

CURRICULUM VITAE: STEFANO VITA

INFORMATION

ORCID ID: <http://orcid.org/0000-0002-0751-1917>
Scopus Author ID: 57077085600

CURRENT POSITION

From 1 August 2024, Assistant Professor RTD-B in Mathematical Analysis MAT/05
at Università di Pavia, Dipartimento di Matematica "Felice Casorati".

EDUCATION

PHD in Pure and Applied Mathematics *November 2014, June 2018*
Università degli Studi di Torino, Politecnico di Torino, Turin (Italy)
Phd thesis: *Strong competition systems ruled by anomalous diffusions.*
Advisor: Susanna Terracini, Università degli Studi di Torino.

Master Degree in Mathematics *September 2012, September 2014*
Università degli Studi di Milano, Milan (Italy)
Master thesis: *Basic results on quasilinear nonlocal elliptic problems involving the fractional p -Laplacian.*
Advisors: Ireneo Peral Alonso, Universidad Autonoma de Madrid, Begoña Barrios Barrera, Universidad Autonoma de Madrid, Kevin Ray Payne, Università degli Studi di Milano.

Erasmus *January 2014, July 2014*
Universidad Carlos III de Madrid, Madrid (Spain)

Undergraduate Degree in Mathematics *September 2009, October 2012*
Università degli Studi di Milano, Milan (Italy)

High School Classical Diploma *September 2004, July 2009*
Liceo Classico Giovanni Berchet, Milan (Italy)

PREVIOUS POSITIONS

May 2018 - April 2019: Starting postdoctoral position in Mathematics and Applications in Sciences, Social Sciences and Engineering at Alma Mater Studiorum Università di Bologna (1 year).

May 2019 - April 2021: Junior A2 type postdoctoral position in Mathematics and its Applications at Università degli Studi di Milano Bicocca (2 years).

May 2021 - September 2021: INDAM postdoctoral position in Mathematics at Politecnico di Milano (1 year).

October 2021 - July 2024: Assistant Professor RTD-A in Mathematical Analysis MAT/05 at Università degli Studi di Torino.

FELLOWSHIPS

Erasmus fellowship from Università degli studi di Milano to visit Universidad Carlos III, Madrid, (5 months) from 01/02/2014 to 01/07/2014.

PhD scholarship by Università degli Studi di Torino and Politecnico di Torino, (3 years) from 01/11/2014 to 31/10/2017.

Research fellowship at Università degli Studi di Torino on project: ERC Compat Adv Grant 339958 (Overheads) - Advisor Prof. Susanna Terracini (6 months), from 01/11/2017 to 30/04/2018.

Marco Polo fellowship from Alma Mater Studiorum Università di Bologna to visit Universitat Politècnica de Catalunya, Barcelona, (3 months) from 01/02/2019 to 30/04/2019.

INDAM fellowship to visit Universitat Politècnica de Catalunya, Barcelona, (4 months) during 2020/2021.

Junior fellowship at the research program Geometric aspects of nonlinear partial differential equations, taking place at Institut Mittag-Leffler, Sweden, (3 months) from 29/08/2022 to 09/12/2022.

PUBLICATIONS

[10] A. Audrito, G. Fioravanti, S. Vita. *Schauder estimates for parabolic equations with degenerate or singular weights*. Accepted for publication on Calc. Var. Partial Differential Equations (2024) arXiv:2401.06038

[9] S. Terracini, G. Tortone, S. Vita. *Higher order boundary Harnack principle via degenerate equations*. Arch. Ration. Mech. Anal., 248-2 (2024), 1-44. DOI: 10.1007/s00205-024-01973-1

[8] S. Vita. *Boundary regularity estimates in Hölder spaces with variable exponent*. Calc. Var. Partial Differential Equations, 61-5 (2022), 1-31. DOI: 10.1007/s00526-022-02274-9

[7] A. De Luca, V. Felli, S. Vita. *Strong unique continuation and local asymptotics at the boundary for fractional elliptic equations*. Adv. Math., 400 (2022), 1-67. DOI: 10.1016/j.aim.2022.108279

[6] Y. Sire, S. Terracini, S. Vita. *Liouville type theorems and regularity of solutions to degenerate or singular problems part II: odd solutions*. Math. Eng., 3-1 (2021), 1-50. DOI: 10.3934/mine.2021005

[5] Y. Sire, S. Terracini, S. Vita. *Liouville type theorems and regularity of solutions to degenerate or singular problems part I: even solutions*. Comm. Partial Differential Equations, 46-2 (2021), 310-361. DOI: 10.1080/03605302.2020.1840586

[4] L. Brasco, E. Cinti, S. Vita. *A quantitative stability estimate for the fractional Faber-Krahn inequality*. J. Funct. Anal., 279-3 (2020), 1-49. DOI: 10.1016/j.jfa.2020.108560

[3] S. Terracini, G. Tortone, S. Vita. *On s -harmonic functions on cones*. Anal. PDE, 11-7 (2018), 1653-1691. DOI: 10.2140/apde.2018.11.1653

[2] S. Terracini, S. Vita. *On the asymptotic growth of positive solutions to a nonlocal elliptic blow-up system involving strong competition*. Ann. Inst. H. Poincaré Anal. Non Linéaire, 35-3 (2018), 831-858. DOI: 10.1016/j.anihpc.2017.08.004

[1] B. Barrios, I. Peral, S. Vita. *Some remarks about the summability of nonlocal nonlinear problems*. Adv. Nonlinear Anal., 4-2 (2015), 91-107. DOI: 10.1515/anona-2015-0012

CONFERENCE PROCEEDINGS, BOOK CHAPTERS, SURVEY ARTICLES

[11] S. Vita. *On s -harmonic functions on cones*. Bruno Pini Mathematical Analysis Seminar, 10-1 (2019), 28-41. DOI: 10.6092/issn.2240-2829/10366

PREPRINTS

[17] A. De Luca, V. Felli, S. Vita. *Unique continuation from conical boundary points for fractional equations*. Preprint (2024) arXiv:2405.12718

[16] S. Vita. *Boundary unique continuation in planar domains by conformal mapping*. Preprint (2024) arXiv:2405.04388

[15] S. Terracini, G. Tortone, S. Vita. *A priori regularity estimates for equations degenerating on nodal sets*. Preprint (2024) arXiv:2404.06980

[14] A. Audrito, G. Fioravanti, S. Vita. *Higher order Schauder estimates for parabolic equations with degenerate or singular weights*. Preprint (2024) arXiv:2403.08575

[13] H. Dong, S. Jeon, S. Vita. *Schauder type estimates for degenerate or singular elliptic equations with Dini mean oscillation coefficients with application*. Preprint (2023) arXiv:2311.06846

[12] S. Jeon, S. Vita. *Higher order boundary Harnack principles in Dini type domains*. Preprint (2023) arXiv:2305.05535

AWARDS AND HONORS

- Quality award 2016 for the Phd in Pure and Applied Mathematics, assigned by the Rector of Politecnico di Torino: distinguished fellow award.
- Seal of excellence for the application to Horizon 2020's Marie Skłodowska-Curie actions call H2020-MSCA-IF-2018.
- Ayuda Juan de la Cierva-Incorporación three year postdoctoral fellowship in 2021.
- Premialità Ricercatori a tempo determinato, Programma Triennale 2021-2023 TO-PEOPLE, Università degli Studi di Torino.
- MUR funding for Young Researchers - Seal of Excellence (linea di finanziamento - giovani ricercatori beneficiari di "Seal of Excellence"). ID: SOE.0000194. Acronym: ADE. Project Title: Anomalous diffusion equations: regularity and geometric properties of solutions and free boundaries. Host institution: Università degli Studi di Torino (2022-2025).

COMMUNICATIONS IN CONFERENCES AND WORKSHOPS, SEMINARS

- Focus Program in Nonlocal Partial Differential Equations: invited talk in the "Conference on Recent Trends on Elliptic Nonlocal Equations" on "asymptotic growth of positive solutions to a nonlocal blow-up system involving strong competition", The Fields Institute, Toronto, Canada, June 9, 2016.
- PhD²-Phd Days: invited talk on "sistemi ellittici regolati da forti interazioni", Università degli Studi di Milano, Milano, June 13, 2016.
- Talk on "nonlocal competition-diffusion systems" at the Workshop: Graduate Lecture Series on Elliptic PDEs of Second Order: Celebrating 40 Years of Gilbarg and Trudinger's Book, MATRIX Centre, Melbourne, Australia, October 16-20, 2017.
- Invited talk on "competition-diffusion elliptic systems" for the seminar "Advanced Differential Equations" at Freie Universität Berlin, Germany, November 23-24, 2017.
- Invited talk "on s -harmonic functions on cones" in the conference "Intensive week of PDEs at Spa", Spa, Belgium, December 10-15, 2017.
- Invited talk on "Liouville type theorems and local behaviour of solutions to degenerate and singular elliptic equations" in the conference "Variational Methods in Analysis, Geometry and Physics", Scuola Normale Superiore, Pisa, February 12-16, 2018.
- Invited talk "on s -harmonic functions on cones" in the conference "Young PDE's @ Roma", dipartimento SBAI, La Sapienza Università di Roma, February 19-22, 2018.
- Invited talk "on s -harmonic functions on cones" for the cycle of seminars "Seminari di Analisi Matematica Bruno Pini", dipartimento di Matematica, Alma Mater Studiorum Università di Bologna, November 8, 2018.

- Invited talk "on s -harmonic functions on cones", dipartimento di Matematica, Università degli Studi di Milano Bicocca, December 4, 2018.
- Invited talk on "Liouville theorems and uniform regularity estimates for a class of degenerate/singular elliptic operators", Universitat Politecnica de Catalunya, February 28, 2019.
- Invited talk on "Liouville type theorems and local regularity for degenerate or singular problems", Università degli Studi di Milano, December 5, 2019.
- Invited talk on "Liouville type theorems and local regularity for degenerate or singular problems", Johns Hopkins University, Baltimore, February 10, 2020.
- Invited talk on "Strong unique continuation and local asymptotics at the boundary for fractional elliptic equations" in the conference "Regularity theory for free boundary and geometric variational problems", Levico Terme, September 5-10, 2021.
- Invited talk on "Strong unique continuation and local asymptotics at the boundary for fractional elliptic equations", Politecnico di Milano, October 12, 2021.
- Invited talk on "Strong unique continuation and local asymptotics at the boundary for fractional elliptic equations", Calderón-Zygmund analysis seminar, University of Chicago, October 25, 2021.
- Invited talk on "Uniform bounds in Hölder spaces via regularization for elliptic equations with variable coefficients" in the conference "Recent Advances in Analysis, PDEs and Applications", Politecnico di Milano, December 2-3, 2021.
- Invited talk on "Higher order boundary Harnack principle via degenerate equations" in the conference "Topics in variational problems arising from models in physics", Bedlewo, Poland, July 24-30, 2022.
- Invited talk on "Degenerate or singular elliptic equations", Univerità degli Studi di Torino, September 16, 2022.
- Invited talk on "Higher order boundary Harnack principle via degenerate equations" in the program "Geometric Aspects of Nonlinear Partial Differential Equations", Institut Mittag-Leffler, Djursholm, Sweden, November 11, 2022.
- Invited talk on "Higher order boundary Harnack principle via degenerate equations" in the Workshop "Calculus of Variations and Free Boundary Problems V", Università di Pisa, March 28, 2023.
- Invited talk on "Higher order boundary Harnack principle via degenerate equations" in the analysis seminar at Columbia University, NY, September 15, 2023.
- Invited talk on "Degenerate equations on nodal sets" in the Workshop "Regularity and geometric aspects of nonlinear PDEs", Università di Pisa, January 31, 2024.
- Invited talk on "Degenerate equations on nodal sets and boundary Harnack principles" in the Seminar "Interactions between PDEs and dynamical systems", Univerità degli Studi di Torino, February 14, 2024.
- Invited talk on "Degenerate equations on nodal sets and boundary Harnack principles" in the Analysis Seminar, Universitat de Barcelona, April 11, 2024.
- Invited talk on "Degenerate equations on nodal sets and boundary Harnack principles" in the Analysis Seminar, Brown University, Providence, April 17, 2024.
- Invited talk on "Degenerate equations on nodal sets" in the Analysis Seminar, Università di Pavia, July 2, 2024.
- Invited talk on "Boundary unique continuation problems and size estimates of critical sets" in the conference "2nd AMS-UMI International joint Meeting", Palermo, July 25, 2024.

- PDE's sessions in Bicocca: eigenvalue problems and shape optimization, Università degli Studi di Milano Bicocca, November 11, 2019.
- PDE's sessions in Bicocca: free boundary problems, Università degli Studi di Milano Bicocca, January 20, 2020.
- Working Group Seminar: "Interactions between PDEs and dynamical systems", Università di Torino, 2022-2023.
- Conference: "PDEs in Cogne: a friendly meeting in the snow", Cogne, Italy, January 9-13, 2023.
- Conference: "PDEs at Grand Paradis IV edition", Cogne, Italy, June 3-7, 2024.

PRINCIPAL INVESTIGATOR IN RESEARCH PROJECTS

Principal Investigator for the project INDAM-GNAMPA *Proprietà qualitative per soluzioni di edp non-lineari ellittiche e paraboliche, locali e nonlocali* (2020-2021).

Principal Investigator for the project *Equazioni differenziali, sistemi dinamici e metodi di approssimazione* (2022-2025). Ricerca Locale 2022 - Linea B. Institution: Università degli Studi di Torino.

Principal Investigator for the project *Anomalous diffusion equations: regularity and geometric properties of solutions and free boundaries* (Acronym: ADE, ID: SOE_0000194). MUR funding for Young Researchers - Seal of Excellence (linea di finanziamento - giovani ricercatori beneficiari di "Seal of Excellence"). Host institution: Università degli Studi di Torino (2022-2025).

PARTICIPATION IN OTHER RESEARCH PROJECTS

From November 2014: Project ERC Advanced Grant 2013 n. 339958 *"Complex Patterns for Strongly Interacting Dynamical Systems - COMPAT*. Institution: Università degli Studi di Torino. Project Director: Prof. Susanna Terracini.

January 2015 - December 2016: Project *Equazioni differenziali lineari e nonlineari - Linear and nonlinear differential equations*. Institution: Università degli Studi di Torino. Project Director: Prof. Alberto Boscaggin.

January 2015 - December 2016: Project *"Equazioni differenziali nonlineari e applicazioni - Nonlinear differential equations and applications"*. Institution: Università degli Studi di Torino. Project Director: Prof. Paolo Caldiroli.

January 2016 - December 2017: Project *"Equazioni differenziali nonlineari e applicazioni - Nonlinear differential equations and applications"*. Institution: Università degli Studi di Torino. Project Director: Prof. Anna Capietto.

January 2017 - December 2018: Project *"Equazioni differenziali nonlineari e applicazioni - Nonlinear differential equations and applications"*. Institution: Università degli Studi di Torino. Project Director: Prof. Marino Badiale.

From January 2017: Project *"Aspetti non-locali in fenomeni di segregazione - Nonlocal aspects in segregation phenonema"*. Institution: Indam - GNAMPA, Project Director: Prof. Nicola Soave.

From 2021: Progetti di Ateneo - Compagnia di San Paolo 2019/2021 - Mission 1.1 - Finanziamento ex-post: "From low to high degrees of freedom in Celestial Mechanics" Institution: Università degli Studi di Torino. Project Director: Prof. Susanna Terracini.

From 2022: TRAPEZIO - Linea 1 - Paving the way to research excellence and talent attraction: "Pattern formation in nonlinear phenomena". Institution: Università degli Studi di Torino. Project Director: Prof. Susanna Terracini.

From 2022: Project *Equazioni differenziali nonlineari e applicazioni* (2022). Ricerca Locale 2022 - Linea A. Institution: Università degli Studi di Torino. Project Director: Prof. Marino Badiale.

From January 2023: Project *"Regolarità e singolarità in problemi di frontiere libere"*. Institution: Indam - GNAMPA, Project Director: Prof. Giorgio Tortone.

From September 2023: PRIN project 2022R537CS *"NO³ - Nodal Optimization, Nonlinear elliptic equations, Nonlocal geometric problems, with a focus on regularity"*. Project Director: Prof. Nicola Soave.

From January 2024: Project *"Nuove frontiere in capillarità nonlocale"*. Institution: Indam - GNAMPA, Project Director: Prof. Alessandra De Luca.

VISITING POSITIONS

- Universidad Autonoma de Madrid, Madrid, Spain, February 2014 - July 2014, working on my Master thesis during Erasmus.
- Fields Institute, Toronto, Canada, May 2016 - June 2016.
- Johns Hopkins University, Baltimore, US, February 2017 - March 2017.
- Universitat Politecnica de Catalunya, Barcelona, Spain, February 2019 - April 2019.
- Johns Hopkins University, Baltimore, US, February 2020.
- Institut Mittag-Leffler, Djursholm, Sweden, September 2022 - December 2022.
- Columbia University, New York, US, September 2023.
- Brown University, Providence, US, September 2023.

GRADUATE TEACHING (PHD COURSES)

A.A. 2023/2024. Alcune generalizzazioni del teorema di Reifenberg e applicazioni ai problemi di frontiera libera, Università di Torino e Politecnico di Torino (PhD in Pure and Applied Mathematics).

UNDERGRADUATE TEACHING

A.A. 2015/2016. Analisi matematica I (Esercitazioni), Politecnico di Torino (CdL Ingegneria).

A.A. 2016/2017. Analisi matematica I (Esercitazioni), Politecnico di Torino (CdL Ingegneria).

A.A. 2016/2017. Precorso per Matematica per la Finanza (Esercitazioni), Università di Torino (CdL Matematica per la Finanza e l'Assicurazione).

A.A. 2017/2018. Analisi matematica I (Esercitazioni), Politecnico di Torino (CdL Ingegneria).

A.A. 2017/2018. Analisi e geometria 2 (Esercitazioni), Politecnico di Milano (CdL Ingegneria).

A.A. 2019/2020. Analisi matematica I (Esercitazioni), Università degli Studi di Milano Bicocca (CdL Fisica/Matematica).

A.A. 2020/2021. Analisi matematica I (Tutorato), Università degli Studi di Milano Bicocca (CdL Fisica/Matematica).

A.A. 2020/2021. Analisi matematica II (Esercitazioni), Università degli Studi di Milano Bicocca (CdL Fisica).

A.A. 2021/2022. Analisi matematica II (Esercitazioni), Università degli Studi di Milano Bicocca (CdL Fisica).

A.A. 2021/2022. Analisi matematica, Università di Torino (CdL Informatica).

A.A. 2022/2023. Analisi matematica I, Università di Torino (CdL Matematica per la Finanza e l'Assicurazione).

A.A. 2022/2023. Analisi matematica, Università di Torino (CdL Informatica).

A.A. 2023/2024. Analisi matematica I, Università di Torino (CdL Matematica per la Finanza e l'Assicurazione).

A.A. 2023/2024. Statistica, Università di Torino (CdLM Farmacia).

A.A. 2023/2024. Analisi matematica, Università di Torino (CdL Ottica e Optometria).

MENTORING (POST DOC)

Alessandra De Luca, from 07/23 to 06/24.

Gabriele Cora, from 12/23 to 06/25.

SUPERVISOR (PHD)

Gabriele Fioravanti, PhD student (11/22-present), co-advised with Susanna Terracini and Alessandro Audrito.

SUPERVISOR (UNDERGRADUATE)

Gabriele Fioravanti, master thesis on *Regularity for even solutions to degenerate or singular elliptic problems and Liouville type theorems*, coadvised with Susanna Terracini, A.A. 2021/2022.

REVIEWER ACTIVITY

Referee for

Journal of the European Mathematical Society, Revista Matemática Iberoamericana, Discrete and Continuous Dynamical Systems Series A, Nonlinear Analysis, ESAIM: Control, Optimisation and Calculus of Variations, Communications in Analysis and Geometry, Mathematics in Engineering, Rendiconti Lincei Matematica e Applicazioni, Communications in Pure and Applied Analysis, Analysis and Mathematical Physics, Bruno Pini Mathematical Analysis Seminar.

LANGUAGES

Italian, English, Spanish.