Sara Svaluto-Ferro

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Education and Academic Positions

2018–present **Postdoc**, *University of Vienna, Faculty of Mathematics*, Research group of Prof. C. Cuchiero.

2014–2018 **Doctor of Science ETH in Mathematics**, *ETH Zurich*, supervision of Prof. M. Larsson.

2012–2014 **Master of Science ETH in Mathematics**, *ETH Zurich*, supervision of Prof. J. Muhle-Karbe.

2008–2012 **Bachelor of Science ETH in Mathematics**, *ETH Zurich*, supervision of Prof. W. Farkas.

Teaching

Spring 2021 **Exercises on Analysis**, *University of Vienna*, Prof. W.Schachinger, English.

Fall 2020 **Exercises on Introduction to Mathematical finance**, *University of Vienna*, Prof. C. Cuchiero, English.

Winter 2019 **Supervision of Bachelor Thesis**, *University of Vienna, Faculty of Mathematics*, L. Anzeletti.

Fall 2015 **Exercises on Mathematical Foundations for finance**, *ETH Zurich*, Prof. M. Schweizer and Prof. W. Farkas, English.

Fall 2011 **Exercises on Linear Algebra and Numerical Mathematics**, *ETH Zurich*, German.

Spring 2012 **Exercises on Statistics and Probability Theory**, *ETH Zurich*, German.

Co-organization of events

March 2021–present **Seminar on Machine Learning in Finance**, *Online*, World.

May 2020–present **Random ladies seminar**, *Vienna*, Austria.

September 2020 **13th European Summer School in Financial Mathematics**, *Vienna*, Austria.

Additional activities

2018–present **Referee activity**, Annals of Applied Probability, Finance and Stochastics, Mathematics and Financial Economics, Stochastic Processes and their Applications.

2016–2018 **Group organizer**, *ETH Zurich*, Organization of the group of Probability theory, Insurance mathematics, and Stochastic finance.

2017 **Victory of the ACQuFRR Financial Mathematics Team Challenge**, *University of Cape Town*, South Africa.

Research interests

Stochastic analysis Analysis of finite and infinite dimensional stochastic processes continuous and with jumps with interesting analytical properties. This includes in particular the study of affine and polynomial processes, processes taking values in different spaces of probability measures, stochastic representations of PDEs, infinite dimensional stochastic optimization, stochastic systems of interacting particles, McKean-Vlasov equations, Markov processes and rough paths. Search for universal structures that allow the exploitation of known techniques in order to deduce information about generic stochastic processes, with particular interest in *signature processes*.

Applications *Mathematical finance*, in particular stochastic and rough volatility modeling, large financial markets, stochastic portfolio theory and systemic risk.

Biological mathematics, in particular population genetics.

Talks, (Invited talks highlighted with *)

Talks in Financial and Insurance Mathematics, *Universality of affine and polynomial processes*, Zurich (online), Switzerland, April 2021.(*)

Seminar at the Università degli studi di Milano, *Universality of affine and polynomial processes*, Milan (online), Italy, April 2021.(*)

Workshop on Representations of (jump-)diffusions, *Universality of affine and polynomial processes and applications to processes on the unit interval*, online, December 2020.

Stochastic processes and applications in biology, *Polynomial processes - a universal modeling class*, Berlin, Germany, December 2019.(*)

Stochastic Analysis and Stochastic Finance, *Polynomial processes - a universal modeling class*, Berlin, Germany, November 2019.(*)

ÖMG Conference, *Infinite dimensional polynomial jump-diffusions*, Dornbirn, Austria, September 2019.

Vienna Congress on Mathematical Finance, *Infinite dimensional polynomial jump-diffusions*, Vienna, Austria, September 2019.

An afternoon of high-dimensional stochastics, *Infinite dimensional polynomial processes and applications to rough volatility modeling*, Vienna, Austria, September 2019.

3rd International Congress on Actuarial Science and Quantitative Finance, *Infinite dimensional polynomial jump-diffusions*, Manizales, Colombia, June 2019.

Joint Risk & Stochastics and Financial Mathematics seminar series, *Infinite dimensional polynomial jump-diffusions*, London, UK, February 2019.(*)

20th Quantitative Finance Workshop, *Infinite dimensional polynomial jump-diffusions*, Zurich, Switzerland, January 2019.

13th Bachelier Colloquium, *Existence of probability measure-valued jump-diffusions in Wasserstein spaces*, Métabief, France, January 2019.

10th World Congresses of the Bachelier Finance Society, *Probability measure-valued polynomial diffusions*, Dublin, Ireland, July 2018.

Freiburg-Wien-Zürich Workshop, *Generators of probability measure-valued jump-diffusions,*, Strobl at Wolfgangsee, Austria, July 2018. (*)

2nd International Conference on Computational Finance, *Measure-valued polynomial diffusions*, Lisbon, Portugal, September 2017.

School and Workshop on Dynamical Models in Finance, *Measure-valued polynomial diffusions*, Lausanne, Switzerland, May 2017.

Young Researcher Workshop in Mathematical Finance, *Measure-valued polynomial diffusions*, Ann Arbor, USA, March 2017.(*)

11th Bachelier Colloquium, *Boundary attainment for polynomial jump-diffusions on the unit interval*, Métabief, France, January 2017.

9th World Congresses of the Bachelier Finance Society, *Polynomial Jump-Diffusions on the Unit Interval (and the Unit Simplex)*, New York, USA, July 2016.

Frontiers in Stochastic Modelling for Finance, *Polynomial Preserving Jump-Diffusions on the Unit Interval*, Padova, Italy, February 2016.

Conference for "Junior female researchers in probability", *Polynomial Preserving Jump-Diffusions on the Unit Interval*, Berlin, Germany, October 2015.

11th Doktorandentreffen Stochastik, *Polynomial Preserving Jump-Diffusions on the Unit Interval*, Berlin, Germany, August 2015.

Languages

Italian (Mother tongue), English and German (Fluent), French (School knowledge)

Computer skills

Intermediate Python, Mathematica, Matlab

Basic C++

Publications (peer-reviewed), preprints, working papers and thesis

Publications C. Cuchiero, S. Svaluto-Ferro, *Infinite dimensional polynomial processes*, Finance and Stochastics, 25(2), 383–426, 2021. https://doi.org/10.1007/s00780-021-00450-x

M. Larsson, S. Svaluto-Ferro, *Existence of probability measure valued jump-diffusions in generalized Wasserstein spaces*, Electronic Journal of Probability, 25, 2020. https://doi.org/10.1214/20-EJP562

C. Cuchiero, M. Larsson, S. Svaluto-Ferro, *Probability measure-valued polynomial diffusions*, Electronic Journal of Probability, 24, 2019. https://doi.org/10.1214/19-EJP290

C. Cuchiero, M. Larsson, S. Svaluto-Ferro, *Polynomial jump-diffusions on the unit simplex*, Annals of Applied Probability, 28(4), 2451-2500, 2018. https://doi.org/10.1214/17-AAP1363

Preprint C. Cuchiero, S. Rigger, S. Svaluto-Ferro, *Propagation of minimality in the supercooled Stefan problem*, 2020. http://arxiv.org/abs/2010.03580

Working papers A. Cox, S. Källblad, M. Larsson, S. Svaluto-Ferro, *Controlled measure-valued martingales: a viscosity solution approach*, 2021.

C. Cuchiero, G. Gazzani, S. Svaluto-Ferro, *A polynomial and affine approach to Sig-Models*, 2021.

C. Cuchiero, F. Primavera, S. Svaluto-Ferro, *Signatures of Lévy-Process: from moments estimation to calibration through Lévy Sig-Models*, 2021.

C. Cuchiero, S. Rigger, W. Schachermayer, S. Svaluto-Ferro, *An incomplete guide to market completeness*, 2021.

C. Cuchiero, S. Svaluto-Ferro, J. Teichmann, *Universality of affine and polynomial processes*, 2021.

Thesis S. Svaluto-Ferro, *Probability measure-valued jump-diffusions in finance and related topics*, Doctoral thesis, 2018. https://doi.org/10.3929/ethz-b-000303781

S. Svaluto-Ferro, *Super-Replication Principle and Fundamental Theorem of Asset Pricing under Transaction Costs*, Master thesis, 2014.

S. Svaluto-Ferro, *Risk Measures and Capital Requirements*, Bachelor thesis, 2012.