Curriculum Vitae

Shiryaev Albert Nikolaevich

12 October 1934

A.

1952–1957	Student of the Faculty of Mechanics and Mathematics of the Moscow State University.
Since 1957	Member of the Steklov Mathematical Institute of the Russian Academy of Sciences.
1961	Candidate (Ph. D.) dissertation "Optimal methods on quickest detection problems". Scientific advisor A. N. Kolmogorov.
1967	Dissertation for degree of Doctor of Phys.-Math. Sci. "Studies in the sequential statistical analysis". Official opponents: A. N. Kolmogorov, A. V. Skorokhod, and I. A. Ibragimov.
Since 1970	Professor of the Moscow State University.
1986–2002	Head of the Laboratory "Statistics of Stochastic Processes" of the Steklov Mathematical Institute.
Since 1996	Head of the Probability Theory Department of the Faculty of Mechanics and Mathematics of the Moscow State University.
Since 1997	Correspondent member of the Russian Academy of Sciences.

B. Scientific activity

More than 170 main scientific papers (on probability theory, mathematical and applied statistics, optimal stochastic control, financial mathematics, history of mathematics).

Monographs:

1. Statistical Sequential Analysis

   1969 – Russian edition, "Nauka", 231 pp.;

   1973 – English edition, Amer. Math. Soc., iv+174 pp.;

1976 – 2nd Russian edition, rev., "Nauka", 272 pp.;

1978 – English edition under the title "Optimal stopping rules", Springer, x+217 pp.

2008 – Reprint of the 1978 translation, Springer-Verlag, xii+217 pp.

2. Statistics of Random Processes (with R. Sh. Liptser)

1974 – Russian edition, "Nauka", 696 pp.;

1977 – English edition, vol. I, Springer, x+394 pp.;

1978 – English edition, vol. II, Springer, x+339 pp.;

1981 – Polish edition, PWN, 680 pp.;

2001 – 2nd English ed., rev. and expanded, vol. I, II; xv+427 pp., xv+402 pp.

3. Theory of Martingales (with R. Sh. Liptser)

1986 – Russian edition, "Nauka", 512 pp.;

1989 – English edition, Kluwer Acad. Publ., xiv+792 pp.

4. Limit Theorems for Stochastic Processes (with J. Jacod)

1987 – English edition, Springer; xvii+600 pp.;

1994 – Russian edition, vol. I, II, "Nauka", 544 pp., 368 pp.;

2003 – 2nd English edition, rev. and expanded, Springer, xx+661 pp.

5. Contiguity and Statistical Invariance Principle (with P. E. Greenwood)

1985 – English edition, Gordon & Breach, viii+236 pp.

6. Essentials of Stochastic Finance

1998 – Russian edition, vol. I, II, "FAZIS", 1018 pp.;

1999 – English edition, World Scientific Publ., xvi+834 pp.
Reprinted 1999, 2000, 2001, 2003;

2004 – 2nd Russian ed., corrected, xxxviii+1018 pp.

7. Statistical Experiments and Decision (with V. G. Spokoiny)

2000 – World Scientific Publ., xvi+281 pp.

8. Theory of Random Processes (with A. V. Bulinsky)

2003 – Russian edition, Fizmatlit, 399 p.

9. Optimal Stopping and Free-Boundary Problems (with G. Peskir)

   2006 – Lectures in Mathematics ETH Zurich. Birkhäuser, xxii+500 p.

Textbooks:

1. Probability, Statistics, Stochastic Processes I, II

   1973 – Russian edition, vol. I, Moscow Univ. Press, 204 pp.;
   1974 – Russian edition, vol. II, Moscow Univ. Press, 224 pp.

2. Stochastic Processes

   1972 – Russian edition, Moscow Univ. Press, 241 pp.;

3. Probability

   1980 – Russian edition, "Nauka", 576 pp.;
   1984 – English edition, Springer, xi+577 pp.;
   1988 – German edition, Academie-Verlag, 592 pp.;
   1989 – 2nd Russian edition, rev. and expanded, "Nauka", 640 pp.;
   1995 – 2nd English edition, Springer, xvi+621 pp.;
   2004 – 3rd Russian edition, rev. and expanded, vol. 1, 2, MCCME, 927 pp.
   2007 – 4th Russian edition, vol. 1, 2, MCCME
   – 3rd English edition, Springer (in preparation).

4. Problems in Theory of Probability

   2005 – Russian edition, MCCME, 416 pp.;
   – English edition, Springer (in preparation).

C. Prizes and Awards

– Markov Prize of Academy of Sciences of the USSR (1974).

– Honorary Fellow of the Royal Statistical Society (1985).

- Member of the International Statistical Institute (ISI), Institute of Mathematical Statistics (IMS), Bernoulli Society (BS), Moscow Mathematical Society (MMS).
- Member of the Academia Europea (1990).
- Kolmogorov Prize of the Russian Academy of Sciences (1994).
- Man of the Year 1994 (by the American Biographical Institute).
- Humboldt Research Award (1996).
- Doctor *Rerum Naturalium Honoris Causa* of Albert Ludwigs University of Freiburg im Breisgau, Germany (2000).
- Professor *Honoris Causa* of Amsterdam University (2002).
- Distinguished Professor of M. V. Lomonosov Moscow State University (2003).

D.

- Deputy Head of the journal "Theory of Probability and its Applications".
- Co-editor of the journal "Finance and Stochastics".
- Member of the editorial boards of the journals:

  "Analysis Mathematica" (Russian-Hungarian journal)

  "International Journal of Imaging Systems and Technology"

  "Markov Processes and Related Fields"

  "Quantitative Finance"

  "Stochastics"

  "Vestnik MGU. Ser Mat. Mekh."
- Member of the Advisory board of the journal "Statistics and Decisions".

E.

- President-elect of the Bernoulli Society (1987–1989)
- President of the Bernoulli Society (1989–1991)
- President of the Actuarial Society of Russia (1994–1998)
- President of the Bachelier Finance Society (1998–1999)

F.

- Adviser of 52 candidate (Ph.D.) dissertations in the USSR and Russia and other countries
- Member of the Scientific Council of the Steklov Mathematical Institute
- Member of the Scientific Council of the Faculty of Mathematics and Mechanics of the Moscow State University
- Member of the High Expert Dissertation Committee (VAK) of Ministry of High Education of Russian Federation
- Member of the Scientific Board of the Thiele Centre for Applied Mathematics in Natural Sciences (Aarhus University, Denmark)

List of publications (2000–2008)

2000

[1] An extension of P. Lévy's distributional properties to the case of a Brownian motion with drift. *Bernoulli* 6 (2000), no. 4, 615–620 (with S. E. Graversen).

[2] Stopping Brownian motion without anticipation as close as possible to its ultimate maximum. *Teor. Veroyatnost. i ee Primenen.* 45 (2000), no. 1, 125–136; *Theory Probab. Appl.* 45 (2001), no. 1, 41–50 (with S. E. Graversen and G. Peskir).

[3] Sequential testing problems for Poisson processes. *Ann. Statist.* 28 (2000), no. 3, 837–859 (with G. Peskir).

[4] Maximal inequalities for reflected Brownian motion with drift. *Teor. Imovir. Mat. Statist.* no. 63 (2000), 125–131; Engl. transl. in *Theory Probab. Math. Statist.* no. 63 (2001), 137–143 (with G. Peskir).

[5] Andrei Nikolaevich Kolmogorov (April 25, 1903 to October 20, 1987). A biographical sketch of life and creative activities. *Kolmogorov in Perspective.* Providence, RI: Amer. Math. Soc.; London: London Math. Soc., 2000, pp. 1–87.

[6] *Statistical Experiments and Decision. Asymptotic Theory.* River Edge, NJ: World Scientific, 2000. xvi+281 pp. (with V. G. Spokoiny).

2001

[7] The Russian option under conditions of a possible price "freeze". (Russian) *Uspekhi Mat. Nauk* 56 (2001), no. 1, 187–188; Engl. transl. in *Russian Math. Surveys* 56 (2001), no. 1, 179–181 (with L. A. Shepp).

[8] A note on the call-put parity and call-put duality. *Teor. Veroyatnost. i Primenen.* 46 (2001), no. 1, 181–183; *Theory Probab. Appl.* 46 (2001), no. 1, 167–170 (with G. Peskir).

[9] Time change representation of stochastic integrals. *Teor. Veroyatnost. i Primenen.* 46 (2001), no. 3, 579–585; *Theory Probab. Appl.* 46 (2001), no. 3, 522–528 (with J. Kallsen).

[10] *Essentials of the arbitrage theory.* Lectures in the Institute for Pure and Applied Mathematics, UCLA, Los Angeles, 3–5 January 2001, 30 pp.

[11] On criteria for the uniform integrability of Brownian stochastic exponentials. *Optimal Control and Partial Differential Equations.* In honour of Prof. Bensoussan's 60th birthday. Ed. by J. L. Menaldi, E. Rofman, and A. Sulem. Amsterdam: IOS Press, 2001, pp. 80–92 (with A. S. Cherny).

[12] *Statistics of Random Processes.* 2nd rev. and expanded ed. Vol. I: General Theory. Vol. II: Applications. Appl. Math. (New York), 5, 6. Berlin: Springer-Verlag, 2001. xv+427 pp., xv+402 pp. (with R. Sh. Liptser).

2002

[13] Quickest detection problems in the technical analysis of the financial data. *Mathematical finance — Bachelier congress 2000*: Selected papers from the First World Wongress of the Bachelier Finance Society (Paris, 2000). Ed. by H. Geman et al. Berlin: Springer-Verlag, Springer Finance, 2002, pp. 487–521.

[14] A vector stochastic integrals and the fundamental theorems of asset pricing. (Russian) *Trudy Mat. Inst. Steklova* 237 (2002), 12–56; Engl. transl. in *Proc. Steklov Inst. Math.* 237 (2002), 6–49 (with A. S. Cherny).

[15] On lower and upper functions for square integrable martingales. *Trudy Mat. Inst. Steklova* 237 (2002), 290–301; *Proc. Steklov Inst. Math.* 237 (2002), 281–292 (with E. Valkeila and L. Vostrikova).

[16] Limit behavior of the "horizontal-vertical" random walk and some extensions of the Donsker–Prokhorov invariance principle. (Russian) *Teor. Veroyatnost. i Primenen.* 47 (2002), no. 3, 498–517; Engl. transl. in *Theory Probab. Appl.* 47 (2002), no. 3, 377–394 (with A. S. Cherny and M. Yor).

[17] The cumulant process and Esscher's change of measure. *Finance Stoch.* 6 (2002), no. 4, 397–428 (with J. Kallsen).

[18] Solving the Poisson disorder problem. *Advances in Finance and Stochastics.* Essays in honour of Dieter Sonderman. Ed. by K. Sandmann et al. Berlin: Springer-Verlag, 2002, pp. 295–312 (with G. Peskir).

[19] A barrier version of the Russian option. *Advances in Finance and Stochastics.* Essays in honour of Dieter Sondermann. Ed. by K. Sandmann et al. Berlin: Springer-Verlag, 2002, pp. 271–284 (with L. A. Shepp and A. Sulem).

[20] *Change of time and measure for Lévy processes.* Lecture Notes no. 13. Aarhus: Aarhus Univ., MaPhySto, 2002. 46 pp. (with A. S. Cherny).

2003

[21] From “disorder” to nonlinear filtration and theory of martingales. (Russian) *Mathematical Events of XX century.* Moscow: “FAZIS”, 2003, pp. 491–518 .

[22] Department of Probability Theory. *Mathematics in Moscow University on the Eve of the XXI century.* Part III. Ed. by O. B. Lupanov and A. K. Rybnikov. Moscow: Moscow State University, Centre of Applied Studies, 2003, pp. 3–92.

[23] On the defense work of A. N. Kolmogorov during World War II. *Mathematics and War* (Karlskrona, 2002). Basel: Birkhäuser, 2003, pp. 103–107.

[24] On stochastic integral representations of functionals of Brownian motion. I. (Russian) *Teor. Veroyatnost. i Primenen.* 48 (2003), no. 2, 375–385; Engl. transl. in *Theory Probab. Appl.* 48 (2003), no. 2 (with M. Yor).

[25] A life in search of the truth (on the centenary of the birth of Andrei Nikolaevich Kolmogorov). (Russian) *Priroda* no. 4 (2003), 36–53.

[26] V poiskakh istiny [In search of the truth]. (Russian) Introductory text to: *Kolmogorov.* [Dedicated to the 100th birthday of A. N. Kolmogorov.] [32] Vol. I: Biobibliography. Moscow: Fizmatlit, 2003, pp. 9–16.

[27] Zhisn’ i tvorchestvo A. N. Kolmogorova [Life and creative work of A. N. Kolmogorov]. (Russian) *Kolmogorov.* [Dedicated to the 100th birthday of A. N. Kolmogorov.] [32] Vol. I: Biobibliography. Moscow: Fizmatlit, 2003, pp. 17–209.

[28] Soglasnoe bienie serdets [Unison beating of hearts]. (Russian) Introductory text to: *Kolmogorov.* [Dedicated to the 100th birthday of A. N. Kolmogorov.] [32] Vol. II: Selected correspondence of A. N. Kolmogorov and P. S. Aleksandrov. Moscow: Fizmatlit, 2003, pp. 9–15.

[29] Mezhdu trivial’nym i nedostupnym [Between trivial and inaccessible]. (Russian) Introductory text to: *Kolmogorov.* [Dedicated to the 100th birthday of A. N. Kolmogorov.] [32] Vol. III: From the diary notes of A. N. Kolmogorov. Moscow: Fizmatlit, 2003, pp. 9–13.

[30] *Limit Theorems for Stochastic Processes.* 2nd expanded ed. Grundlehren der Mathematischen Wissenschaften, 288. Berlin: Springer-Verlag, 2003. xx+661 pp.

[31] *Theory of Random Processes.* (Russian) Moscow: Fizmatlit, 2003. 399 pp. (with A. V. Bulinsky).

[32] *Kolmogorov.* [Dedicated to the 100th birthday of A. N. Kolmogorov.] Vol. I: Biobibliography. Vol. II: Selected correspondence of A. N. Kolmogorov and P. S. Aleksandrov. Vol. III: From the diary notes of A. N. Kolmogorov. Ed. by A. N. Shiryaev. Moscow: Fizmatlit, 2003, 384 pp., 672 pp., 230 pp.

2004

[33] On an effective case of solving the optimal stopping problem for random walks. *Teor. Veroytnost. i Primenen.* 49 (2004), no. 2, 373–382; Engl. transl. in *Theory Probab. Appl.* 49 (2004), no. 2 (with A. A. Novikov).

[34] A remark on the quickest detection problems. *Statist. Decisions* 22 (2004), no. 1, 79–82.

[35] *Essentials of Stochastic Finance.* (Russian) Vol. I: Facts and Models. Vol. II: Theory. 2nd corrected ed. Moscow: "FAZIS", 2004. xxxviii+1018 pp.

2005

[36] On stochastic integrals up to infinity and predictable criteria for integrability. *Lecture Notes in Math.* 1857 (2005), 165–185 (with A. S. Cherny).

[37] A. N. Shiryaev. *Problems in Theory of Probability.* [Textbook.] (Russian). Moscow: MCCME, 2005, 416 pp.

[38] *A. N. Kolmogorov. Selected works in six volumes. Vol. 1: Mathematics and Mechanics.* Ed. by A. N. Shiryaev. Moscow: Nauka, 2005, 519 pp.

2006

[39] *Kolmogorov in Reminiscences of his Pupils.* Edited by A. N. Shiryaev. Moscow: MCCME, 2006, 475 pp.

[40] A. N. Shiryaev. Whether the Great can be seen from a far away. Instead of introduction. *Kolmogorov in Reminiscences of his Pupils.* Moscow: MCCME, 2006, 6–9.

[41] A. N. Shiryaev. Kolmogorov's attraction. *Kolmogorov in Reminiscences of his Pupils.* Moscow: MCCME, 2006, 10–27.

[42] *Stochastic Finance.* Edited and with a preface by A. N. Shiryaev et al. New York: Springer Science+Business Media, 2006, 364 pp.

[43] From "disorder" to nonlinear filtering and martingale theory. Bolibruch A. A. (ed.) et al., Mathematical events of the twentieth century. Transl. of [21]. Berlin: Springer; Moscow: PHASIS, 371–397.

[44] A proof of the Poincaré–Chernoff inequality and of the logarithmic Sobolev inequality by the methods of stochastic calculus for Brownian motion. (Russian) Uspekhi Mat. Nauk 61 (2006), no. 3(369), 177–178; Engl. transl. in *Russian Math. Surveys*, 61, no. 3, 571–573.

[45] On stochastic integral representations of functionals of Brownian motion. II. (Russian) *Teor. Veroyatn. i Primen.*, 51 (2006), no. 1, 64–77; Engl. transl. in *Theory Probab. Appl.* 51, no. 1, 65–77 (with S.-E. Graversen and M. Yor).

[46] Quickest detection of drift change for Brownian motion in generalized Bayesian and minimax settings, *Statist. Decisions*, 24, no. 4, 445–470 (with E. A. Feinberg).

[47] *Optimal Stopping and Free-Boundary Problems.* Lectures in Mathematics ETH Zurich. Birkhäuser, Basel, xxii+500 pp. (with G. Peskir).

2007

[48] On the classical, statistical, and stochastic approaches to the hydrodynamical turbulence. *Research report* no. 02, Thiele Centre for Applied Mathematics in Natural Sciences, Aarhus.

[49] On solution of the optimal stopping problem for processes with independent increments. *Stochastics* 79, no. 3–4, 393–406 (with A. Novikov).

[50] On martingale methods in the boundary crossing problems of Brownian motion. *Modern Problems of Mathematics*, 8. Steklov Mathematical Institute, Moscow, 78 pp.

[51] *Probability.* (Russian). Vol. 1, 2. 4th ed., MCCME, Moscow.

2008

[52] Predicting the last zero of Brownian motion with drift. *Stochastics* 80, no. 2, 229–245 (with J. du Toit and G. Peskir).

[53] To the 75-th anniversary of publication of "Foundations of the Theory of Probability" by Kolmogorov. (Russian) *Teor. Veroyatn. i Primen.*, 53, no. 2, 209–212 (with Yu. V. Prokhorov).

[54] On the duality principle in option pricing: semimartingale settings. *Finance Stoch.* 12, no. 2, 265–292 (with E. Eberlein and A. Papapantoleon).

[55] On stochastic models and optimal methods in the quickest detection problems. (Russian) *Teor. Veroyatn. i Primen.*, 53, no. 3, 417–436.

[56] On asymptotic optimality of second order in the minimax problem of quickest detection of the time of change of drift of Brownian motion. (Russian) *Teor. Veroyatn. i Primen.*, 53, no. 3, 557–575 (with E. V. Burnaev and E. A. Feinberg).

[57] Generalized Bayesian nonlinear quickest detection problems: on Markov family of sufficient statistics, *Proceedings of the Workshop on Mathematical Control Theory and Finance* (April 10–14, 2007, Lisbon), Springer, Berlin, 377–386.

[58] Thou Shalt Buy and Hold, *Quantitative Finance*, 8, no. 8 (with Z. Xu and X. Y. Zhou).

[59] On conditionally extemal problems of quickest detection of unpredictable times for observable Brownian motion. (Russian) *Teor. Veroyatn. i Primen.*, 53, no. 4, 21 pp.

In print

[60] Financial innovations in stochastic economics. (Russian) *Ekonomika i matem. metody*, 45, 17 pp.

[61] On the linear and nonlinear generalized Bayesian disorder problem (discrete time case), *Volume dedicated to 60th birthday of Yu. Kabanov*, Springer, 8 pp. (with P. Y. Zryumov).

[62] *Probability.* Vol. 1, 2. English translation of [51], Springer, Berlin.

[63] *Problems in Theory of Probability.* Engl. transl. of [37], Springer.

[64] *Change of Time and Change of Measure*, World Scientific, Singapore (with O. E. Barndorff-Nielsen), 330 pp.

[65] On the duality principle in option pricing. II: Multidimensional semimartingales. *Ann. Appl. Probab.* 20 pp. (with E. Eberlein and A. Papapantoleon).