

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: <i>Geometric patterns and Microstructures in the study of Material Defects and Composites</i> Grade: Pass with no corrections, Advisor: Prof. Mariapia Palombaro
2012 – 2014	MSc in Mathematics , Sapienza University, Italy Thesis: <i>A variational approach to topological singularities in two-dimensions</i> Grade: 110/110 Cum Laude, Advisor: Prof. Marcello Ponsiglione
2008 – 2011	BSc in Mathematics , Sapienza University, Italy Thesis: <i>The isoperimetric problem</i> 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

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|---------|---|---|
| 2020/21 | Participation in FWF Research Project P29192 led by K. Bredies (€ 231k)
Project title: <i>Regularization Graphs for Variational Imaging</i> |   |
| 2019/21 | Participation in FWF Research Project P28858 led by K. Bredies (€ 221k)
Project title: <i>Solving bilinear inverse problems by tensorial lifting</i> |   |
| 2018/20 | Participation in FWF Research Project PIR-27 led by K. Bredies (€ 234k)
Project title: <i>Mathematical methods for motion-aware medical imaging</i> |   |
| 2014/18 | Full-time PhD Studentship for 3.5 Years from the University of Sussex (£ 49k)
Project title: <i>Rigidity problems and Microstructures in Materials Science</i> | |
| 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 21 modules: 13 as Lecturer and 8 as Teaching Assistant

Lecturer

2025/26	 	MSC PROJECT, MSc Math GRADUATE SKILLS, MSc Math STATISTICAL MODELS, Y2 BSc Math	University of Hull, UK
2024/25	 	STATISTICAL MODELS, Y2 BSc Math 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 INVERSE PROBLEMS (EXERCISE COURSE), Y2 MSc Math	University of Graz, Austria
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 9 students: 1 PhDs, 3 Master's and 5 Undergraduate students

PhD Students

Start 2025		MARK AUSTIN, PhD Mathematics Thesis title: <i>Statistical Models for Sports</i> Joint supervision with John Fry	University of Hull, UK
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Master Students

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

Undergraduate Students

2025/26	 OSCAR CAWTHORNE, BSc Mathematics Thesis title: <i>Inverse Problems in Imaging</i>	University of Hull, UK
	 KOTRYNA KUBILIUTE, BSc Mathematics Thesis title: <i>Optimal Transport, with applications to Tennis</i>	
2024/25	 SAM FOWLER, BSc Mathematics Thesis title: <i>Optimal Transport, with applications to Logistic problems</i>	
	 DECLAN HODGES, BSc Mathematics Thesis title: <i>Gödel's First Incompleteness Theorem</i>	
	 JOE VARLEY, BSc Mathematics Thesis title: <i>Geodesics, old and new</i>	

Administrative Experience

2025/26	Convenor of MSc Mathematics module “MSc 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 <i>Inverse Problems International Association</i> (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	UNIVERSITY OF SUSSEX, UK, 1–22 Jul and 27 Oct–5 Nov HERIOT-WATT UNIVERSITY, UK, 12–16 Sep	Filippo Cagnetti Panagiota Birmpa
2019	SAPIENZA UNIVERSITY, Italy, 15–19 Apr and 8–17 Jul	Marcello Ponsiglione
2018	SAPIENZA UNIVERSITY, Italy, 17–21 Dec UNIVERSITY OF GRAZ, Austria, 31 Jan–2 Feb	Marcello Ponsiglione Kristian Bredies

Communication

I have given 16 presentations: 13 oral presentations (12 invited) and 3 poster presentations (1 invited)

Oral Presentations

indicates invited presentation

2025	1ST WORKSHOP OF YOUNG ANALYSTS IN ROME Sapienza University, Italy, 17–19 Dec 2025	
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 mathématiques 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

