Dr Silvio Fanzon FHEA

Curriculum Vitæ

Lecturer in Applied Mathematics

Department of Mathematics, University of Hull

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Academic Profile

I am a Lecturer in Applied Mathematics at the University of Hull, with research and teaching responsibilities. My research lies at the interface of *Statistics*, *Optimization*, *PDEs*, and *Variational Methods*. I am interested in both the theoretical foundations of these areas and their applications to *Mathematical Imaging*, *Materials Science*, *Sports Analytics*, and *Machine Learning*. I am *Fellow of the Higher Education Academy* and have taught courses across pure and applied mathematics. I have also supervised undergraduate and postgraduate students. For any queries, please contact me by email.

Education

2024 – 2025	**Postgraduate Certificate in Academic Practice (PCAP)**, University of Hull, UK
2014 – 2018	**PhD in Mathematics**, University of Sussex, UK Thesis: *Geometric patterns and Microstructures in the study of Material Defects and Composites* Grade: Pass with no corrections, Advisor: Prof. Mariapia Palombaro
2012 – 2014	**MSc in Mathematics**, Sapienza University, Italy Thesis: *A variational approach to topological singularities in two-dimensions* Grade: 110/110 Cum Laude, Advisor: Prof. Marcello Ponsiglione
2008 – 2011	**BSc in Mathematics**, Sapienza University, Italy Thesis: *The isoperimetric problem* Grade: 110/110 Cum Laude, Advisor: Prof. Annalisa Malusa

Academic Positions

04/23 – Now	**Lecturer in Applied Mathematics** Department of Mathematics, University of Hull, UK
06/22 – 03/23	**Faculty member (University Assistant)** Department of Mathematics & Scientific Computing, University of Graz, Austria
04/18 – 10/21	**Postdoctoral Researcher** Department of Mathematics & Scientific Computing, University of Graz, Austria
09/14 – 03/18	**Associate Tutor** Department of Mathematics, University of Sussex, UK

Top 4 Publications

[1] *Asymptotic linear convergence of Fully–Corrective Generalized Conditional Gradient methods*
MATHEMATICAL PROGRAMMING, 205:135–202, 2024
K. Bredies, M. Carioni, **S. Fanzon,** D. Walter

[2] *A Generalized Conditional Gradient Method for Dynamic Inverse Problems with Optimal Transport Regularization*
FOUNDATIONS OF COMPUTATIONAL MATHEMATICS, 23:833–898, 2023
K. Bredies, M. Carioni, **S. Fanzon,** F. Romero

[3] *A superposition principle for the inhomogeneous continuity equation with Hellinger–Kantorovich-regular coefficients*
COMMUNICATIONS IN PARTIAL DIFFERENTIAL EQUATIONS, 47(10):2023–2069, 2022
K. Bredies, M. Carioni, **S. Fanzon**

[4] *Derivation of Linearized Polycrystals from a Two-Dimensional System of Edge Dislocations*
SIAM JOURNAL ON MATHEMATICAL ANALYSIS, 51(5):3956–3981, 2019
S. Fanzon, M. Palombaro, M. Ponsiglione

List of Publications

I have authored 11 Peer-Reviewed Journal Articles, 1 Book and 3 Theses

Peer-Reviewed Journal Articles   Authors are listed in alphabetical order, unless marked by **#**

[16] **#** *Elementary econometric and strategic analysis of curling matches*
MANAGERIAL FINANCE, 51(7):1206–1216, 2025
J. Fry, M. Austin, **S. Fanzon**

[15] **#** *Faster identification of faster Formula 1 drivers via time-rank duality*
ECONOMICS LETTERS, 237:111671, 2024
J. Fry, T. Brighton, **S. Fanzon**

[14] *Asymptotic linear convergence of Fully–Corrective Generalized Conditional Gradient methods*
MATHEMATICAL PROGRAMMING, 205:135–202, 2024
K. Bredies, M. Carioni, **S. Fanzon,** D. Walter

[13] *A Generalized Conditional Gradient Method for Dynamic Inverse Problems with Optimal Transport Regularization*
FOUNDATIONS OF COMPUTATIONAL MATHEMATICS, 23:833–898, 2023
K. Bredies, M. Carioni, **S. Fanzon,** F. Romero

[12] *A superposition principle for the inhomogeneous continuity equation with Hellinger–Kantorovich-regular coefficients*
COMMUNICATIONS IN PARTIAL DIFFERENTIAL EQUATIONS, 47(10):2023–2069, 2022
K. Bredies, M. Carioni, **S. Fanzon**

[11] *On the extremal points of the ball of the Benamou–Brenier energy*
BULLETIN OF THE LONDON MATHEMATICAL SOCIETY, 53(5):1436–1452, 2021
K. Bredies, M. Carioni, **S. Fanzon,** F. Romero

[10] *An optimal transport approach for solving dynamic inverse problems in spaces of measures*
ESAIM: MATHEMATICAL MODELLING AND NUMERICAL ANALYSIS, 54(6):2351–2382, 2020
K. Bredies, **S. Fanzon**

[9] *Uniform distribution of dislocations in Peierls–Nabarro models for semi-coherent interfaces*
Calculus of Variations and Partial Differential Equations, 59(4):141, 2020
S. Fanzon, M. Ponsiglione, R. Scala

[8] *Derivation of Linearized Polycrystals from a Two-Dimensional System of Edge Dislocations*
SIAM Journal on Mathematical Analysis, 51(5):3956–3981, 2019
S. Fanzon, M. Palombaro, M. Ponsiglione

[7] *Optimal lower exponent for the higher gradient integrability of solutions to two-phase elliptic equations in two dimensions*
Calculus of Variations and Partial Differential Equations, 56(5):137, 2017
S. Fanzon, M. Palombaro

[6] *A Variational Model for Dislocations at Semi-coherent Interfaces*
Journal of Nonlinear Science, 27(5):1435–1461, 2017
S. Fanzon, M. Palombaro, M. Ponsiglione

Miscellaneous   Authors are listed in alphabetical order, unless marked by **#**

[5] **#** *Optimal Transport Based Convex Hybrid Image and Motion-Field Reconstruction*
2021 ISMRM & SMRT Annual Meeting & Exhibition, 15-20 May 2021, Vancouver, Canada
I. Middelhoff, M. Schlögl, A. M. Fernández, **S. Fanzon**, K. Bredies, R. Stollberger

[4] *Geometric patterns and microstructures in the study of material defects and composites*
Doctoral Thesis (PhD), University of Sussex, 2018

[3] *A variational approach to topological singularities in two-dimensions (in Italian)*
Master Thesis, Sapienza University, 2014

[2] *Lecture Notes on Ordinary Differential Equations (in Italian)*
Book, ISBN: 8890734175, Edizioni LaDotta, 2013
S. Fanzon, A. Malusa

[1] *The isoperimetric problem (in Italian)*
Bachelor Thesis, Sapienza University, 2011

Research Impact: Projects & Funding

2020/21	Participation in FWF Research Project P29192 led by K. Bredies (€ 231k)
	Project title: *Regularization Graphs for Variational Imaging*
2019/21	Participation in FWF Research Project P28858 led by K. Bredies (€ 221k)
	Project title: *Solving bilinear inverse problems by tensorial lifting*
2018/20	Participation in FWF Research Project PIR-27 led by K. Bredies (€ 234k)
	Project title: *Mathematical methods for motion-aware medical imaging*
2014/18	Full-time PhD Studentship for 3.5 Years from the University of Sussex (£ 49k)
	Project title: *Rigidity problems and Microstructures in Materials Science*
2014/18	PhD Fees Waiver for 3.5 Years from the University of Sussex (£ 14k)
2014/18	Research Grant from the University of Sussex (£ 5.8k)
2014/17	Travel support from Carnegie Mellon University (US), Oxford University (UK), SISSA (Italy), Warwick University (UK), National Research Council of Italy (total £ 4k)

Teaching Experience

I have taught 18 modules: 10 as Lecturer and 8 as Teaching Assistant

Lecturer

2024/25	↗ 🅰	STATISTICAL MODELS, Y2 BSc Math	University of Hull, UK
	↗ 🅰	DIFFERENTIAL GEOMETRY, Y3 BSc Math	
	↗ 🅰	NUMBERS, SEQUENCES AND SERIES, Y1 BSc Math	
2023/24	↗ 🅰	STATISTICAL MODELS, Y2 BSc Math	
	↗ 🅰	NUMBERS, SEQUENCES AND SERIES, Y1 BSc Math	
	↗ 🅰	DIFFERENTIAL GEOMETRY, Y3 BSc Math	
2022/23	↗ 🅰	ANALYSIS 3 (EXERCISE COURSE), Y2 BSc Math	University of Graz, Austria
	↗ 🅰	INVERSE PROBLEMS (EXERCISE COURSE), Y2 MSc Math	
2020/21	↗ 🅰	CALCULUS OF VARIATIONS, Y1 MSc Math	
2019/20	↗ 🅰	ADVANCED FUNCTIONAL ANALYSIS (EXERCISE COURSE), Y1 MSc Math	

Teaching Assistant

2017/18	↗	GEOMETRY 1, Y1 BSc Math	University of Sussex, UK
2016/17	↗	ANALYSIS 1, Y1 BSc Math	
	↗	INTRODUCTION TO PROBABILITY, Y1 BSc Math	
	↗	MATHEMATICS DEMYSTIFIED, Y1 BSc Math	
2015/16	↗	PROBABILITY AND STATISTICS, Y2 BSc Math	
	↗	INTRODUCTION TO PROBABILITY, Y1 BSc Math	
2014/15	↗	PROBABILITY AND STATISTICS, Y2 BSc Math	
2012/13	↗ 🅰	ORDINARY DIFFERENTIAL EQUATIONS, Y2 BSc Math	Sapienza University, Italy

Academic Supervision

I have supervised 6 students: 3 Master's and 3 Undergraduate students

Master Students

2023/24	↗	OLAPEJU ENITAN AROWOBUSOYE, MSc Mathematics Thesis title: *A Complex Analysis approach to the isoperimetric inequality*	University of Hull, UK
	↗	LUCKY EKESHILI, MSc Mathematics Thesis title: *The Euler-Lagrange equation*	
2022/23	↗	DAVID AWUKU, MSc Mathematics Thesis title: *The Isoperimetric Problem*	

Undergraduate Students

2024/25	↗	Sᴀᴍ Fᴏᴡʟᴇʀ, BSc Mathematics Thesis title: *Optimal transport, with applications to Logistic problems*	University of Hull, UK
	↗	Dᴇᴄʟᴀɴ Hᴏᴅɢᴇs, BSc Mathematics Thesis title: *Gödel's First Incompleteness Theorem*	
	↗	Jᴏᴇ Vᴀʀʟᴇʏ, BSc Mathematics Thesis title: *Geodesics, old and new*	

Administrative Experience

2025/26	Convenor of MSc Mathematics module "Dissertation Project" at the University of Hull
2024/25	Organized Welcome Week for BSc and MSc in Mathematics at the University of Hull
2023/24	Responsible for open days Mathematics desk at the University of Hull

Professional Qualifications & Memberships

Since 2025	Fellow of the Higher Education Academy (FHEA)	↗
Since 2023	Member of the *Inverse Problems International Association* (IPIA)	↗

Technical Skills

Coding	Python, Matlab, R, C, Mathematica
Teaching	LaTex, Quarto, Canvas, Panopto, MS Office, MS Teams, Moodle
Web	Git, HTML, CSS, JavaScript, Jekyll, Liquid, YAML, Markdown

Reviewer Activity

SIAM Journal on Mathematical Analysis	↗	Numerische Mathematik	↗
SIAM Journal on Imaging Sciences	↗	Inverse Problems and Imaging	↗
ESAIM: COCV	↗	Mathematics in Engineering	↗
Managerial Finance	↗		

Research Stays

2022	Uɴɪᴠᴇʀsɪᴛʏ ᴏғ Sᴜssᴇx, UK, 1–22 Jul and 27 Oct–5 Nov	Filippo Cagnetti
	Hᴇʀɪᴏᴛ-Wᴀᴛᴛ Uɴɪᴠᴇʀsɪᴛʏ, UK, 12–16 Sep	Panagiota Birmpa
2019	Sᴀᴘɪᴇɴᴢᴀ Uɴɪᴠᴇʀsɪᴛʏ, Italy, 15-19 Apr and 8–17 Jul	Marcello Ponsiglione
2018	Sᴀᴘɪᴇɴᴢᴀ Uɴɪᴠᴇʀsɪᴛʏ, Italy, 17–21 Dec	Marcello Ponsiglione
	Uɴɪᴠᴇʀsɪᴛʏ ᴏғ Gʀᴀᴢ, Austria, 31 Jan–2 Feb	Kristian Bredies

Communication

I have given 15 presentations: 12 oral presentations (11 invited) and 3 poster presentations (1 invited)

Oral Presentations   ✉ indicates invited presentation

2023	✉	AIP 2023: 11th Applied Inverse Problems Conference University of Göttingen, Germany, 4-8 Sep 2023
2022	✉	Sussex Mathematics Seminar University of Sussex, UK, 3 Nov 2022
	✉	Seminar, Department of Mathematics Heriot-Watt University, UK, 13 Sep 2022
	✉	Seminar, Department of Mathematics & Scientific Computing University of Graz, Austria, 18 Feb 2022
2021	✉	SIMAI 2020-2021 Parma University of Parma, Italy, 30 Aug - 3 Sep 2021
2019	✉	M.A.G.A. Days (Monge-Ampère et Géométrie Algorithmique) Laboratoire de mathematiques d'Orsay, France, 20-21 Nov 2019
	✉	1st Austrian Calculus of Variations Day University of Vienna, Austria, 17-18 Oct 2019
	✉	ICCOPT: 6th International Conference on Continuous Optimization Technical University Berlin, Germany, 3-8 Aug 2019
2018	✉	Topics in Nonlinear Analysis: Calculus of Variations and PDEs University of Lisbon, Portugal, 10-12 Oct 2018
	✉	Seminar, Department of Mathematics & Scientific Computing University of Graz, Austria, 31 Jan 2018
2017		XXVII National meeting of Calculus of Variations Levico Terme, Italy, 6-10 Feb 2017
2016	✉	Working Seminar on Calculus of Variations Sapienza University, Italy, 19 Dec 2016

Poster Presentations   ✉ indicates invited presentation

2021	✉	ITN TraDe-OPT Winter School Online, 15-19 Feb 2021
2016		Hysteresis, Avalanches and Interfaces in Solid Phase Transformations University of Oxford, UK, 19-21 Sep 2016
		PIRE-CNA. New Frontiers in Nonlinear Analysis for Materials Carnegie Mellon University, US, 2-10 Jun 2016