

CURRICULUM VITAE

SILVIO FANZON

April 2023

CONTACT INFORMATION

Position	Lecturer in Applied Mathematics
Address	Department of Physics and Mathematics University of Hull Hull, HU6 7RX, United Kingdom
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Scholar profile	Link

RESEARCH INTERESTS

Inverse Problems, Numerical Analysis, Mathematical Imaging, Machine learning,
Partial Differential Equations, Optimal Transport, Calculus of Variations, Materials Science

EMPLOYMENT

Apr 23 - Present	Lecturer in Applied Mathematics University of Hull, United Kingdom
Jun 22 - May 23	Faculty member (University Assistant) in Mathematics University of Graz, Austria
Nov 21- May 22	Career break due to paternity
Apr 18 - Oct 21	Postdoctoral Researcher in Mathematics University of Graz, Austria Project: <i>Mathematical methods for motion-aware medical imaging</i>
Sept 14 - Mar 18	Associate Tutor in Mathematics University of Sussex, United Kingdom

PROFESSIONAL QUALIFICATIONS / ACADEMIC ROLES

- 2023 - Present **HEAD of Department / Outreach officer / EDI Specialist**
Description of duties
- 2023 - Present **Fellow of the Higher Education Academy (FHEA)**
After successfully achieving the mandatory requirements of the graduate teaching skills of Learning & Teaching in Higher Education (LTHE) in 2013 the accreditation as Associate Fellow status of Higher Education Academy (HEA) was received in January 2014

EDUCATION

- 2014 - 2018 **PhD in Mathematics**, University of Sussex, UK
Thesis: *Geometric patterns and Microstructures in the study of Material Defects and Composites*
Advisor: Prof. Mariapia Palombaro
Grade: Unconditional Pass
- 2012 - 2014 **MSc in Mathematics**, Sapienza University of Rome, Italy
Thesis: *A mathematical model for screw dislocations in two dimensions*
Advisor: Prof. Marcello Ponsiglione
Grade: 110/110 Cum Laude
- 2008 - 2011 **BSc in Mathematics**, Sapienza University of Rome, Italy
Thesis: *The isoperimetric inequality*
Advisor: Prof. Annalisa Malusa
Grade: 110/110 Cum Laude

LIST OF PUBLICATIONS

Refereed Journal Articles

- [1] *Asymptotic linear convergence of fully-corrective generalized conditional gradient methods*
Mathematical Programming, 2023 (forthcoming)
(with K. Breides, M. Carioni, D. Walter) [add link](#)
- [2] *A generalized conditional gradient method for dynamic inverse problems with optimal transport regularization*

Foundations of Computational Mathematics, Online first, 2022 ([Link](#))

(with K. Breides, M. Carioni, 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 ([Link](#))

(with K. Breides, M. Carioni)

- [4] *On the extremal points of the ball of the Benamou–Brenier energy*

Bulletin of the London Mathematical Society, 53(5):1436–1452, 2021 ([Link](#))

(with K. Breides, M. Carioni, F. Romero)

- [5] *An optimal transport approach for solving dynamic inverse problems in spaces of measures*

ESAIM: Mathematical Modelling and Numerical Analysis, 54(6):2351–2382, 2020 ([Link](#))

(with K. Bredies)

- [6] *Uniform distribution of dislocations in Peierls–Nabarro models for semi-coherent interfaces*

Calculus of Variations and Partial Differential Equations, 59(4):141, 2020 ([Link](#))

(with M. Ponsiglione, R. Scala)

- [7] *Derivation of Linearised Polycrystals from a two-dimensional system of edge dislocations*

SIAM Journal on Mathematical Analysis, 51(5):3956–3981, 2019 ([Link](#))

(with M. Palombaro, M. Ponsiglione)

- [8] *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 ([Link](#))

(with M. Palombaro)

- [9] *A Variational Model for Dislocations at Semi-coherent Interfaces*

Journal of Nonlinear Science, 27(5):1435–1461, 2017 ([Link](#))

(with M. Palombaro, M. Ponsiglione)

Submitted for publication

- [10] *Benamou–Brenier applications paper*

Submitted to: SIAM IMAGING

(with K. Bredies, M. Carioni, D. Walter)

[11] *Richard Huber paper*

Submitted to: SIAM IMAGING

(with K. Bredies, R. Huber)

Conference Proceedings & Others

[12] *Novel Convex Hybrid Image and Motion-Field Reconstruction*

“2021 ISMRM & SMRT Annual Meeting & Exhibition”, 15-20 May 2021, Vancouver, BC, Canada ([Link](#))

(with K. Breides, A. Martin, I. Middelhoff, M. Schlögl, R. Stollberger)

[13] *Geometric patterns and microstructures in the study of material defects and composites*

Doctoral Thesis (PhD), University of Sussex, 2018 ([Link](#))

GRANTS

- Full-time PhD Studentship from the University of Sussex and fees waived (4 years)
- Research Grant of £5800 from the University of Sussex

TEACHING EXPERIENCE

- From 2023 **Lecturer in Applied Mathematics, University of Hull**
Statistics, Undergraduate course (Lecturer. module lead. say duties, in person?)
which student cohort? Maths, Physics, Data Science
- 2019 - 2022 **University Assistant, University of Graz**
Module lead, duties etc: see teaching statement. Specify if in presence or online
Inverse Problems (Exercise Course), in presence, Masters, 2022
Analysis 3 (Exercise Course), Bachelor, 2022
Calculus of Variations, Bachelors, online , 2021
Advanced Functional Analysis (Exercise Course), Masters, 2019
- 2015 - 2018 **Associate Tutor, University of Sussex**
Duties: Marking, Student Presentations, Exercise Workshops
Courses: *Analysis I*, *Introduction to Probability*, *Probability and Statistics*
Geometry I, *Mathematics Demystified*

STUDENT SUPERVISION

- David Awuku, Hull, Master Degree in ... , Thesis Title, Objectives, Impact
- 2023 Second Supervisor for Master Thesis dissertations in Hull

SERVICE TO PROFESSION

Reviewer for the following journals:

- SIAM Journal of Mathematical Analysis
- SIAM Journal on Imaging Sciences
- Numerische Mathematik
- Inverse Problems and Imaging
- Mathematics in Engineering

INVITED SEMINARS

- 2022 *Sparsity and convergence analysis of generalized conditional gradient methods*
University of Sussex, United Kingdom, 3 Nov 2022
- Sparsity and convergence analysis of generalized conditional gradient methods*
Heriot-Watt University, United Kingdom, 13 Sept 2022
- 2021 *Uniform distribution of dislocations at semi-coherent interfaces*
Event: SIMAI 2020-2021
University of Parma, Italy, 30 Aug - 3 Sept 2021
- Optimal transport regularization for dynamic inverse problems*
Event: ITN TraDe-OPT Winter School
Online event, 15-19 Feb 2021
- 2019 *Optimal transport regularization for dynamic inverse problems*
Event: M.A.G.A. Days (Monge-Ampere et Geometrie Algorithmique)
Laboratoire de mathematiques d'Orsay, France, 20-21 Nov 2019
- Optimal transport regularization for dynamic inverse problems*
Event: 1st Austrian Calculus of Variations Day
University of Vienna, Austria, 17-18 Oct 2019
- Optimal transport regularization for dynamic inverse problems*
Event: ICCOPT: 6th International Conference on Continuous Optimization 2019
Technical University Berlin, Germany, 3-8 Aug 2019
- 2018 *Optimal lower exponent of solutions to two-phase elliptic equations in 2D*
Event: Topics in Nonlinear Analysis: Calculus of Variations and PDEs
University of Lisbon, Portugal, 10-12 Oct 2018
- Linearised polycrystals from a 2D system of edge dislocations*
University of Graz, Austria, 31 Jan 2018
- 2017 *A variational model for dislocations at semi-coherent interfaces*
Event: XXVII National meeting of Calculus of Variations
CIRM, Levico Terme, Italy, 6-10 Feb 2017
- 2016 *Variational models for semi-coherent interfaces*
Sapienza University, Italy, 19 Dec 2016
- A variational model for dislocations at semi-coherent interfaces*
Event: Hysteresis, Avalanches and Interfaces in Solid Phase Transformations
University of Oxford, United Kingdom, 19-21 Sept 2016
- A variational model for dislocations at semi-coherent interfaces*

Event: PIRE-CNA. New Frontiers in Nonlinear Analysis for Materials
Carnegie Mellon University, United States, 2-10 Jun 2016

RESEARCH STAYS

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| 2022 | University of Sussex, United Kingdom, 1-22 Jul and 27 Oct - 5 Nov
Invited by Filippo Cagnetti |
| | Heriot-Watt University, United Kingdom, 12-16 Sept
Invited by Panagiota Birmpa |
| 2019 | Sapienza University, Italy, 15-19 Apr and 8-17 Jul
Invited by Marcello Ponsiglione |
| 2018 | Sapienza University, Italy, 17-21 Dec
Invited by Marcello Ponsiglione |
| | University of Graz, Austria, 31 Jan - 2 Feb
Invited by Kristian Bredies |