

CURRICULUM VITAE

Serena Federico

Ricercatore a tempo determinato di tipo A

Dipartimento di Matematica

Università di Bologna

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RESEARCH INTERESTS

Local solvability of Partial differential equations, Degenerate Partial differential operators, Pseudo-differential operators, a priori estimates, Microlocal Analysis, Hypoellipticity, Carleman estimates, Dispersive equations, Pseudo-differential operators on Lie groups, Coercive inequalities.

CURRENT POSITION

12/2021 – now: Ricercatore a tempo determinato di tipo A, Università di Bologna.

AWARDS AND FELLOWSHIPS

- H2020-MSCA-IF 2018 (Marie Skłodowska Curie Individual Fellowship).
Duration of the fellowship: 2 years.

EDUCATION

June-Dec 2021	Postdoctoral researcher, Ghent University, Belgium.
2019-2021	Marie Skłodowska Curie Fellow, Ghent University, Belgium.
2017-2019	Postdoctoral Researcher in Mathematics, University of Bologna, Italy.
2013 - 2017	PhD in Mathematics, University of Bologna, Italy. Title of the thesis: <i>Local solvability of a class of degenerate second order operators</i> . Supervisor: Prof. Alberto Parmeggiani. Date of defense: 30/01/2017. Committee: M. Cicognani, D. Del Santo, G. Mendoza.
2010 - 2012	Master Degree in Mathematics, University of Bologna, Italy. Title of the thesis: <i>Convolution equations</i> . Supervisor: Prof. A. Parmeggiani.
2006 - 2010	Bachelor Degree in Mathematics, University of Bologna, Italy. Title of the thesis: <i>Il metodo COS per la valutazione dei derivati</i> . Supervisor: Prof. Andrea Parcucci.

TEACHING ACTIVITY

2017-2018	Teaching assistant for the course of Analysis 2 of Prof. Fausto Ferrari and Prof. Alberto Parmeggiani, Bachelor of Science in Electronics and
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	Telecommunication Engineering and Bachelor of Science in Chemical and Biochemical Engineering, University of Bologna.
2016 - 2017	Teaching assistant for the course of Analysis 1 of Prof. Annalisa Baldi, Bachelor of Science in Electrical Engineering, University of Bologna.
2015 - 2016	Teaching assistant for the course of Analysis 2 of Prof. Carlo Ravaglia, Bachelor of Science in Computer Engineering, University of Bologna.
2015 - 2016	Teaching assistant for the course of General Mathematics of Prof. Alberto Parmeggiani, Bachelor of Economics in Management and Marketing, University of Bologna.
2014 - 2015	Teaching assistant for the course of General Mathematics of Prof. Alberto Parmeggiani, Bachelor of Economics in Management and Marketing, University of Bologna.
2014 - 2015	Teaching assistant for the course of Analysis 1 of Prof. Carlo Ravaglia, Bachelor of Science in Computer Engineering, University of Bologna.
2013 - 2014	Teaching assistant for the course of Analysis 2 of Prof. Carlo Ravaglia, Bachelor of Science in Computer Engineering, University of Bologna.

OTHER TITLES

Qualification à maître de conférences sections 25 et 26 campagne 2018.

LANGUAGES

Italian: mother tongue

English: fluent

RESEARCH VISITS

Nov 11-31, 2020	Department of Mathematics, Massachusetts Institute of Technology.
Sept 13-23, 2019	Department of Mathematics, University of Bologna.
Jun 21- Jul 1, 2019	Department of Mathematics, University of Bologna.
Oct – Dec 2018	Visiting scholar at Massachusetts Institute of Technology, Cambridge, Massachusetts. Mentor: Prof. Gigliola Staffilani.
Jan - Apr 2016	Visiting student at Massachusetts Institute of Technology, Cambridge, Massachusetts. Mentor: Prof. Gigliola Staffilani.

CONFERENCE PRESENTATIONS AND INVITED TALKS

Dec14, 2021	<i>Strichartz estimates for some variable coefficient Shrödinger operators</i> , webinar in Recent Advances in Nonlinear Evolution Equations .
June 2021	<i>Smoothing effect, Strichartz estimates and local well-posedness for some time-degenerate Shrödinger operators</i> , Online workshop on hyperbolic equations and related topics.
May 2021	<i>Smoothing and Strichartz estimates for some time-degenerate Shrödinger operators</i> , Generalized Function Online Workshop.

Apr 7-9, 2021	<i>Smoothing and Strichartz estimates for some time-degenerate Schrödinger operators</i> , 14 th Symposium on Partial Differential Equations, UFPR, Brazil.
Mar 1, 2021	<i>Smoothing effect and Strichartz estimates for some time-degenerate Schrödinger operators</i> , Analysis seminar, Temple University, Philadelphia (USA).
Oct 19-21, 2020	<i>Smoothing and Strichartz estimates for a class of time-degenerate Schrödinger operators</i> , Workshop: Coercive inequalities and PDEs, Imperial College.
Aug 31-Sept 4, 2020	<i>Smoothing and Strichartz estimates for degenerate Schrödinger-type equations</i> , International Conference on Generalized Functions, Ghent, Belgium.
Feb 10-12, 2020	<i>Smoothing effect for time-degenerate Schrödinger operators</i> , Workshop: Dispersive and Subelliptic PDEs, Centro De Giorgi, Pisa, Italy.
Feb 3-5, 2020	<i>On the local solvability of some degenerate linear partial differential operators</i> , ICM Summer meeting 2020, São Carlos, Brazil.
Sept 2019	<i>Local solvability of some partial differential operators with non-smooth coefficients</i> , INDAM Workshop: Anomalies in PDEs, Università la Sapienza di Roma, Italy.
Dec 2018	<i>Sufficient conditions for local solvability of some degenerate partial differential operators</i> , MIT PDE/Analysis Seminar, Dept. of Mathematics, Massachusetts Institute of Technology, Cambridge, Massachusetts.
Dec 2018	<i>Sufficient conditions for local solvability of some degenerate partial differential operators</i> , PDE & Geometric Analysis Seminar, UW-Madison Dept. of Mathematics, Madison, Wisconsin.
Mar 2017	<i>Local solvability of a class of degenerate second order operators</i> , Bruno Pini Analysis Seminar, University of Bologna, Italy.
June 2016	<i>Local solvability of a class of degenerate second order operators with smooth and non-smooth coefficients</i> , Graduate Student Seminar, Centre d'analyse et de mathématique sociales (CAMS), Paris.
Mar 2016	<i>Local solvability of a class of degenerate second order operators with smooth and non smooth coefficients</i> , Analysis Seminar, Temple University, Philadelphia.
Mar 2016	<i>Local and global well-posedness for the $H^1(\mathbb{R}^n)$ subcritical nonlinear Schrödinger</i> , Graduate Student Seminar, Temple University, Philadelphia.
May 2013	<i>Weighted estimates for the $\bar{\partial}$-operator</i> , Analysis Seminar, University of Bologna
May 2013	<i>Compactness of the $\bar{\partial}$-operator</i> , Analysis Seminar, University of Bologna.

ORGANIZING COMMITTEES

Feb 2021-now	<i>Ghent Methusalem Junior Seminar.</i> https://analysis-pde.org/ghent-methusalem-junior-seminar/
Oct 19-21, 2020	<i>Coercive Inequalities and PDEs</i> , Imperial College London. https://sites.google.com/view/coercive-inequalities-and-pdes
July 7-8, 2020	<i>Pseudo-Differential Conference 2020</i> , Ghent Analysis & PDE Center, Ghent, Belgium. https://analysis-pde.org/noncommutative-conference/

CONFERENCES AND SCHOOLS ATTENDED

Feb 26-27, 2021	<i>Recent Advances in Global Analysis</i> , Temple University, Philadelphia.
Aug 18-20, 2020	<i>Noncommutative Conference 2020</i> , Ghent Analysis & PDE Center, Ghent University, Ghent, Belgium.
Feb 10-12, 2020	<i>Workshop: Dispersive and Subelliptic PDEs</i> , Centro De Giorgi, Pisa, Italy.
Feb 3-5, 2020	<i>ICM Summer meeting 2020</i> , São Carlos, Brazil.
Sept 9-12, 2019	<i>INDAM Workshop: Anomalies in PDEs</i> , Università la Sapienza di Roma, Italy.
Jul 29-Aug2, 2019	<i>12th ISAAC Congress</i> , University of Aveiro, Portugal.
Sept 10-14, 2018	<i>Linear and Nonlinear Wave Phenomena: Stability, Propagation of Regularity and Turbulence</i> , Cortona, Italy.
July 2-6, 2018	<i>Microlocal and Time Frequency Analysis 2018 in honor of the 70'th birthday of Luigi Rodino</i> , Torino, Italy.
Nov 30-Dec 1, 2017	<i>Simposio di Analisi Matematica in occasione dei 70 anni di Ferruccio Colombini</i> , Pisa.
July 17-28, 2017	Summer graduate School: <i>Nonlinear dispersive PDE, quantum many particle systems and the world between</i> , Cortona, Italy.
Sept 12-15, 2017	Summer School: <i>Harmonic Analysis, Spectral Theory and PDE's</i> , Rome, Italy.
June 9-10, 2016	<i>Two-day Meeting on linear and nonlinear PDE's in honor of the 65th birthday of Cristian Gutierrez</i> , Bologna, Italy.
Sept 14-18, 2015	<i>Shocks, Singularities and Oscillations in Nonlinear Optics and Fluid Mechanics</i> , INDAM, Rome.
June 9-11, 2015	<i>2th Advanced Course in Operator Theory and Complex Analysis</i> , Bologna.
Mar 9-11, 2015	<i>School/Workshop Phase transition problems and nonlinear PDEs</i> , Bologna.
Mar 4-6, 2015	<i>Mini-courses and workshop on Geometric Analysis in the Heisenberg group</i> , Bologna.
Jan 22-24, 2014	<i>Fifth Itinerant Workshop on PDEs</i> , De Giorgi Center, Pisa.
July 1-4, 2014	<i>Linear and Nonlinear Hyperbolic Equations</i> , De Giorgi Center, Pisa.
Mar 15-16, 2013	<i>Proprietà Geometriche Microlocali delle Equazioni alle Derivate Parziali</i> , Cesena.

PUBLICATIONS

PREPRINTS

- D. Cardona, S. Federico, M. Ruzhansky, *Subelliptic sharp Gårding inequality on compact Lie groups*. Preprint. Arxiv <https://arxiv.org/abs/2110.00838> (2021).
- S. Federico, G. Staffilani, *Sharp Strichartz estimates for some variable coefficients Schrödinger operators on $\mathbb{R} \times \mathbb{T}^2$* . Preprint. Arxiv <https://arxiv.org/abs/2106.11940> (2021).
- M. Chatzakou, S. Federico, B. Zegarlinski, *q -Poincaré inequalities on Carnot Groups with filiform type Lie algebra*, Preprint. Arxiv <https://arxiv.org/abs/2007.04689> (2020).
- S. Federico, M. Ruzhansky, *Smoothing and Strichartz estimates for degenerate Schrödinger-type equations*. Preprint. Arxiv <https://arxiv.org/abs/2005.01622> (2020).

PUBLISHED

- S. Federico, G. Staffilani, *Smoothing effect for time-degenerate Schrödinger operators*. Journal of Differential Equations 298 (2021), 205-247, <https://doi.org/10.1016/j.jde.2021.07.006>.

- S. Federico, *Local Solvability of Some Partial Differential Operators with Non-smooth Coefficients*, Springer Nature Switzerland AG 2021 M. Cicognani et al. (eds), *Anomalies in Partial Differential Equations*, Springer INdAM Series 43, http://doi.org/10.1007/978-3-030-61346-4_12.
- S. Federico, A. Parmeggiani, *On the Solvability of a Class of Second Order Degenerate Operators*. P. Boggiatto et al. (eds.), *Advances in Microlocal and Time-Frequency Analysis*, Springer Nature Switzerland AG 2020, pp. 207-226.
- S. Federico, *Sufficient conditions for local solvability of some degenerate PDO with complex subprincipal symbol*, J. Pseudo-Differ. Oper. Appl. 10 (4) (2019) 929-940, doi:10.1007/s11868-018-0264-x.
- S. Federico, A. Parmeggiani, *On the local solvability of a class of degenerate second order operators with complex coefficients*, Comm. Partial Differential Equations 43 (10) (2018) 1485-1501.
- S. Federico, *Local solvability of a class of degenerate second order operators*, Bruno Pini Mathematical Analysis Seminar, Vol. 8 (2017) 185-203.
- S. Federico, *A model of solvable second order PDE with non smooth coefficients*, J. Math. Anal. Appl. 440 (2016) 661-676.
- S. Federico, A. Parmeggiani, *Local solvability of a class of degenerate second order operators*, Comm. Partial Differential Equations 41 (03) (2016) 484-514.

MEMBERSHIPS

- From August 2020, member of ISAAC - International Society for Analysis its Applications and Computation. <http://isaacmath.org/home/>
- From June 2019, member of Ghent Analysis & PDE Center, Ghent, Belgium. <https://analysis-pde.org>
- Member of Marie Curie Alumni Association