

Alessio Figalli

Short CV

Department of Mathematics
ETH Zürich
✉ alessio.figalli@math.ethz.ch
🌐 www.math.ethz.ch/~afigalli/

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 très 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

- 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”

Mentoring

PhD Students

- 2022 – present *Giacomo Colombo*, ETH Zürich
- 2020 – present *Lauro Silini*, ETH Zürich
- 2019 – present *Federico Franceschini*, ETH Zürich (coadvised with Joaquim Serra)
- 2018 – 2022 *Federico Glaudo*, ETH Zürich
- 2015 – 2020 *Xavier Fernández-Real*, UT Austin - ETH Zürich
- 2014 – 2018 *Yash Jhaveri*, UT Austin - ETH Zürich
- 2013 – 2017 *Javier Morales*, UT Austin
- 2013 – 2017 *Robin Neumayer*, UT Austin (coadvised with Francesco Maggi)
- 2012 – 2015 *Maria Colombo*, UT Austin - SNS Pisa (coadvised with Luigi Ambrosio)
- 2011 – 2016 *Rohit Jain*, UT Austin (coadvised with Luis Caffarelli)
- 2011 – 2012 *Levon Nurbekyan*, UT Austin - IST Lisbon (coadvised with Diogo Gomes)
- 2010 – 2013 *Diego Marcon Farias*, UT Austin - IST Lisbon (coadvised with Diogo Gomes)
- 2009 – 2013 *Emanuel Indrei*, UT Austin
- 2009 – 2012 *Eric Baer*, UT Austin

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) Generic hyperbolicity of Aubry sets on surfaces (with G. Contreras and L. Rifford), *Invent. Math.* 200 (2015), no. 1, 201-261.
- 4) Partial regularity for optimal transport maps (with G. De Philippis), *Publ. Math. Inst. Hautes Études Sci.* 121 (2015), 81-112.

- 5) Universality in several-matrix models via approximate transport maps (with A. Guionnet), *Acta Math.* 217 (2016), no. 1, 81-176.
- 6) On the fine structure of the free boundary for the classical obstacle problem (with J. Serra), *Invent. Math.* 215 (2019), no. 1, 311-366.
- 7) 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.
- 8) 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.
- 9) 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.
- 10) 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.* 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.*
- 2015 – present Editor of *Probab. Theory Related Fields*
- 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, September 26, 2022