Christian Bayer

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Born: November 23, 1979—Linz, Austria
Nationality: Austria

Current position

Research Scientist (wissenschaftlicher Mitarbeiter), Weierstrass Institute, Berlin

Areas of specialization

Stochastic numerics; Quantitative finance.

Academic career

2008	Postdoc, Institute of Applied Mathematics, University of Bonn
2008-2009	Postdoc, Institute of Mathematics, KTH, Stockholm
2009-2010	Postdoc, Institute of Mathematics, TU Berlin
2010-2012	Assistant Professor, Institute of Mathematics, University of Vienna
2012-present	Research scientist (Wissenschaftlicher Mitarbeiter), Weierstrass Institute, Berlin
2015	Visiting Professor, Humboldt Universität zu Berlin (at leave from Weierstrass Institute)

Education

2004	DI in Mathematics, TU Wien
2009	PhD (Dr. tech.) in Mathematics, TU Wien
2019	Habilitation in Mathematics, TU Berlin

Grants, honors & awards

2015 DFG research grant BA 5484/1 "Rough stochastic volatility and related topics"

2016 DFG research unit FOR 2402 "Rough paths, stochastic partial differential equations and related topics"

2018 Continuation of DFG research unit FOR 2402 "Rough paths, stochastic partial differential equations and related topics"

2019 DFG cluster of excellence MATH+ project EF1-5 "On robustness of deep neural networks"

2019 DFG cluster of excellence MATH+ project AA4-2 "Optimal control in energy markets using rough analysis and deep networks", renewed 2021

2020 DFG International Research Training Group IRTG 2544 "Stochastic Analysis in Interaction"

2021 DFG cluster of excellence MATH+ project EF1-13 "Stochastic and Rough Aspects in Deep Neural Networks"

2022 DFG cluster of excellence MATH+ project "Volatile Electricity Markets and Battery Storage: A Model-Based Approach for Optimal Control"

Publications (selected)

Journal articles

2014 Christian Bayer, John Schoenmakers: *Simulation of conditional diffusions via forward-reverse stochastic representations*, Annals of Applied Probability 24(5), 1994–2032, 2014.

2014 Christian Bayer, Peter Laurence: *Asymptotics beats Monte Carlo: The case of correlated CEV baskets*, Communications on Pure and Applied Mathematics, 67(10):1618–1657, 2014.

2016 Christian Bayer, Peter Friz, Sebastian Riedel, John Schoenmakers: *From rough-path estimates to multi-level Monte Carlo*, SINUM 4(3), 1449–1483, 2016.

2016 Christian Bayer, Peter Friz, Jim Gatheral: *Pricing under rough volatility*, Quantitative Finance, 16(6), 887–904, 2016.

2017 Christian Bayer, Ulrich Horst, Jinniao Qiu: *A functional limit theorem for limit order books with state dependent price dynamics*, Annals of Applied Probability, 27(5), 2753–2806, 2017.

2020 Christian Bayer, Peter Friz, Paul Gassiat, Jörg Martin, Benjamin Stemper: *A regularity structure for rough volatility*, Mathematical Finance 30(3), 782-832, 2020.

2020 Christian Bayer, Raul Tempone, Sören Wolfers: *Pricing American Options by Exercise Rate Optimization*, Quantitative Finance 20 (11), 1749-1760, 2020.

2021 Christian Bayer, Fabian Harang, Paolo Pigato: *Log-modulated rough stochastic volatility models*, SIAM Journal on Financial Mathematics 12 (3), 1257-1284, 2021.

2022 Christian Bayer, Jinniao Qiu, Yao Yao: *Pricing Options Under Rough Volatility with Backward SPDEs*, SIAM Journal on Financial Mathematics 13 (1), 179-212, 2022.

2022 Christian Bayer, Masaaki Fukasawa, Shonosuke Nakahara: *On the weak convergence rate in the discretization of rough volatility models* SIAM Journal on Financial Mathematics 13(2), 2022.