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David J. Prömel

Curriculum Vitae

Academic Positions

09/2017 – present **Departmental lecturer**, *University of Oxford*.
Member of the Mathematical and Computational Finance Group

10/2015 – 08/2017 **Postdoctoral researcher**, *ETH Zürich*.
Member of the working group of Josef Teichmann

Education

10/2012 – 09/2015 **PhD studies**, *Humboldt-Universität zu Berlin* and *Berlin Mathematical School*.
Supervisor: Peter Imkeller

10/2007 – 08/2012 **Studies in mathematics with minor economics**, *Humboldt-Universität zu Berlin*.
Diploma in Mathematics

10/2010 – 07/2011 **Studies in mathematics**, *Imperial College London*.
Imperial College International Diploma

08/2004 – 06/2007 **Secondary school (Gymnasium)**, *Katholische Schule Liebfrauen Berlin*.
A-levels (Abitur)

Employment

09/2014 – 01/2015 **Teaching assistant**, *Stochastic Finance Group*, Department of Mathematics, ETH Zürich.

06/2012 – 08/2012 **Intern**, *Corporates & Markets*, Commerzbank AG, Frankfurt am Main.

08/2011 – 06/2012 **Teaching assistant**, *Chair of Applied Financial Mathematics*, Institute of Mathematics, Humboldt-Universität zu Berlin.

Awards, Grants and Scholarships

09/2015 **Certificate of Distinction**, *Berlin Mathematical School*.

07/2015 **Elsevier Travel Grant**, *Travel grant for SPA 2015 Oxford*.

02/2015 – 04/2015 **Member of the Hausdorff Junior Trimester on Optimal Transportation**, *Hausdorff Center for Mathematics*, Bonn.

10/2012 – 09/2015 **Full PhD Scholarship**, *Research Training Group 1845 "Stochastic Analysis with Applications in Biology, Finance and Physics"*, German Research Foundation.

2012 – 2015 **e-fellows.net Scholarship**, Provided by private foundation of well-known German companies.

2010 – 2011 **Erasmus Scholarship**, *European Union*.

2003, 2006 **Students Award Berlin**, *Physical Society of Berlin*.

Teaching

Michaelmas Term 2017 **Lecture "Financial Derivatives"**, *University of Oxford*.

Michaelmas Term 2017 **Lecture "Introduction to Probability"**, *University of Oxford*.

Autumn 2016 **Lecture "Rough Path Theory and Regularity Structures"**, *ETH Zürich*.

Spring 2016 **Seminar "Robustness in Mathematical Finance"**, *ETH Zürich*.

Autumn 2014 **Exercise class "Mathematical Foundation for Finance"**, *ETH Zürich*.

Research Stays

01/2017 **Universität Hamburg**, *visiting Mathias Trabs*, 2 weeks.

06/2016 **Technische Universität Berlin**, *visiting Peter Friz*, 1 week.

02/2015 – 04/2015 **Hausdorff Research Institute for Mathematics Bonn**, *Junior Hausdorff Trimester Program*, 6 weeks.

09/2014 – 02/2015 **ETH Zürich**, *visiting Josef Teichmann*, 6 months.

Publications

Publications

2017+ **Rough path metrics on a Besov-Nikolskii type scale**, *with P. K. Friz*, to appear in Trans. Amer. Math. Soc.

2017+ **Pathwise super-replication via Vovk's outer measure**, *with M. Beiglböck, A. M. G. Cox, M. Huesmann and N. Perkowski*, to appear in Finance Stoch.

2016 **Rough differential equations driven by signals in Besov spaces**, *with M. Trabs*, J. Differential Equations, Vol. 260, No. 6 (2016), 4973–5025.

2016 **Pathwise stochastic integrals for model free finance**, *with N. Perkowski*, Bernoulli, Vol. 22, No. 4 (2016), 2486-2520.

2015 **An FBSDE approach to the Skorokhod embedding problem for Gaussian processes with non-linear drift**, *with A. Fromm and P. Imkeller*, Electron. J. Probab. 20 (2015), no. 127, 1-38.

2015 **Existence of Lévy's area and pathwise integration**, *with P. Imkeller*, Commun. Stoch. Anal., Vol. 9, No.1 (2015), 93-111.

2015 **Local times for typical price paths and pathwise Tanaka formulas**, *with N. Perkowski*, Electron. J. Probab. 20 (2015), no. 46, 1–15.

Preprints

2017 **Examples of Itô càdlàg rough paths**, *with C. Liu*, arXiv:1709.05988.

2017 **Duality for pathwise superhedging in continuous time**, *with D. Bartl, M. Kupper and L. Tangpi*, arXiv:1705.02933.

2017 **On Skorokhod Embedding and Poisson Equations**, *with L. Döring, L. Gonon and O. Reichmann*, arXiv:1703.05673.

2016 **Stochastic Analysis with Modelled Distributions**, *with J. Teichmann*, arXiv:1609.03834.

2016 **A Superhedging Approach to Stochastic Integration**, *with R. M. Łochowski and N. Perkowski*, arXiv:1609.02349.

Proceedings

2016 **Continuity of the Itô map on Nikolskii spaces**, *with P. K. Friz*, MFO Report No. 24/2016.

Thesis

2015 **Robust Stochastic Analysis with Applications**, *PhD thesis*, under the supervision of Peter Imkeller.

2012 **Minimal Supersolutions of non-Markovian BSDEs**, *Diploma thesis*, under the supervision of Peter Imkeller.

Selected Talks

Invited Talks

09/2017 **On Skorokhod embeddings and Poisson equations**, *Martingale Optimal Transport (and Friends)*, Oxford.

07/2017 **Rough path integrals in the spirit of Föllmer integration**, *International Workshop on BSDEs, SPDEs and their Applications*, Edinburgh.

06/2017 **Paracontrolled distribution approach to rough convolution equations**, *Oberseminar Partielle Differentialgleichungen*, Konstanz.

05/2017 **On Skorokhod Embedding and Poisson Equations**, *7th Annual ERC Berlin-Oxford Young Researchers Meeting on Applied Stochastic Analysis*, Berlin.

03/2017 **Rough path metrics on a Besov-Nikolskii type scale**, *Imperial-ETH Meeting on Mathematical Finance*, London.

01/2017 **Superhedging Approach to Stochastic Analysis**, *Colloquium on Mathematical Statistics and Stochastic Processes*, Hamburg.

01/2017 **Model-free Itô integration via pathwise super-hedging**, *Seminar "Stochastic Analysis and Stochastic Finance Seminar"*, Berlin.

11/2016 **Rough path metrics on a Besov-Nikolskii type scale**, *Stochastic Analysis Seminar*, Oxford.

10/2016 **Superhedging Approach to Stochastic Analysis**, *North British Probability Seminar*, Edinburgh.

09/2016 **Paracontrolled Convolution Equation**, *Imperial-ETH Meeting on Mathematical Finance*, Zürich.

08/2016 **Paracontrolled Convolution Equation**, *5th Annual ERC Berlin-Oxford Young Researchers Meeting on Applied Stochastic Analysis*, WIAS Berlin.

07/2016 **Skorokhod embedding via time-changed Lévy processes**, *Crossroads: Workshop on Stochastic Analysis and Related Fields*, HU Berlin.

06/2016 **Paracontrolled Convolution Equation**, *Oberseminar Rough Paths and Related Topics*, TU Berlin.

06/2016 **On the continuity of the Itô map**, *Oberseminar Stochastics*, Bonn.

05/2016 **Continuity of the Itô map on Nikolskii spaces**, *Workshop "Rough Paths, Regularity Structures and Related Topics"*, Oberwolfach.

04/2016 **Pathwise Tanaka formula and local times for typical price paths**, *Workshop "Pathwise methods, Functional Calculus and applications in Mathematical Finance"*, WPI Vienna.

03/2016 **On Bass' Approach to the Skorokhod Embedding Problem**, *Workshop "Skorokhod embeddings, Martingale Optimal Transport and their applications"*, Oxford.

03/2016 **Superhedging Approach to Robust Finance and Local Times**, *Stochastic Analysis Seminar*, Oxford.

12/2015 **Continuity of the Itô map on Nikolskii spaces**, *4th Annual ERC Berlin-Oxford Young Researchers Meeting on Applied Stochastic Analysis*, WIAS Berlin.

10/2015 **Paracontrolled Distribution Approach to Rough Differential Equation**, *North British Probability Seminar*, Edinburgh.

09/2015 **Pathwise Tanaka formulas and local times for typical price paths**, *7th General AMaMeF and Swissquote Conference*, Lausanne.

01/2015 **Rough differential equation on Besov spaces**, *ERC Berlin-Oxford Young Researchers Meeting on Applied Stochastic Analysis*, WIAS Berlin.

10/2014 **Pathwise stochastic integration for model free finance**, *Post/Doctoral Seminar in Mathematical Finance*, Zürich.

07/2014 **Local times for typical price paths and pathwise Tanaka formulas**, *Young Researchers Meeting on Applied Stochastic Analysis*, Oxford.

05/2014 **Existence of Lévy area and pathswise integration**, *Oberseminar Rough Paths and Related Topics*, TU Berlin.

12/2013 **Pathwise stochastic integrals for model free finance**, *Young Researchers Meeting on Applied Stochastic Analysis*, WIAS Berlin.

Contributed Talks

01/2017 **A Superhedging Approach to Stochastic Integration**, *11. Bachelier Colloquium on Mathematical Finance and Stochastic Calculus*, Metabief.

03/2016 **Rough differential equation on Besov spaces**, *12th German Probability and Statistics Days*, Bochum.

01/2016 **Continuity of the Itô map on Nikolskii spaces**, *10. Bachelier Colloquium on Mathematical Finance and Stochastic Calculus*, Metabief.

09/2015 **Rough differential equation on Besov spaces**, *Berlin-Padova Summer School*, Levico Terme.

08/2015 **Robust Super-replication for Time-invariant Derivatives**, *Doktorandentreffen Stochastik*, Berlin.

07/2015 **Rough differential equation on Besov spaces**, *SPA 2015*, Oxford.

10/2014 **Skorokhod embedding via FBSDE**, *EMS-RTG 1845 Summer school*, Będlewo.

03/2014 **Pathwise stochastic integrals for model free finance**, *11th German Probability and Statistics Days*, Ulm.

09/2013 **Pathwise stochastic integration for model free finance**, *Summer school at ETH Zürich*, Zürich.

08/2013 **Pathwise stochastic integrals for model free finance**, *Doktorandentreffen Stochastik*, Göttingen.

01/2013 **Minimal supersolution of non-Markovian BSDEs**, *Seminar of the RTG "Stochastic Analysis with Applications in Biology, Finance and Physics"*, WIAS Berlin.

Further Activities

12/2017 Co-organizer of the "8th Oxford-Berlin Young Researchers Meeting on Applied Stochastic Analysis" at University of Oxford

09/2017-now Organizer of the "Mathematical Finance Internal Seminar" at University of Oxford

04/2017 Co-organizer of the workshop "Young Researcher in Robust Financial Mathematics" at ETH Zürich

10/2012 – 02/2014 Student Representative of Research Training Group 1845 "Stochastic Analysis with Applications in Biology, Finance and Physics" at HU Berlin, TU Berlin and University of Potsdam

Languages

German **Mother tongue**

English **Fluent**

Latin **Proficiency Certificate**

Oxford, 20th September 2017