

UNIVERSITÀ DEGLI STUDI DI MILANO

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Salvatore Stuvard Curriculum Vitae

Personal Information

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Nome Salvatore
Data di nascita 6 Luglio 1988

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Current Appointment

Sep 2018 – present **Bing Instructor of Mathematics**, *The University of Texas at Austin (USA)*.

Previous Appointments

Sep 2017 – **Postdoctoral Researcher**, *The University of Texas at Austin (USA)*,
Aug 2018 Principal Investigator: PROF. FRANCESCO MAGGI.
Supported by the NSF funded program FRG: 'Vectorial and geometric problems in the Calculus of Variations'.

Education and Training

Sep 2013 – **Ph.D. in Mathematics**, *University of Zurich (Switzerland)*,
Aug 2017 Advisor: PROF. CAMILLO DE LELLIS.
Supported by the ERC grant 306247: Regularity of area-minimizing currents.
Title of the Ph.D. thesis: "*Geometric variational problems on spaces of multiple valued functions*".
Graduation date: November, 1st 2017.
Nov 2010 – **M.Sc. in Mathematics**, *University of Naples "Federico II" (Italy)*,
Jul 2013 Major subject in the master: Mathematical Analysis.
Thesis advisor: PROF. MASSIMILIANO BERTI.
Title of the master thesis: "*On the Cauchy Problem for Nonlinear Wave Equations*".
Graduation date: July, 24th 2013.
Marks: 110/110 cum Laude (Summa cum Laude).

Oct 2007 - **B.Sc. in Mathematics**, *University of Naples "Federico II" (Italy)*,

Oct 2010 Thesis advisor: PROF. VITTORIO COTI ZELATI.

Title of the thesis: "*Topological Dynamical Systems*".

Graduation date: October, 28th 2010.

Marks: 110/110 cum Laude (Summa cum Laude).

Awards and Fellowships

Jul 2020 - Simons Travel Grant (5000 USD) from the American Mathematical Society and the Simons Foundation

Sep 2018 - R. H. Bing Fellowship at the University of Texas at Austin (with 1000 USD per year of travel allowance)

Sep 2013 - Fellowship of the ZGSM (Zurich Graduate School in Mathematics)

Aug 2017

Professional societies

- o Member of the *American Mathematical Society* since 2019
- o Member of the *Society for Industrial and Applied Mathematics (SIAM)* and of the *SIAG - PDE* since 2019
- o Member of the *INdAM - Gruppo Nazionale per l'Analisi Matematica, la Probabilità e le loro Applicazioni* since 2019

Research Interests

- o Geometric Measure Theory
- o Calculus of Variations
- o Geometric Analysis
- o Partial Differential Equations

Scientific Production

- [1] S. Stuvard and Y. Tonegawa. Dynamical instability of minimal surfaces at flat singular points. *Submitted (2020)*. Preprint arXiv:2008.13728 (August 2020).
- [2] D. King, F. Maggi, and S. Stuvard. Smoothness of collapsed regions in a capillarity model for soap films. Preprint arXiv:2007.14868 (July 2020).
- [3] D. King, F. Maggi, and S. Stuvard. Collapsing and the convex hull property in a soap film capillarity model. *Submitted (2020)*. Preprint arXiv:2002.06273 (February 2020).
- [4] S. Stuvard and Y. Tonegawa. An existence theorem for Brakke flow with fixed boundary condition. *Submitted (2019)*. Preprint arXiv:1912.02404 (December 2019).
- [5] C. De Lellis, J. Hirsch, A. Marchese, and S. Stuvard. Regularity of area minimizing currents mod p . To appear on **Geom. Funct. Anal.**. Preprint arXiv:1909.05172 (September 2019).
- [6] C. De Lellis, J. Hirsch, A. Marchese, and S. Stuvard. Area minimizing currents mod $2Q$: linear regularity theory. To appear on **Comm. Pure Appl. Math.**. Preprint arXiv:1909.03305 (September 2019).
- [7] D. King, F. Maggi, and S. Stuvard. Plateau's problem as a singular limit of capillarity problems. To appear on **Comm. Pure Appl. Math.**. Preprint arXiv:1907.00551 (July 2019).
- [8] F. Maggi, A. Scardicchio, and S. Stuvard. Soap films with gravity and almost-minimal surfaces. **Discrete Cont. Dyn. Syst.** 39 (2019), no. 12, 6877-6912. Preprint arXiv:1807.05200 (July 2018).
- [9] A. Marchese, A. Massaccesi, S. Stuvard, and R. Tione. A multi-material transport problem with arbitrary marginals. *Submitted (2020)*. Preprint arXiv:1807.10969 (July 2018).

- [10] J. Hirsch, S. Stuvard, and D. Valtorta. Rectifiability of the singular set of multiple valued energy minimizing harmonic maps. **Trans. Amer. Math. Soc.** 371 (2019), no. 6, 4303-4352. Preprint arXiv:1708.02116 (August 2017).
- [11] S. Stuvard. Multiple valued sections of vector bundles: the reparametrization theorem for Q -valued functions revisited. To appear on **Comm. Anal. Geom.**. Preprint arXiv:1705.00054 (May 2017).
- [12] M. Colombo, A. De Rosa, A. Marchese, and S. Stuvard. On the lower semicontinuous envelope of functionals defined on polyhedral chains. **Nonlinear Anal.** 163 (2017), 201-215. Preprint arXiv:1703.01938 (March 2017).
- [13] S. Stuvard. Multiple valued Jacobi fields. **Calc. Var. Partial Differential Equations** 58 (2019), no. 3, 58:92. Preprint arXiv:1701.08753 (January 2017).
- [14] A. Marchese and S. Stuvard. On the structure of flat chains modulo p . **Adv. Calc. Var.** 11 (2018), no. 3, 309-323. Preprint arXiv:1607.05138 (July 2016).

Invited Talks

- 23.11.2020, TBD, Workshop on Partial Differential Equations, University of Western Australia
postponed
- 07.10.2020 TBD, Analysis Seminar at University of California San Diego
- 12.09.2020 AN EXISTENCE THEOREM FOR BRAKKE FLOW WITH FIXED BOUNDARY CONDITIONS, AMS Fall Central Sectional Meeting, special session on the "Geometry of Submanifolds and Integrable Systems", online-based meeting
- 31.08.2020, TBD, FRG Focus Period: "New challenges in Geometric Measure Theory", University of
postponed Washington
- 08.03.2020 AN EXISTENCE THEOREM FOR MEAN CURVATURE FLOW WITH FIXED BOUNDARY
CONDITION WITH APPLICATIONS TO PLATEAU'S PROBLEM, Texas Differential Equations
conference, The University of Texas at Austin
- 28.02.2020 A CAPILLARITY THEORY APPROACH TO THE ANALYSIS OF SOAP FILMS AND PLATEAU'S
PROBLEM, Analysis Seminar at Columbia University
- 17.01.2020 A CAPILLARITY THEORY APPROACH TO THE ANALYSIS OF SOAP FILMS, AMS Joint
Mathematics Meeting, AMS Special Session on Interfaces Between PDEs and Geometric
Measure Theory, Denver
- 20.06.2019 PLATEAU'S PROBLEM AS A SINGULAR LIMIT OF CAPILLARITY PROBLEMS, Workshop
on "New trends in variational models: from superconductors to liquid crystals", The Fields
Institute, Toronto
- 30.01.2019 SOAP FILMS WITH GRAVITY AND ALMOST-MINIMAL SURFACES, Analysis Seminar at
Tokyo Institute of Technology
- 29.01.2019 THE REGULARITY OF AREA-MINIMIZING CURRENTS MODULO p , Analysis Seminar at
Tokyo University
- 10.01.2019 SOAP FILMS WITH GRAVITY AND ALMOST-MINIMAL SURFACES, Analysis Seminar at the
University of L'Aquila
- 27.11.2018 SOAP FILMS WITH GRAVITY AND ALMOST-MINIMAL SURFACES, Rainwater Seminar at
the University of Washington
- 04.10.2018 SOAP FILMS WITH GRAVITY AND ALMOST-MINIMAL SURFACES, PDE Seminar at Purdue
University
- 22.06.2018 SOAP FILMS WITH GRAVITY AND ALMOST-MINIMAL SURFACES, Analysis Seminar at the
University of Verona

- 20.06.2018 REGULARITY AND SINGULARITIES OF MULTIPLE VALUED DIRICHLET MINIMIZING HARMONIC MAPS, Seminar Differential Equations and Applications at the University of Padua
- 16.05.2018 REGULARITY AND SINGULARITIES OF MULTIPLE VALUED DIRICHLET MINIMIZING HARMONIC MAPS, Analysis Seminar at the University of Texas at Austin
- 20.12.2017 AN INVITATION TO CALCULUS OF VARIATIONS ON SPACES OF MULTIPLE VALUED FUNCTIONS, Analysis Seminar at the University of Naples
- 22.12.2015 REGULARITY THEORY OF AREA-MINIMIZING GENERALIZED SURFACES, Xmaths Workshop at the University of Bari

Workshops and Schools Organization

- May-June 2020 Summer Program in PDE 2020 (co-organized with Philip Isett and Francesco Maggi), The University of Texas at Austin (postponed to 2021)
- March 2020 Texas Differential Equations 2020 (co-organized with Irene Gamba and Francesco Maggi), The University of Texas at Austin

Teaching

- Fall 2020 Instructor of the course "M408K - *Differential Calculus*" at the University of Texas at Austin.
- Fall 2019 Instructor of the graduate course "M393C - *Geometric Harmonic Maps*" at the University of Texas at Austin.
- Fall 2019 Instructor of the course "M341 - *Linear Algebra and Matrix Theory*" at the University of Texas at Austin.
- Spring 2019 Organizer of the conference course "*Topics in Geometric Measure Theory*" at the University of Texas at Austin.
- Spring 2019 Instructor of the course "M346 - *Applied Linear Algebra*" at the University of Texas at Austin.
- Fall 2018 Instructor of the course "M361 - *Theory of Functions of a Complex Variable*" at the University of Texas at Austin.
- Spring 2017 T.A. for the course "*Analysis II*", Bachelor in Mathematics at the University of Zurich. Lecturer: Prof. Camillo De Lellis.
- Fall 2016 T.A. for the course "*Mathematical Statistics*", Master in Mathematics at the University of Zurich. Lecturer: Prof. Reinhard Furrer.
- Spring 2016 T.A. for the course "*Einführung in die Wahrscheinlichkeit*" (Introduction to Probability), Bachelor in Physics and Life Sciences at the University of Zurich. Lecturer: Dr. Delia Marina Coculescu.
- Fall 2015 T.A. for the course "*Mathematik für die Chemie I*" (Calculus 1), Bachelor in Chemistry at the University of Zurich. Lecturer: Prof. Camillo De Lellis.
- Spring 2015 T.A. for the course "*Einführung in die Wahrscheinlichkeit*" (Introduction to Probability), Bachelor in Physics and Life Sciences at the University of Zurich. Lecturer: Dr. Delia Marina Coculescu.
- Fall 2014 T.A. for the course "*ODEs and Dynamical Systems*", Bachelor and Master in Mathematics at the University of Zurich. Lecturer: Prof. Camillo De Lellis.
- Spring 2014 T.A. for the course "*Analysis II*", Bachelor in Mathematics at the University of Zurich. Lecturer: Prof. Camillo De Lellis.
- Fall 2013 T.A. for the course "*Geometrie / Topologie I*" (Geometry and Topology), Bachelor in Mathematics at the University of Zurich. Lecturer: Prof. Viktor Schroeder.

Mentoring

- Jan 2019 - present Informal co-advisor of the Ph.D. thesis of Darren King at the University of Texas at Austin (with Francesco Maggi).
- Sep 2018 - Co-advisor of the bachelor thesis of Hunter Stufflebeam at the University of Texas at Austin
May 2019 (with Francesco Maggi). Topic: Allard's ε -regularity theorem for varifolds with bounded mean curvature
- Sep 2016 - Co-advisor of the master thesis of Emanuele Caputo at the EPFL and the University of
Jan 2017 Zurich (with Camillo De Lellis). Topic: Analysis of Dirichlet minimizing multiple valued functions

Service

- Referee activity (journals): *SIAM J. Math. Anal.*, *Commun. Contemp. Math.*, *Potential Anal*, *Discr. Cont. Dyn. Syst*, *J. Geom. Anal.*, *Proc. A*
- MR / MathSciNet Reviewer since 2020

Departmental Service

- Sep 2018 - present Co-organizer of the Analysis Seminar at the Department of Mathematics of UT Austin (with Stefania Patrizi).

Computer Skills

Programming Languages Fortran, Matlab, Mathematica, R, \LaTeX

Languages

Italian Mother tongue.
English Fluent.
German Intermediate.

References

Prof. Camillo De Lellis

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Prof. Francesco Maggi

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Prof. Guido De Philippis

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Data: 9 Settembre 2020

Luogo: Austin, Texas