CURRICULUM VITAE

General Information

Name. Alexander Cherny.

Date of birth. 1976.

Working history.

- 2000 – 2003: Assistant Professor at the Department of Probability Theory, Faculty of Mechanics and Mathematics, Moscow State University.
- 2003 – 2008: Associate Professor at the Department of Probability Theory, Faculty of Mechanics and Mathematics, Moscow State University.
- 2008 – present time: Quantitative Analyst in financial industry.

Education.

- 1998 – 2000: Ph.D. course, Moscow State University, Faculty of Mechanics and Mathematics.
- 1993 – 1998: Graduate course, Moscow State University, Faculty of Mechanics and Mathematics.

Degree.

- Doctor's degree in probability and statistics, Steklov Mathematical Institute (Moscow) of the Russian Academy of Sciences, 2006. Title: "Investigations on stochastic analysis and singular stochastic differential equations".
- Ph.D. degree in probability and statistics, Moscow State University, 2000. Title: "Qualitative behavior of solutions of singular stochastic differential equations".

Lines of research. Stochastic analysis and mathematical finance, including the following topics:

- Stochastic differential equations;
- Brownian motion and Lévy processes;
- Pricing and hedging derivative securities;
- Risk and reward measurement;
- Coherent risk measures.

Students. Three students defended Ph.D. thesis under my supervision.

Awards.

- Soros stipend for Ph.D. students, 2000;
- Premium of the Moscow Mathematical Society for young Russian scientists, 2001;
- Premium of the Moscow State University for young scientists, 2002;
- Premium of the Moscow State University for young scientists, 2003;
- Academiae Europaeae Prize for young Russian scientists, 2004;
- Premium of the Moscow State University for young scientists, 2005;
- Premium of the Moscow State University for young scientists, 2006.

Reviews for academic journals.

- Annals of Applied Probability (1);
- Finance and Stochastics (5);
- Markov Processes and Related Fields (1);
- Mathematical Finance (3);
- SIAM Journal on Control and Optimization (1);
- Stochastic Processes and Their Applications (1);
- Theory of Probability and Its Applications (17).

Lectures at the Moscow State University. Lecture courses on:

- Brownian motion and martingales (2000–2001);
- Lévy processes (2001–2002);
- Introduction to mathematical finance (2003–2004);
- Financial risk and its measurement (2004–2005);
- Advanced topics in random processes (2006);
- Asset pricing in continuous time (2001, 2002, 2003, 2004, 2006, 2007);

Seminars on:

- Probability;
- Random processes;
- Statistics.

Research seminars on:

- Mathematical finance;
- Theory of martingales;
- Stochastic analysis.

Organizational activities. Organizer of the First–Fifth "Kolmogorov Students' Competitions on Probability Theory" (Moscow State University, 2001, 2003, 2004, 2005, 2006).

Member of the Secretariat of the International Conference "Kolmogorov and Contemporary Mathematics" (Moscow State University, June 2003).

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Website. http://mech.math.msu.su/~cherny

Talks and Lectures

Talks as invited speaker

- 9th Vilnius Conference on Probability Theory and Mathematical Statistics, section "Finance". Vilnius, Lithuania, 2006.
- Advances in Mathematics of Finance. Bedlewo, Poland, 2007.

Talks at international conferences.

- Workshop on Mathematical Finance. Paris, France, 1998.
- Mathématiques Financières. Paris, France, 1999.
- Second Nordic-Russian Symposium on Stochastic Analysis. Beitostoelen, Norway, 1999.
- 12th Winter School on Stochastic Processes. Siegmundsburg, Germany, 2000.
- Workshop on Lévy Processes and Related Subjects. Aarhus, Denmark, 2000.
- Workshop on Fluid Mechanics and Stochastic Flows. Aarhus, Denmark, 2001.
- 12th European Young Statisticians Meeting. Janska Dolina, Slovakia, 2001.
- Second World Congress of the Bachelier Finance Society. Crete, Greece, 2002.
- Conference "Kolmogorov and Contemporary Mathematics". Moscow State University, 2003.
- Third World Congress of the Bachelier Finance Society. Chicago, USA, 2004.
- Workshop on Stochastic Equations and Related Topics (in honor of the 60th anniversary of H.-J. Engelbert). Jena, Germany, 2005.
- Stanford-Tsukuba Western Consortium in Quantitative Finance Workshop. Stanford, USA, 2007.
- Stochastic Processes and Their Applications. Urbana-Champaign, USA, 2007.
- Hedge fund replication forum. Downtown Association, New York, USA, 2008.

Lectures at schools.

- Lectures at the Summer School *"From Lévy processes to semimartingales: recent theoretical developments and applications in finance"*. University of Aarhus, Denmark, 2002.

Talks at the universities.

- Carnegie Mellon University, Pittsburgh, USA, 2005.
- Columbia University, New York, USA, 2005, 2007, 2008.
- ETH Zurich, Switzerland, 2004.
- Imperial College of London, UK, 2002.
- Isaak Newton Institute for Mathematical Sciences, Cambridge, UK, 2005.
- New York University, USA, 2007.
- Princeton University, USA, 2007.
- Saint Petersburg Department of Steklov Mathematical Institute, 2005, 2006, 2007.
- Stanford University, USA, 2007.
- University of Aarhus, Denmark, 2000.
- University of Angere, France, 2003.
- University of Cambridge, UK, 2002.
- University of Florida, USA, 2007.
- University of Jena, Germany, 1999, 2000, 2001, 2002, 2004.
- University of Maryland, USA, 2005, 2007.

- University of Minnesota, USA, 2001.
- University of North Carolina at Charlotte, 2007.
- University Paris-VI, France, 2003.
- Vienna University of Technology, Austria, 2002, 2004, 2006.

Scientific Works

Monograph.

Singular stochastic differential equations (written jointly with H.-J. Engelbert). Lecture Notes in Mathematics, **1858** (2004), 128 p.

Papers.[1]

1. *Vector stochastic integrals in the fundamental theorem of asset pricing.* Russian Mathematical Surveys, **53** (1998), No. 4, p. 221–222.
2. *Some distributional properties of the Brownian motion with a drift and an extension of P. Lévy's theorem* (written jointly with A.N. Shiryaev). Theory of Probability and Its Applications, **44** (1999), No. 2, p. 466–472.
3. *Qualitative behaviour of solutions of stochastic differential equations with singular coefficients.* Russian Mathematical Surveys, **55** (2000), No. 3, p. 193–194.
4. *Convergence of some integrals associated with Bessel processes.* Theory of Probability and Its Applications, **45** (2000), No. 2, p. 251–267.
5. *On the strong and weak solutions of stochastic differential equations governing Bessel processes.* Stochastics and Stochastics Reports, **70** (2000), No. 3, p. 213–219.
6. *Qualitative behavior of solutions of stochastic differential equations with singular coefficients* — Ph.D. thesis, 2000, 104 p.
7. *On criteria for the uniform integrability of Brownian stochastic exponentials* (written jointly with A.N. Shiryaev). In: Optimal Control and Partial Differential Equations. In honor of Alain Bensoussan's 60th birthday. IOS Press, 2001, p. 80-92.
8. *Families of consistent probability measures.* Theory of Probability and Its Applications, **46** (2001), No. 1, p. 160–163.
9. *Principal values of the integral functionals of Brownian motion: existence, continuity and an extension of Itô's formula.* Lecture Notes in Mathematics, **1755** (2001), p. 348–370.
10. *On the uniqueness in law and the pathwise uniqueness for stochastic differential equations.* Theory of Probability and Its Applications, **46** (2001), No. 3, p. 483–497.
11. *Limit behaviour of the "horizontal-vertical" random walk and some extensions of the Donsker-Prokhorov invariance principle* (written jointly with A.N. Shiryaev and M. Yor). Theory of Probability and Its Applications, **47** (2002), No. 3, p. 498–516.
12. *Vector stochastic integrals and the fundamental theorems of asset pricing* (written jointly with A.N. Shiryaev). Proceedings of the Steklov Mathematical Institute, **237** (2002), p. 12–56.
13. *Change of time and measure for Lévy processes* (written jointly with A.N. Shiryaev). Lectures at the Summer Schools "From Lévy processes to semimartingales: recent theoretical developments and applications in finance" (Aarhus, 2002).
14. *Isolated singular points of stochastic differential equations* (written jointly with H.-J. Engelbert). In: R. Buckdahn, H.-J. Engelbert, M. Yor (Eds.). Stochastic processes and related topics. Taylor & Francis, 2002, p. 55–80.
15. *Separating times for measures on filtered spaces* (written jointly with M.A. Urusov). Theory of Probability and Its Applications, **48** (2003), No. 2, p. 416–427.
16. *On minimization and maximization of entropy in various disciplines* (written jointly with V.P. Maslov). Theory of Probability and Its Applications, **48** (2003), No. 3, p. 466–486.

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[1]Including two dissertations and working papers and excluding conference theses.

17. *Invariant distributions for singular stochastic differential equations.* Stochastics and Stochastics Reports, **76** (2004), No. 2, p. 101–112.

18. *On stochastic integrals up to infinity and predictable criteria for integrability* (written jointly with A.N. Shiryaev). Lecture Notes in Mathematics, 1857 (2004), p. 165–185.

19. *Some particular problems of martingale theory.* In: Yu. Kabanov, R. Liptser, J. Stoyanov (Eds.). From Stochastic Calculus to Mathematical Finance. Springer, 2006, p. 109–124.

20. *On the absolute continuity and singularity of measures on filtered spaces: separating times* (written jointly with M.A. Urusov). In: Yu. Kabanov, R. Liptser, J. Stoyanov (Eds.). From Stochastic Calculus to Mathematical Finance. Springer, 2006, p. 125–168.

21. *Weighted V@R and its properties.* Finance and Stochastics, **10** (2006), p. 367–393.

22. *Coherent measurement of factor risks* (written jointly with D. Madan). SSRN, 2006, 53 p.

23. *Pricing and hedging in incomplete markets with coherent risk* (written jointly with D. Madan). SSRN, 2006, 22 p.

24. *CAPM, rewards, and empirical asset pricing with coherent risk* (written jointly with D. Madan). SSRN, 2006, 20 p.

25. *Investigations on stochastic analysis and singular stochastic differential equations* — Doctoral thesis, 2006, 223 p.

26. *General arbitrage pricing model: probability approach.* Lecture Notes in Mathematics, **1899** (2007), p. 415–446.

27. *General arbitrage pricing model: transaction costs.* Lecture Notes in Mathematics, **1899** (2007), p. 447–462.

28. *General arbitrage pricing model: possibility approach.* Lecture Notes in Mathematics, **1899** (2007), p. 463–481.

29. *Pricing with coherent risk.* Theory of Probability and Its Applications, **52** (2007), No. 3, p. 506–540.

30. *Optimality with coherent risk.* Theory of Probability and Its Applications, forthcoming, 34 p.

31. *Dilatation monotone risk measures are law invariant* (written jointly with P.G. Grigoriev). Finance and Stochastics, **11** (2007), p. 291–298.

32. *Pricing and hedging European options with discrete-time coherent risk.* Finance and Stochastics, **11** (2007), p. 537–569.

33. *The Kolmogorov Students' Competitions on Probability Theory.* Mathematics Today, A.A. Dorogovtsev (Ed.), Kiev, 2007, p. 147–198.

34. *New measures for performance evaluation* (written jointly with D. Madan). Review of Financial Studies, **22** (2009), p. 2571–2606.

35. *Capital allocation and risk contribution with discrete-time coherent risk.* To appear in Mathematical Finance, 20 p.

36. *Brownian moving averages have conditional full support.* To appear in the Annals of Applied Probability, 5 p.

37. *Risk-reward optimization with discrete-time coherent risk.* To appear in Mathematical Finance, 20 p.

38. *Concave distortion semigroups* (written jointly with D. Filipovic). Submitted, 19 p.

39. *Divergence utilities* (written jointly with M. Kupper). Submitted, 25 p.

40. *On two approaches to coherent risk contribution* (written jointly with D.V. Orlov). To appear in Mathematical Finance, 15 p.

41. *Pricing and hedging through coherent acceptability* (written jointly with D. Madan). In preparation, 24 p.

42. *Recovering coherent risk aversion and scaling consistency* (written jointly with D. Madan). In preparation, 14 p.

43. *Range options* (written jointly with B. Dupire). In preparation, 7 p.

44. *On measuring risk with scarce observations* (written jointly with R. Douady and S. Molchanov). To appear in Finance and Stochastics, 18 p.

45. *On measuring hedge fund risk* (written jointly with R. Douady and S. Molchanov). In preparation, 12 p.