Alessio Figalli

Short CV

Department of Mathematics
ETH Zürich
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Professor of Mathematics & FIM Director
Phd, SNS Pisa and ENS Lyon, 2007

Personal information

Citizenship   Italian citizen, Swiss permanent resident

Position held

Sep 2019 – present   *FIM Director*, ETH Zürich (Zurich, Switzerland)

Sep 2016 – present   *Chaired Professor*, ETH Zürich (Zurich, Switzerland)

Sep 2013 – Aug 2016   *Full Professor and R. L. Moore Chair*,
The University of Texas at Austin (Austin, TX, USA)

Sep 2011 – Aug 2013   *Full Professor*, The University of Texas at Austin (Austin, TX, USA)

Sep 2010 – Aug 2011   *Associate Professor*, The University of Texas at Austin (Austin, TX, USA)

Sep 2009 – Aug 2010   *Associate Professor and Harrington Faculty Fellow*,
The University of Texas at Austin (Austin, TX, USA)

Oct 2008 – Aug 2009   *Professor* (Professeur Hadamard), École Polytechnique (Palaiseau, France)

Oct 2007 – Sep 2008   *Researcher* (Chargé de recherche CNRS), University of Nice (Nice, France)

Formation

Feb 17, 2009   Habilitation à Diriger de Recherche (French habilitation)

Mémoire HDR (in english): *Optimal transport, Euler equations, Mather and DiPerna-Lions theories*

Nov 2006 – Sep 2007   PhD student at the Scuola Normale Superiore of Pisa (Italy) and at the École Normale Supérieure of Lyon (France).
Advisors: Luigi Ambrosio and Cédric Villani.

PhD degree obtained Oct. 24, 2007 (italian grade: 70/70 cum laude; french grade: mention trés honorable).
Phd thesis (in english):*Optimal transportation and action-minimizing measures*

Oct 2002 – Oct 2006   Student of mathematics at the Scuola Normale Superiore of Pisa (Italy)
Master degree obtained the Jun 23, 2006 (grade: 110/110 cum laude).
Master thesis (in english): *Trasporto ottimale su varietà non compatte*

Bachelor degree obtained Nov 29, 2004 (grade: 110/110 cum laude).
Degree thesis (in italian): *Il problema di Bernstein e una congettura di De Giorgi*

Selected Honors

2022	*Doctorate Honoris Causa* of the "University of Sussex"
2019	*Doctorate Honoris Causa* of the "Universitat Politècnica de Catalunya"
2018 – present	*Knight of the Order of Merit of the Italian Republic*
2018	*Doctorate Honoris Causa* of the "Université Côte d'Azur"
2018	*Fields Medal*
2017	*Feltrinelli Prize* of "Accademia Nazionale dei Lincei"
2016	*O'Donnell Award in Science* of "The Academy for Medicine, Engineering, & Science of Texas (TAMEST)"
2015	*Stampacchia Gold Medal* of the Italian Mathematical Union
2012	*European Mathematical Society (EMS) Prize*

━━━━━━━━ Grants

2024 – 2028	*SNF Sinergia Grant*, "From single disease reductionist research to informed Machine Learning: a new research paradigm for multimorbidity"
2017 – 2023	*ERC Grant*, "Regularity and Stability in Partial Differential Equations (RS)"
2014 – 2017	*NSF Grant DMS-1361122*, "FRG: Collaborative Research: Vectorial and geometric problems in the calculus of variations"
2013 – 2018	*NSF Grant DMS-1262411*, "Regularity and stability results in variational problems"
2010 – 2013	*NSF Grant DMS-0969962*, "Analytical and geometrical problems in calculus of variations and partial differential equations"

━━━━━━━━ Research

10 Selected Publications

1) A mass transportation approach to quantitative isoperimetric inequalities (with F. Maggi and A. Pratelli), *Invent. Math.* 182 (2010), no. 1, 167-211.

2) $W^{2,1}$ regularity for solutions of the Monge-Ampère equation (with G. De Philippis), *Invent. Math.* 192 (2013), no. 1, 55-69.

3) Partial regularity for optimal transport maps (with G. De Philippis), *Publ. Math. Inst. Hautes Études Sci.* 121 (2015), 81-112.

4) Universality in several-matrix models via approximate transport maps (with A. Guionnet), *Acta Math.* 217 (2016), no. 1, 81-176.

5) On the fine structure of the free boundary for the classical obstacle problem (with J. Serra), *Invent. Math.* 215 (2019), no. 1, 311-366.

6) On stable solutions for boundary reactions: a De Giorgi type result in dimension 4+1 (with J. Serra), *Invent. Math.* 219 (2020), no. 1, 153-177.

7) Stable solutions to semilinear elliptic equations are smooth up to dimension 9 (with X. Cabré, X. Ros-Oton and J. Serra), *Acta Math.* 224 (2020), no. 2, 187–252.

8) Generic regularity of free boundaries for the obstacle problem (with X. Ros-Oton and J. Serra), *Publ. Math. Inst. Hautes Études Sci.* 132 (2020), 181–292.

9) Strong Sard Conjecture and regularity of singular minimizing geodesics for analytic sub-Riemannian structures in dimension 3 (with A. Belotto da Silva, A. Parusiński and L. Rifford), *Invent. Math.* 229 (2022), no. 1, 395-448.

10) The singular set in the Stefan problem (with X. Ros-Oton and J. Serra), *J. Amer. Math. Soc.*, to appear

Editorial work

2021 – present	Editor of Transactions of the *LMS*
2021 – present	Editor of *Publ. Math. Inst. Hautes Études Sci.*

2016 – present	Editor of *Arch. Ration. Mech. Anal.*
2014 – present	Editor of *Duke Math. J.*
2013 – present	Editor of *J. Ecole Polytechnique*
2011 – present	Editor of *AIMS Series on Applied Mathematics*

(D.L.196/03).

Zurich, November 23, 2023