

Selected Publications:

Monographs:

Sequential Control with Incomplete Information: The Bayesian Approach to Many-Armed Bandit Problems, Academic Press, 1990, 266 p., English translation of: Moscow, Nauka, 1982, 256 p., (jointly with I.M.Sonin)

List of main papers:

A. Boundary Problems and Queueing Theory

1. The time of being of one system in disrepair. Proc. of the Steklov Inst. of Math. 71 (1964), pp.78-81, (in Russian)
2. On waiting time for many-served queueing system. Theory of Probability and its Applications, 10.1 (1965), pp. 70-81
3. Duration of stay of one system in breakdown state. "Twenty-Two Papers on Statistics and Probability", in: "Selected Translations in Mathematical Statistics and Probability", v.6, 1966, American Mathematical Society, ISSN: 0065-9274, reprinted 1970, ISBN: 0-8218-1456-7.
4. A boundary problem for sums of lattice random variables defined on a regular Markov chain. Theory of Probability and its Applications, 12.2 (1967), pp. 373-380
5. The factorization methods and boundary problem for the sums of random variables defined on a regular Markov chain. Trans. of the USSR Acad. of Sci. Math. series., 33.4 (1969), pp. 861-900

B. Limit Theorems of the Theory of Probability

1. A multidimensional version of the Kolmogoroff uniform limit theorem. Theory of Probability and its Applications, 18.2 (1973), pp. 396-402
2. On the rate of approach of the distributions of sums independent random variables to accompanying distributions. Theory of Probability and its Applications, 18.4 (1973), pp. 753-766, (jointly with I.A.Ibragimov)
3. Two inequalities for symmetric processes and symmetric distributions. Theory of Probability and its Applications, 26.4 (1981), pp. 827-831
4. On the approximation of binomial distributions by means of infinitely divisible one. Theory of Probability and its Applications, 28.2 (1983), pp. 372-382
5. On the variation distance between the distribution of a sum of independent Bernoulli variables and the Poisson law. Theory of Probability and its Applications, 30.2 (1985), pp. 391-396
6. Approximations of binomial distributions in sense of the distance in variation. In: T.V.Arak, A.Yu.Zaitsev, Uniform Limit Theorems for Sums of Independent Random Variables. Proc. of the Steklov Inst. of Math. 174 (1986), p. 77-91
7. Lower estimations. In: T.V.Arak, A.Yu.Zaitsev, Uniform Limit Theorems for Sums of Independent Random Variables. Proc. of the Steklov Inst. of Math. 174 (1986), p. 183-203
8. On the law of large numbers for nonlinear functions of many random variables. Theory of Probability and its Applications, 41.3 (1996), pp. 665-672, (jointly with V.I.Rotar)
9. Estimation of the Constant in a Burkholder Inequality for Supermartingales and Martingal, v. 53, n. 1, 2009, pp. 173-180
10. On the Kolmogorov–Prokhorov Theorem on the Existence of Expectations of Random Sums, ISSN 1064–5624, Doklady Mathematics, 2009, Vol. 79, No. 2, pp. 293–295. © Pleiades Publishing, Ltd., 2009, (jointly with Sh.K. Formanov).

C. Optimal control of stochastic processes

a) Optimal choice and optimal stopping

1. The best choice problem for a random number of objects. Theory of Probability and its Applications, 17.4 (1972), pp. 695-706, (jointly with I.M.Sonin)

2. Equilibrium point in a game related to the best choice problem. *Theory of Probability and its Applications*, 20.4 (1975), pp. 785-796, (jointly with I.M.Sonin)
3. Optimal choice under conditions of incomplete information. *Economics and Mathematical Methods*, 11.3 (1975), pp. 439-452, (jointly with I.M.Arkin and I.M.Sonin)
4. The game problems of optimal stopping. Existence and uniqueness of equilibrium points. In: *Probabilistic Control Problems in Economics*, Moscow, Nauka, 1977, pp. 115-144, (jointly with I.M.Sonin), (in Russian)
5. The choice of decision time in game situation. In: *Probabilistic Control Problems in Economics*, Moscow, Nauka, 1977, pp. 145-166, (jointly with I.M.Sonin), (in Russian)
6. The Existence and Uniqueness of Nash Equilibrium Point in an m -player Game "Shoot later, shoot first!" (jointly with I.M.Sonin), *International Journal of Game Theory*, v.34, i.3, 2006, p. 185-205.
7. On Optimal Stopping of Random Sequences Modulated by Markov Chain (jointly with I.M.Sonin), *Theory of Probability and its Applications*, v. 54, n. 3, 2010, pp. 534-542.
8. New approach to the solution of the optimal stopping problem in a discrete time, *Stochastics*, special issue dedicated to Optimal Stopping and Applications, 2011 (in print)
9. Solution of optimal stopping problem based on a modification of payoff function, *Musela Festschrift*, Springer Ferlag, 2011 (in print)
10. Solution of the optimal stopping problem of one-dimensional diffusion based on a modification of payoff function, *Prokhorov Festschrift*, Springer Ferlag, 2011 (in print)

b) Multi-armed bandit problems

11. "Two-armed bandit" problems in continuous time. In: *Stochastic Processes and Control*, Moscow, Nauka, 1978, pp. 154-204, (jointly with I.M.Sonin), (in Russian)
12. "Two and many-armed bandit" problems with infinite horizon. In: *Lectures Notes in Mathematics*, 1021 (1983), *Proceedings of the Fourth USSR-Japan Symposium on Probability and Mathematical Statistics*, pp. 526-540, (jointly with I.M.Sonin)
13. Poisson version of "two-armed bandit" problem with discounting. *Theory of Probability and its Applications*, 35.2 (1990), pp. 318-328
14. Properties of optimal strategies in Poisson version of "two-armed bandit" problem with two hypotheses. *Contemporary mathematics. The Proceedings of the Joint AMS-IMS-SIAM Summer Research Conference 1990 on Strategies for Sequential Search and Selection in Real Time*, Volume 125 (1992), pp. 97-104

c) Linear regulator problem

15. Optimality in Probability and Almost Surely. The General Scheme and a Linear Regulator Problem. *Stochastics and Stochastics Report*, Vol. 43 (1993), pp. 127-137, (jointly with V.Rotar, M.Taksar)
16. Controls asymptotically optimal in distribution for a linear stochastic system with a quadratic functional, *Automatika i Telemekhanika*, n.3 (1997), pp. 106-115, (jointly with T.Belkina)
17. Optimality almost sure and in probability for a stochastic linear-quadratic regulator. *Theory of Probability and its Applications*, 42.3 (1997), pp. 627-632
18. On the law of iterated logarithm in one problem of control. *Theory of Probability and its Applications*, 43.2 (1998), pp. 364-369, (jointly with S.V.Nagaev)
19. On a stochastic optimality of the feedback control in the LQG-problem. Preprint N 2000/34, UNIVERSITE DE FRANCHE COMTE, 2000, (jointly with Yu.M.Kabanov and T.A.Belkina)
20. On a stochastic optimality of the feedback control in the LQG-problem. *Theory of Probability and its Applications*, 48.4 (2003), pp. 661-675., (jointly with Yu.M.Kabanov and T.A.Belkina)

d) Some other problems of stochastic optimal control

21. A Gittins Type Index Theorem for Randomly Evolving Graphs (jointly with I.M.Sonin). In: *From Stochastic Calculus to Mathematical Finance. The Shiryaev Festschrift*, Springer-Verlag, 2005, p. 567-588
22. Presman, E. and Sethi, S.P., *Stochastic Inventory Models with Continuous and Poisson Demands and Discounted and Average Costs. Production and Operations Management*, v.15, i. 1, 2006
23. Presman, E. and Sethi, S.P., *One Approach to Investigation of Stochastic Inventory Models*, *Proceedings of the Russian Economics Congress*, (ISBN 987-59940-0219-3), Institute of Economics of RAS, Moscow, 2009

D) Some economic applications

a) Optimal investment

1. A stochastic model of optimal investment in a new technology in the presence of competition. In: *Mathematical modeling of control processes under uncertainty*, Moscow, CEMI, 1987, pp. 89-100, (jointly with R.Ericson), (in Russian)
2. Risk aversion behavior in consumption/investment problems. *Mathematical Finance*, 1 (1991), Erratum, 1 (3), 1991, p. 86, (jointly with S.Sethi). (Reproduced in: S.Sethi "Optimal consumption and investment with bankruptcy", pp. 85-116, Kluwer Academic publisher, Boston/Dordrecht/London, 1997)
3. Explicit solution of a general consumption/portfolio problem with subsistence consumption and bankruptcy. *Journal of Economic Dynamics and Control*, 16 (1992), pp. 747-768, Erratum, 19 (1995), pp. 1297-1298, (jointly with S.Sethi, M.Taksar). (Reproduced in: S.Sethi "Optimal consumption and investment with bankruptcy", pp. 119-143, Kluwer Academic publisher, Boston/Dordrecht/London, 1997)
4. Distribution of bankruptcy time in a consumption/portfolio problem. *Journal of Economic Dynamics and Control*, 20 (1996), pp. 471-477, (jointly with S.Sethi). (Reproduced in: S.Sethi "Optimal consumption and investment with bankruptcy", pp. 145-154, Kluwer Academic publisher, Boston/Dordrecht/London, 1997)
5. Risk-Aversion Behavior in Consumption/Investment Problems with Subsistence Consumption and Bankruptcy (jointly with S.Sethi), In: S.Sethi "Optimal consumption and investment with bankruptcy", pp. 155-184, Kluwer Academic publisher, Boston/Dordrecht/London, 1997
6. Consumption Behavior in Investment/Consumption Problems (jointly with S.Sethi), In: S.Sethi "Optimal consumption and investment with bankruptcy", pp. 185-205, Kluwer Academic publisher, Boston/Dordrecht/ London, 1997
7. Equivalence of Objective Functionals in Infinite Horizon and Random Finite Horizon Problems (jointly with S.Sethi), In: S.Sethi "Optimal consumption and investment with bankruptcy", pp. 207-214, Kluwer Academic publisher, Boston/Dordrecht/London, 1997

b) Stochastic manufacturing systems

8. Optimal Feedback Production Planning in a Stochastic N-Machine Flowshop (jointly with S.Sethi, Q.Zhang), In: *Proceedings of the 12th IFAC World Congress*, Sidney, Australia, July 1993, Elsevier Science Limited, U.K
9. Optimal Feedback Production Planning in a Stochastic N-Machine Flowshop, *Automatika*, Vol. 31, No. 9 (1995), pp. 1325-1332, (jointly with S.Sethi, Q.Zhang)
10. Existence of Optimal Feedback Production Plans in Stochastic Flowshops with Limited Buffers, "*Automatika*", Vol. 32, No. 10, pp. 1899-1903, 1997, (jointly with S.Sethi, W.Suo)
11. Optimal Feedback Controls in Dynamic Stochastic Jobshops, *Proceedings of 1996 AMS-SIAM Summer Seminar: Mathematics of Stochastic Manufacturing Systems. "Lectures in Applied Mathematics"*, Vol. 33, pp. 235-252, 1997, (jointly with S.Sethi, W.Suo)
12. Optimal Production Planning in a Stochastic N- Machine Flowshop with Long-Run Average cost. In: *Proc of the 2nd International Conference on the Applications of Mathematics to Science and Engineering (CIAMASI'98)*, Oct. 27-29, 1998, Casablanca, Morocco, pp. 704-711, (jointly with S.Sethi, H.Zhang, Q.Zhang)
13. Optimality of Zero-Inventory Policies for an Unreliable Manufacturing System Producing Two Part Types. "*Dynamics of Continuous and Discret Impulsive Systems*", Vol 4, No. 4, pp. 485-496, 1998, (jointly with S.Sethi, H.Zhang, Q.Zhang)
14. Optimal Production Planning in a Stochastic N-Machine Flowshop with Long-Run Average Cost, *{it The Proceedings of the Indian National Science Academy}*, December Issue, 1999, pp. 121-140 (jointly with S.Sethi, H.Zhang, Q. Zhang)
15. Average Cost Optimal Policy for an Unreliable Two-Machine Flowshop with Limited Internal Buffer. *Annals of Operation Research*, 98 (2000), pp. 333-351, (jointly with S.Sethi, H.Zhang , A.Bisi)
16. Optimal Production Planning in General Stochastic Jobshops with Long-Run Average Cost (jointly with S.Sethi, H.Zhang), In: E.J.Dockner, R.F.Hartl, M.LuptaXik, and G.Sorger (Eds.), *Optimization, Dynamics, and Economic Analysis, Essays in Honor of Gustav Feichtinger*, Physica-Verlag, Heidelberg, New York, 2000, 259-274

17. Average Cost Optimal Policy for a Stochastic Two-Machine Flowshop with Limited Work-in-Process, *Nonlinear Analysis*, 47, 2001, pp. 5671-5678, (jointly with S.Sethi, H.Zhang, A.Bisi)
18. On Optimality of Stochastic $M/M/1$ -Machine Flowshop with Long-Run Average Cost (jointly with S.Sethi, H.Zhang, Q. Zhang). *Stochastic Theory and Control, Proceedings of a Workshop held in Lawrence, Kansas, October 18-20, 2001, Lecture Notes in Control and Information Sciences, Vol. 280*, B. Pasik-Duncan (Ed.), Springer-Verlag, New York, 2002.
19. Optimal Production Control of a Failure-Prone Machine (jointly with S.Sethi, E.Khmelnitski), *Annals of Operations Research, Special issue on Manufacturing Systems*, v. 173, 2009

E. Stochastic models of economic dynamics

1. Probabilistic models of economic dynamics with controlled scientific-technological progress. In: *Modeling of Scientific Progress and the Control of Economic Processes under Conditions of Incomplete Information*, Moscow, CEMI, 1976, (jointly with V.I.Arkin and I.M.Sonin), (in Russian)
2. On an approach to growth rate notion in stochastic von Neumann-Gale models. In: *Models and methods of stochastic optimization*, Moscow, CEMI, 1983, (jointly with A.D.Slastnikov), (in Russian)
3. On asymptotic behavior of paths in stochastic von Neumann-Gale model. In: *Researches on Probabilistic Problems of Control of Economic Processes*, Moscow, CEMI, 1985, (jointly with A.D.Slastnikov), (in Russian)
4. Growth rates and optimal paths in stochastic models of expanding economy. *Stochastic optimization, Proc. of Intern. Conference, Kiev/USSR, 1984, Lect. Notes Control Inf. Sci, 1986*, (jointly with A.D.Slastnikov)
5. An equilibrium in stochastic von Neumann-Gale models. In: *Mathematical modeling of control processes under uncertainty*, Moscow, CEMI, 1987, (jointly with A.D.Slastnikov), (in Russian)
6. Growth rate, internal rates of return, and financial bubbles (jointly with I.M.Sonin), Preprint N WP/2000/103 CEMI RAS, 2000

PRESENTATIONS AT INTERNATIONAL CONFERENCES:

The Fifth Bachelier Colloquium (January 24-31, 2011, Metabief-France). Solution of the optimal stopping problem of one-dimensional diffusion based on a modification of payoff function.

Международной конференции «Stochastic Optimal Stopping» (SOS2010, г. Петрозаводск, 12-16 сентября 2010 г.). Method of the solution of the optimal stopping problem based on the modification of the reward function.

The Fourth Bachelier Colloquium (January 24-31, 2010, Metabief-France). About new approach to the solution of the optimal stopping problem.

Optimal Stopping with Applications Symposium, Turku, 23-26 June 2009, Abo Akdimi University, Finland. Modification of Sonin's algorithm for optimal stopping of Markov chain.

Fourth international conference on control problems (January 26---30, 2009). --- M.: Institute of Control Sciences, On Sonin's algorithm for solution of the optimal stopping problem.

Seventh International Petrozavodsk Conference "Probabilistics Methods in discrete Mathematics", Petrozavodsk, June 01-06, 2008.

Fifth International Conference of Applied Mathematics and Computing, Plovdiv, August 12-18, 2008, Technical University of Plovdiv, On Sonin's algorithm in the problem of optimal stopping

14-th INFORMS Applied Probability Conference, July 9-11 2007. Eindhoven University of Technology, Optimal Stopping of "Seasonal" Observations

Randomly Evolving Graphs and Gittins Type Index Theorem (jointly with I.M.Sonin), In: *The Book of Ester Samuel-Cahn: from Empirical Bayes to Prophet Inequalities*, a conference in honor of Professor Ester Samuel-Cahn, Program and Abstracts, The Hebrew University of Jerusalem, 2006, p. 14.

International Conference "Limit theorems of the theory of probability and its applicatios ", August 21-25, 2006., S. Sobolev Inststute of Mathematics, Novosibirsk, Estimation of the Constant in a Burkholder Inequality for Supermartingales and Martingals.

International Conference on Management Sciences: Optimization Models & Applications, May 20-22, 2006, University of Texas at Dallas, Dallas, USA, Optimal Production Control of a Failure-Prone Machine (jointly with S.Sethi, E.Khmel'nitski),

International Workshop Optimal Stopping and Stochastic Control, Petrozavodsk, Russia, August 22-26 2005, Gittins Type Index for Randomly Evolving Graphs (jointly with I.M.Sonin).

Second Bachelier Colloquium on Stochastic Calculus and Probability, Metabief, France, January 2005, A Gittins Type Index Theorem for Randomly Evolving Graphs, (jointly with I.M.Sonin).

Second World Congress of the Game Theory Society, Marseille, France, July 2004, The classes of an m -player Game "Shoot later, shoot first with an explicit and unique Nash Equilibrium Point, (jointly with I.M.Sonin).

International conference "Kolmogorov and contemporary mathematics", Moscow, June 2003, A simple proof of an (Gittins) index theorem for graphs (jointly with I.M.Sonin).

International Workshop "Optimal Stopping and Stochastic Games", 1-7 July 2002, Bedlewo, Poland. The Existence and Uniqueness of Nash Equilibrium Point in an m -player Game "Shoot later, shoot first" (jointly with I.M.Sonin).

First World Congress of the Game Theory Society (GAMES 2000), Bilbao, Spain, 24-28 July, 2000. Equilibrium Points in an k Player Game of "Black Jack" Type.

10th INFORMS Applied Probability Conference, University of Ulm, Germany, July 1999. Average Cost Optimality in a stochastic flowshop (jointly with S.Sethi).

International Congress of Mathematicians, Berlin, August 18-27, 1998 Optimality for the stochastic linear-quadratic regulator.

22nd European Meeting of Statisticians, 7th Vilnius Conference in Probability Theory and Mathematical statistics, August 12-18, 1998, Vilnius, Lithuania. On the law of iterated logarithm in one problem of control (jointly with S.V.Nagaev).

2nd world Congress of Non-Linear-Analysts - WCNA 96, Aghens, 10-17 July, 1996. Optimal Feedback Strategies in Some Problems of Stochastic Control.

AMS-SIAM Summer Seminar: Mathematics of Stochastic Manufacturing Systems. June 17-22, 1996, Williamsburg, Virginia. Optimal Feedback Controls in Dynamic Stochastic Jobshops (jointly with S.Sethi, W.Suo).

International Seminar "Limit theorems and related problems "Omsk, 29.08 - 02.09, 1995. Asymptotical optimality in distribution (joint work with T.Konyuhova).

International Conference "Stochastic Models and Optimal Stopping", Nanzan University, Nagoya, December 19-21, 1994, talk: "On sensitive criteria in the stochastic linear regulator problem with the infinite horizon" (joint work with T.Konyuhova).

Conference "Applications of Stochastic Analysis", School of Informatics and Sciences, Nagoya University, Nagoya, December 2-4, 1994, a talk: "Some properties of solution of a consumption/portfolio problem with subsistent consumption and bankruptcy" (joint work with S.Sethi).

12-th World Congress. International Federation of Control, Sydney, Australia, July 18-23, 1993. Optimal Feedback Production Planning in a Stochastic N -Machine Flowshop.

The 6-th USSR-Japan Symposium on Probability Theory, Kiev, August 5-10, 1991. Optimality in probability and almost surely for an infinite horizon linear regulator problem (jointly with V.Rotar', M.Taksar).

Conference on Preference, Risk, and Social Choice, UC at Irvine, June 25 - July 2, 1991. On a statistical approach to risk under uncertainty.

Joint AMS-IMS-SIAM Summer Research Conference on Strategies for Sequential Search and Selection in Real Time, Amherst, June 21-27, 1990, A Poisson version of multi-armed bandit problems.

The Fifth International Vilnius Conference on Probability Theory and Mathematical Statistics, Vilnius, June 26 - July 1, 1989. Properties of optimal strategies in Poisson version of two-armed bandit problems with discount.

The First Finnish-Soviet Symposium on Probability Theory and Mathematical Statistics, Lahti, August 31 - September 5, 1987. On controlled counting processes.

The First World Congress of the Bernoulli Society, Tashkent, September 8 - 14, 1986. Optimal control for partly observed m-variate counting process.

The 5-th USSR-Japan Symposium on Probability Theory, Kyoto, July 8 - 14, 1986. Optimal control for partly observed m-variate counting process.

The Forth International Vilnius Conference on Probability Theory and Mathematical Statistics, Vilnius, June 1985. A Control of multidimensional counting process depending on unknown.

International Conference on Stochastic Optimization, Kiev, 1984, The problems of optimal control with incomplete data (jointly with I.M.Sonin), Growth rates and optimal paths in stochastic models of expanding economy (jointly with A.D.Slastnikov).

International Congress of Mathematicians, Warsaw 1982, The two-armed bandit problems and a control of point processes

The Forth USSR-Japan Symposium on Probability Theory, Tbilisi September 1982. Two and many armed bandit problems with infinite horizon (jointly with I.M.Sonin).

The Third International Vilnius Conference on Probability Theory and Mathematical Statistics, Vilnius 1981, Many armed bandit problems in discrete and continuous time (jointly with I.M.Sonin), Two inequalities for symmetric processes and symmetric distributions

The USSR-Poland Symposium on Mathematical Methods in Planning and Control in Economics, Moscow 1979. The asymptotic behavior of value function in a problem of sequential control with incomplete data.

The Second International Vilnius Conference on Probability Theory and Mathematical Statistics, Vilnius 1977. Two-armed bandit problems in continuous time (jointly with I.M.Sonin).

The Third USSR-Japan Symposium on Probability Theory, Tashkent 1975. The points of equilibrium in the game problems of optimal stopping (jointly with I.M.Sonin).

International Vilnius Conference on Probability Theory Mathematical Statistics, Vilnius 1973, The uniform limit theorem of Kolmogoroff in multidimensional case.

The First USSR-Japan Symposium on Probability Theory, Khabarovsk 1969. The factorization methods and boundary problem for the sums of random variables defined on a regular Markov chain.

International Congress of Mathematicians, Moscow, August 15 - 26, 1966. A boundary problem for sums of random variables defined on finite regular Markov chain.