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CURRICULUM VITAE

Employment

since 2009	Professor, Mannheim University
2009	Associate Professor, TU Munich
2007–2008	Associate Professor, Cornell ORIE
2003–2007	Associate Professor, TU Berlin
2002–2003	Heisenberg Fellow at UBC, Vancouver, Canada
2001–2002	Visiting Professor at TU Berlin
1995–2001	Research Associate (C1), Humboldt University of Berlin
1997–1998	DFG Fellow at MSRI, Berkeley, U.S.A.
1993–1994	Research Associate, University of Bonn
1992–1993	Fellow of the Bonn Graduate School of Mathematics
1989–1991	Teaching Assistant, University of Bonn

University education

2001	Habilitation, Humboldt University of Berlin
1994	Doctoral degree “Dr. rer. nat.”, University of Bonn
1992	Diploma in Mathematics, University of Bonn

Selected research grants

P.I., “*Optimization of dynamic consumption streams under uncertainty*”, funded by the German National Science Foundation DFG through Collaborative Research Center SFB 649 *Economic Risk* (2005–2008)

P.I., “*Impulse control problems in algorithmic trading*”, Quantitative Products Laboratory (2006–2007)

P.I., “*Optimal stopping problems and local implied volatility for American options*”, Quantitative Products Laboratory (2006–2007)

P.I., “*Optimization problems for market impact models and order book dynamics*”, Quantitative Products Laboratory (2006–2007)

P.I., “*Algorithmic trading in practice*”, Quantitative Products Laboratory (2006–2007)

P.I., “*Duality and optimal control for soft constraints*”, Quantitative Products Laboratory (2006–2007)

P.I., “*Analysis of a stochastic volatility model with four factors*”, Quantitative Products Laboratory (2006–2007)

P.I., “*Optimization problems for market impact models*”, Quantitative Products Laboratory (2006–2007)

Member, International Research Training Group Berlin-Zürich *Stochastic Models of Complex Processes and their Applications*, funded by the Swiss and German National Science Foundations (2006–2007)

P.I. (with A. Bovier), “*Risk analysis for the cost development of the XFEL project*”, Deutsches Elektronensynchrotron DESY (2005–2007)

P.I. (from 2002-2006 with H. Föllmer), “*Beyond Value at Risk: quantifying and hedging the downside risk*”, funded by the German National Science Foundation DFG through DFG Research Center MATHEON (2002–2007)

Member, Research Training Group *Stochastic Processes and Probabilistic Analysis*, funded by the German National Science Foundation DFG

TMR Network *Stochastic Analysis and its Applications* (1996–2001)

Academic services

Member of the EURANDOM Scientific Council, (since 2009)

Program committee, 2009 INFORMS Applied Probability Conference

Scientific Director, Quantitative Products Laboratory, Berlin (2006–2007)

Scientist in Charge for the Application Area Finance of the DFG Research Center MATHEON “Mathematics for Key Technologies” (2005–2007)

Member of the QP Lab steering committee (2006–2007)

Coordinator of SOCRATES/ERASMUS cooperations of TU Berlin with Ecole Polytechnique de Paris, TU Wien, Universitat de Barcelona, Université Paris 7, Université Paris Sud, University of Durham, Université Louis Pasteur Strasbourg, Université Libre de Bruxelles, Katholieke Universiteit Leuven, Università degli Studi di Perugia, Universidad de Granada, and others (2004-2007)

Reviewer for the National Science Foundations DFG (Germany), NSF (U.S.A.), SNF (Switzerland), and FWF (Austria)

Editorial activities

Associate Editor of *SIAM Journal of Financial Mathematics* (since 2008)

Associate Editor of *Finance & Stochastics* (since 2008)

Associate Editor of *Jahresbericht der DMV* (since 2005)

Supervised Ph.D. theses

Hans Bühler: *Volatility markets: consistent modeling, hedging and practical implementation*. TU Berlin (2006).

Torsten Schöneborn: *Trade execution in illiquid markets. Optimal stochastic control and multi-agent equilibria*. TU Berlin (2008).

Stephan Sturm: *Small-time large deviations for sample paths of infinite-dimensional symmetric Dirichlet processes*. TU Berlin (2010).

Wiebke Wittmüss: *Optimization of dynamic consumption streams under uncertainty*. TU Berlin (expected April 2010).

Supervised master and diploma theses

Yanlan Xu: *Time-inhomogeneous portfolio liquidation*. TU Munich (2009)

Christian Hanke: *Portfolio optimization under partial information*. TU Munich (2009) (with J. Muhle-Karbe)

Yuzhang Zong: *CPPI in discrete time*. TU Munich (2009)

Yingying Xi: *Block trade optimization in bull and bear markets. Diploma thesis*. TU Berlin (2008)

Vasco Varduhn: *Portfoliooptimierung in einem stochastischen Faktormodell: Dualität und optimale Kontrolle*. Diploma thesis, TU Berlin (2008)

Frank Tomaschke: *Hedging mit minimalem Shortfall-Risiko für konvexe Risikomaße*. Diploma thesis, TU Berlin (2008)

Robert Rossbach: *Implied volatility of swaptions in an extended LIBOR market model with stochastic volatility*. Diploma thesis, TU Berlin (2008)

Qiong Shen: *Weighted variance swap markets. Diploma thesis*. TU Berlin (2007)

Xiaofeng Fu: *Equity derivatives with defaultable underlying*. Diploma thesis, TU Berlin (2007)

Robert Fitzner: *Superhedging under soft constraints in discrete-time market model*. Diploma thesis, TU Berlin (2007)

Adrien Roux: *Optimal portfolio liquidation with quadratic and non-quadratic risk measures*. Double-diploma with Ecole Centrale de Paris (2007).

Stefanie Stark: *Darstellungsproblem und Dualität für amerikanische Optionen*. Diploma thesis, TU Berlin (2007)

Boris Tschierschke: *Darstellungsproblem und Dualität für amerikanische Optionen*. Diploma thesis, TU Berlin (2007)

Antje Schulz: *Optimal execution in limit order books with call auctions*. Diploma thesis, TU Berlin (2007)

Michael Rybak: *Sample path explosion in multifactor stochastic volatility models*. Diploma thesis,

TU Berlin (2007)

Lars Putzig: *Soft constraints – a penalty approach to the superhedging problem*. Diploma thesis, TU Berlin (2007)

Xiumei Wang: *Zur Bewertung mehrfach ausübbarer Optionen mittels Dualität und Monte-Carlo-Simulation*. Diploma thesis, TU Berlin, in cooperation with Christian Bender and John Schoenmakers at WIAS (2007)

Stefanie Hartwig: *Absicherung eines optimierten Pumpspeicherkraftwerks am Strommarkt – Bewertung, Flexibilität und Realisierung am Terminmarkt*. Diploma thesis, TU Berlin, in cooperation with Vattenfall Europe AG (2007).

Alla Slynko: *Optimal control problems for interacting jump processes: a numerical approach*. Diploma thesis, TU Berlin (2006).

Marcel Binkowski: *Ein probabilistischer MOWSE-Score in der massenspektroskopischen Analyse*. Diploma thesis, TU Berlin, in cooperation with Proteome Factory AG (2006).

Nicole Heruth: *Robuste Optimierung von Konsum- und Portfoliostrategien in einem zeitdiskreten Finanzmarkt*. Diploma thesis, TU Berlin (2006).

Dae-Wie Rha: *Lokale Volatilitätsmodelle und Zeittransformation*. Diploma thesis, TU Berlin (2006).

Karoline Pausch: *Ermittlung signifikanter Zeitreihen für die charttechnische Analyse*. Diploma thesis, TU Berlin, in cooperation with Fipertech GmbH (2006).

Mayukh Gayen: *Time reduction algorithms for VaR decision problems*. Master thesis, IIT Madras, carried out at TU Berlin and supported by DAAD (2006).

Dirk Jentsch: *Entwicklung und Implementierung impliziter Baummodelle zur Optionsbewertung*. Diploma thesis, TU Berlin (2006).

Mitja Stadje: *Convexity of option prices in a local volatility model*. Diploma thesis, TU Berlin (2005).

Quentin Serres: *Exotische Optionen im Heston-Model: Malliavin Kalkül, lokale Volatilität und numerische Analysis*. Double-Diploma with Ecole Central de Paris and TU Berlin (2005).

Olivier Souliac: *Sensitivitätsanalyse von Optionspreisen mit Hilfe des Malliavin-Kalküls*. Double-Diploma with Ecole Central de Paris and TU Berlin (2005).

Vira Sommer: *Anwendungen der statistischen Testtheorie auf die robuste Konstruktion optimaler Investitionsstrategien*. Diploma thesis, TU Berlin (2005).

Bernd Vorbrugg: *Optimale Investition in unvollständigen Finanzmärkten unter Abschwächung der Inada-Bedingung*. Diploma thesis, TU Berlin (2005).

Gerrit Reininghaus: *Raue Pfade und pfadweises Itô-Kalkül*. Diploma thesis, Humboldt-Universität zu Berlin (2005).

- Turgay Ercan: *Arbitrage theory under consideration of transaction costs*. Diploma thesis, TU Berlin (2005).
- Thomas Ilene: *Asymptotics of the average growth of universal portfolio strategies*. Diploma thesis, TU Berlin (2005).
- Kerstin Goluchowicz: *Generation of optimal scenario trees with applications to the approximation of continuous processes*. Diploma thesis, TU Berlin (2005).
- Andreas Hahn: *Arbitrage-free option pricing under transaction costs*. Diploma thesis, TU Berlin (2004).
- Thomas Hopp: *Analysis of a financial optimization problem with nonconvex loss function*. Diploma thesis, TU Berlin (2004).
- Alexander Adamescu: *The competing species model with finitely many interacting superprocesses*. Diploma thesis, Humboldt-Universität zu Berlin (2004) (with S. Evans (Berkeley) and H. Föllmer (Humboldt)).
- Holger Pint: *Pricing and hedging of American options in incomplete time-discrete market models*. Diploma thesis, TU Berlin (2003).
- Steffen Krüger: *Investigation of efficient hedging strategies with respect to generalized criteria for shortfall risk*. Diploma thesis, TU Berlin (2003).
- Nicolas Vanhoutteghem: *Convex measures of risk*. Diploma thesis, École Polytechnique Fédérale de Lausanne (2001) (with H. Föllmer and R. Dalang).
- Camilla Hiertner: *The Dupire volatility model versus the stochastic volatility model for European call options*. Master thesis, Royal Institute of Technology, Stockholm (2001) (with B. Djehiche).
- Hans Bühler: *On the information structure of Brownian motions*. Diploma thesis, Humboldt-University Berlin (2001) (with H. Föllmer).

INVITED LECTURES

Lecture series and minicourses

3rd AIMS Summer School in Mathematical Finance, Cape Town: *Market impact modeling, price manipulation, and optimal trade execution*. (6 hours, February 2010)

9th Winter School on Mathematical Finance, Lunteren: *Market impact models and optimal trade execution* (5 hours, 2010)

National University of Singapore: *Risk measures, robust preferences, and robust portfolio choice* (with H. Föllmer, 12 hours, 2009)

Second SMAI European Summer School on Financial Mathematics, Paris: *Financial modeling under illiquidity: viability of market impact models and optimal execution* (6 hours, 2009)

ENPC and Université de Marne la Vallée, Paris: *Some aspects of model uncertainty and robustness in finance and economics* (4 hours, 2006)

National Tsing Hua and Chiao-Tung Universities, Hsinchu: *Model uncertainty, robustness and risk measures* (9 hours, 2006)

Carnegie Mellon University, Pittsburgh: *Heath Lectures* (10 hours, 2006).

Institut Henri Poincaré, Paris: *Cours Bachelier* (8 hours, 2005)

Academia Sinica, Taipei: *Risk measures* (4 hours, 2004)

8th Symposium on Probability and Stochastic Processes, Universidad de las Americas, Puebla: *Risk measures and robust optimization problems* (4 hours, 2004)

Invited conference, colloquium, and seminar talks since 2003

2010

Oxford University: *Nomura Seminar*

Warwick University: *CRISM Seminar*

UC Los Angeles: *IPAM Workshop on New Directions in Financial Mathematics*

2009

KIT Karlsruhe: *Stochastics seminar*

National University of Singapore: *Workshop on Risk Measures and Robust Optimization in Finance*

TU Vienna: *PRisMa 2009 – Workshop on Portfolio Risk Management*

Kyoto: *Congress on Stochastic Analysis for and from Finance*

Berlin: *33rd Conference on Stochastic Processes and Their Applications* (plenary talk)

Oxford-Man Institute: *Conference on Liquidity – Modelling, Recent Crises and Challenges*

ENPC and Université de Marne-la-Vallée, Paris: *Séminaire en stochastique et finance*

TU Munich: *IAS Workshop on Advances in Risk Analysis and Stochastic Modelling*

University of Jena: *Workshop on Finance and Insurance*

2008

London: *Quant Congress Europe*

University of Chicago: *Liquidity Conference at the Stevanovich Center for Financial Mathematics*

ETH Zurich: *Talks on Mathematical Finance*

RICAM Linz: *Workshop on Advanced Modeling in Finance and Insurance*

University of Bonn: *Seminar on Stochastics*

Cornell University: *NSF Workshop on Liquidity Risk*

UC Santa Barbara: *NSF/CBMS Conference on Convex Duality Methods in Mathematical Finance*

Swiss Banking Institute, Zürich: *Talks in Financial Engineering*

Pitesti: *3rd General AMaMeF Conference*

Stanford University: *Financial Mathematics Seminar*

UC Berkeley: *IEOR Seminar*

Cornell University: *Probability Seminar*

Columbia University: *Probability Seminar*

Oberwolfach: *Workshop on Stochastic Analysis in Finance and Insurance*

San Diego: *Special Session on Financial Mathematics at the AMS Meeting*

2007

Princeton University: *4th CCCP conference*

Columbia University: *DRO-IEOR Seminar*

Humboldt University Berlin: *Fest colloquium in honor of Hans Föllmer*

Stefan Banach Center, Bedlewo: *Second AMaMeF conference*

Universität Ulm: *Mathematics Colloquium*

University of Kaiserslautern: *Conference on Modern Perspectives in Real and Stochastic Analysis*

Cornell University: *Financial Engineering Seminar*

Cornell University: *Joint session of the Statistics and Financial Engineering Seminars*

UC Santa Barbara: *CRFMS Seminar*

2006

Princeton University: *Conference on Risk Measures and Robust Control in Finance*

TU Berlin: *Fest der Mathematik*

Academia Sinica, Taipei: *Probability Seminar*

Université de Marne-la-Vallée, Paris: *Séminaire en stochastique et finance*

Oxford University: *Stochastic Analysis Seminar*

ETH Zürich: *Talks in Financial and Actuarial Mathematics*

University of Frankfurt: *Mathematics Colloquium*

2005

Humboldt-Universität, Berlin: *Jour fixe of the SFB 649*

Deutsche Bank, London: *Workshop on Stochastic Analysis in Finance*

École Polytechnique, Paris: *Séminaire de la groupe de travail en finance*

Isaac Newton Institute, Cambridge: *Developments in Quantitative Finance*

Université de Marne-la-Vallée, Paris: *Séminaire en stochastique et finance*

Max-Planck-Institute Leipzig: *Workshop on Stochastic Analysis and Applications in Finance*
EURANDOM, Eindhoven: *Workshop on Risk Measures and Risk Management*
MLU Halle: *Kolloquium des Instituts für Stochastik und Optimierung*
University of Freiburg: *Mathematics Colloquium*

2004

TU Vienna: *Seminar on Financial and Actuarial Mathematics*
University of Leipzig: *Workshop on Risk Management*
National University of Kaosiung: *Mathematics Colloquium*
National Chung Chen University: *Mathematics Colloquium*
National Tsing Hua University: *CTS Probability Seminar*
University of Heidelberg: *DMV-Tagung*
TU München: *Workshop on Advanced Mathematical Methods in Finance*

2003

University of Alberta, Edmonton: *Mathematics Colloquium*
University of Alberta, Edmonton: *Seminar on Stochastic Processes*
Carnegie Mellon University Pittsburgh: *Computational Finance Seminar*
Humboldt University Berlin: *Mathematical Finance Seminar*
TU Munich: *Seminar on Financial and Actuarial Mathematics*
LMU Munich: *Mathematics Colloquium*

PUBLICATIONS

Books

- [1] (with H. FÖLLMER) *Stochastic Finance: An Introduction in Discrete Time*. Russian edition, translated by Yuliya Mishura and Georgiy Shevshenko, 496 pages, Moscow: MCCME, ISBN 978-5-94057-346-3 (2008).
- [2] (with H. FÖLLMER) *Stochastic Finance: An Introduction in Discrete Time*. Second revised and extended edition, xi + 459 pages, Berlin: de Gruyter Studies in Mathematics, Vol. 27, ISBN 3-11-018346-3 (2004).
- [3] (with H. FÖLLMER) *Stochastic Finance: An Introduction in Discrete Time*. ix + 422 pages. Berlin: de Gruyter Studies in Mathematics, Vol. 27, ISBN 3-11-017119-8, first edition 2002.

Book chapters

- [4] (with H. FÖLLMER and S. WEBER) *Robust preferences and robust portfolio choice*. In: Mathematical Modelling and Numerical Methods in Finance (Ed. P. Ciarlet, A. Bensoussan, Q. Zhang), Handbook of Numerical Analysis **15**, 29-88 (2009).
- [5] (with J. BLATH) *Finanz- und Versicherungsmathematik*. In: Teubner Taschenbuch der Mathematik, Bd. 2 (Ed. E. Zeidler), approx. 50 pages, Wiesbaden: Teubner-Verlag, forthcoming.
- [6] (with H. FÖLLMER) *Coherent and convex risk measures*. Encyclopedia of Quantitative Finance, forthcoming.

Research papers and preprints

- [7] (with J. GATHERAL and A. SLYNKO) *Transient linear price impact and Fredholm integral equations..* Preprint (2010).
- [8] (with A. ALFONSI and A. SLYNKO) *Order book resilience, price manipulation, and the positive portfolio problem*. Preprint (2009).
- [9] (with T. SCHÖNEBORN and MIKE TEHRANCI) *Optimal basket liquidation for CARA investors is deterministic*. To appear in Applied Mathematical Finance.
- [10] (with A. ALFONSI) *Optimal execution and absence of price manipulations in limit order book models*. Preprint (2009).
- [11] (with A. ALFONSI and A. FRUTH) *Optimal execution strategies in limit order books with general shape functions*. Quantitative Finance **10**, 143-157 (2010).
- [12] (with T. SCHÖNEBORN) *Risk aversion and the dynamics of optimal liquidation strategies in illiquid markets*. Finance and Stochastics **13**, 181-204 (2009).
- [13] (with T. SCHÖNEBORN) *Liquidation in the face of adversity: stealth vs. sunshine trading, predatory trading vs. liquidity provision*. Submitted for publication (2007).
- [14] (with A. ALFONSI and A. FRUTH) *Constrained portfolio liquidation in a limit order book model*. Banach Center Publ. **83**, 9-25 (2008).

- [15] *Robust optimal control of consumption-investment strategies in a stochastic factor model.* Mathematical Methods of Operations Research **67**, No. 1, 1-20 (2008).
- [16] (with M. STADJE) *Robustness of Delta hedging for path-dependent options in local volatility models.* J. Applied Probab. **44**, 865-879 (2007).
- [17] (with D. HERNÁNDEZ-HERNÁNDEZ) *Robust maximization of consumption with logarithmic utility.* Proceedings of the 2007 American Control Conference, 1120-1123 (2007).
- [18] (with D. HERNÁNDEZ-HERNÁNDEZ) *A control approach to robust utility maximization with logarithmic utility and time consistent penalties.* Stoch. Processes Appl. **117**, No. 8, 980-1000 (2007).
- [19] *Optimal investments under aversion against risk and ambiguity: a duality approach.* Finance Stochast. **11**, No. 1, 107-129 (2007).
- [20] (with D. HERNÁNDEZ-HERNÁNDEZ) *Robust utility maximization in a stochastic factor model.* Stat. Decisions **24**, no. 1, 109-125 (2006).
- [21] *Risk measures and robust optimization problems.* Stochastic Models **22**, 753-831 (2006).
- [22] (with C.-T. WU) *Duality theory for optimal investments under model uncertainty.* Stat. Decisions **23**, no. 3, 199-217 (2005).
- [23] *Optimal investments for robust utility functionals in complete market models.* Math. Oper. Research. **30**, no. 3, 750-764 (2005).
- [24] *On the Neyman-Pearson problem for law-invariant risk measures and robust utility functionals.* Ann. Appl. Probab. **14**, 1398-1423 (2004).
- [25] (with H. FÖLLMER) *Convex measures of risk and trading constraints.* Finance Stochast. **6**, No. 4, 429-447 (2002).
- [26] (with H. FÖLLMER) *Robust preferences and convex measures of risk.* Advances in Finance and Stochastics, 39-56, Springer (2002).
- [27] *Geometric Analysis for symmetric Fleming-Viot operators: Rademacher's theorem and exponential families.* Potential Analysis **17**, No. 4, 351-374 (2002).
- [28] (with M. RÖCKNER) *Rademacher's theorem on configuration spaces and applications.* J. Funct. Anal. **169**, No.2, 325-356 (1999).
- [29] *Existence and regularity for a class of infinite-measure (ξ, ψ, K) -superprocesses.* J. Theor. Probab. **12**, No.4, 1011-1035 (1999).
- [30] *Cramér's condition and Sanov's theorem.* Stat. Probab. Lett. **39**, No.1, 55-60 (1998).
- [31] (with B. DJEHICHE) *Large deviations for hierarchical systems of interacting jump processes.* J. Theor. Probab. **11**, No.1, 1-24 (1998).
- [32] *Moderate deviations and functional LIL for super-Brownian motion.* Stochastic Processes Appl. **72**, No.1, 11-25 (1997).

- [33] *Geometric aspects of Fleming-Viot and Dawson-Watanabe processes.* Ann. Probab. **25**, No.3, 1160-1179 (1997).
- [34] *Sample path large deviations for super-Brownian motion.* Probab. Theory Relat. Fields **104**, No.3, 319-347 (1996).
- [35] *Große Abweichungen für die Pfade der Super-Brownschen Bewegung.* Bonner Math. Schriften **277**, 1-91 (1995).

Non-refereed conference proceedings

- [36] (with T. SCHÖNEBORN) *Optimal portfolio liquidation: market impact models and optimal control.* To appear in Oberwolfach Reports.
- [37] *Some small-time asymptotics for super-Brownian motion.* In: Workshop on Large Deviations and Statistical Mechanics. P. Eichelsbacher and M. Löwe (eds.), SFB 343, Bielefeld (1996).
- [38] *Large deviations for hierarchically interacting Markov chains.* In: Workshop on Probability Theory and its Applications. P. Eichelsbacher and M. Löwe (eds.), SFB 343, Bielefeld (1997).

Book reviews

- [39] *“Binomial models in finance” by J. van der Hoek and R. Elliott.* ISI Short Book Reviews (2006).
- [40] *“Diffusions, Superdiffusions and Partial Differential Equations” von E. B. Dynkin.* Jahresbericht der DMV 105, No. 4 (2003).

Discussion papers

- [41] (with T. SCHÖNEBORN) *Optimal basket liquidation with finite time horizon for CARA investors.* (2008).
- [42] (with T. SCHÖNEBORN) *Optimal portfolio liquidation for CARA investors.* (2007).
- [43] *Criteria for exponential tightness in path spaces.* Discussion Paper, SFB 303, Bonn (1995).

Lecture notes

- [44] *Wahrscheinlichkeitstheorie II.* TU Berlin, 116 pp. (2005).
- [45] *Finanzmathematik II.* TU Berlin, 115 pp. (2005).
- [46] *Markovsche Ketten.* TU München (2009).