “On Products of Skew Rotations” Proceedings of International Mathematical Conference “50 Years of IITP”, Moscow 2011, ISBN 978-5-901158-15-9 pp.1 – 23.

55. A.N.Rybko, “Asymptotic Properties of Queuing Networks”, Proceedings of International Conference ITIS 2011, p.31.