

Elena Cordero

Curriculum Vitae

Personal Information

Place of Birth Torino, Italy
Date of Birth February 3, 1973
Citizenship Italian
Maternity leave From 27/09/2010 to 10/02/2011, First daughter Elisa (06/10/2010)
From 14/04/2014 to 12/12/2014, Second son Francesco (13/05/2014)

Education

28-01-2004 Ph.D. in Mathematics, Università degli Studi di Torino
Thesis: *Time-Frequency Analysis of Localization Operators and Wavelet Representations*
Supervisor: Professor Anita Tabacco
10-07-1996 Laurea cum laude in Mathematics, Università degli Studi di Torino
Thesis: *Pseudodifferential operators and applications to the problem of local solvability*
Supervisor: Professor Luigi Rodino

Academic positions

Current

1-03-2022– Present **Full Professor in Mathematical Analysis**, *Dipartimento di Matematica "Giuseppe Peano"*, University of Torino, Torino, Italy.

Past

1-11-2010– 28-02-2022 **Associate Professor in Mathematical Analysis**, *Dipartimento di Matematica "Giuseppe Peano"*, University of Torino, Torino, Italy.
2005–2010 **Researcher in Mathematical Analysis**, *Dipartimento di Matematica "Giuseppe Peano"*, Torino, Italy.
2004 **Post-Doc Research Fellow**, *Laboratoire Jacques-Louis Lions, Paris VI*.
2004–2005 **Research Assistant (Assegnista di ricerca)**, *Dipartimento di Matematica, Politecnico di Torino, Italy*.

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Visiting Positions

- January 2014 **Erwin Schrödinger International Institute for Mathematical Physics (ESI), University of Vienna**, *Follow-up Workshop on "Time-Frequency Analysis"*.
- October 2012 **Erwin Schrödinger International Institute for Mathematical Physics (ESI), University of Vienna**, *Phase space methods for pseudo-differential operators*.
- April 4-14, 2006 **Washington University in St. Louis, Missouri**, *Research activities with Professor G. Weiss*.
- June 2006 **Numerical Harmonic Analysis Group (NuHAG), Vienna**, *Research activities with Professors K. Gröchenig and H.G. Feichtinger*.
- June 2005 **Erwin Schrödinger International Institute for Mathematical Physics (ESI), University of Vienna**, *Research activities with Professors K. Gröchenig and K. A. Okoudjou*.
- From April to June 2004 **Laboratoire Jacques-Louis Lions, Paris VI, Paris**, *Post-Doc Research Fellowship*, Supervisor: Professor A. Cohen.
- October 2002 **University of Storrs, CT, USA**, *Research activity with Professor K. Gröchenig*.

Professional experience

- 2001-2005 Professor in Mathematics on research leave, class of competition A047, ITIS Enzo Ferrari, Torino, and, later, Liceo Scientifico C. Darwin Rivoli (To)
- 1999 Winner of the competition, based on tests and qualifications for access to the roles of the secondary school level, organized by DDG 1.4.1999, for the classes of competition: A047-Mathematics and A048-Applied Mathematics
- 1997-2000 Analyst programmer, Banksiel S.p.a., Italy
- 1996-1997 Employee, Banca Sella S.p.a., Italy

Bibliometric Indicators (July 1, 2021)

Scopus source: Publications: 74, Citations: 1200 total citations by 476 documents, *h-index*: 21
MathSciNet source: Publications: 77, Citations: 916, most quoted paper: 121

Principal Investigator of research projects

- PI of the Research Project "Analisi tempo-frequenza applicata alla teoria dei segnali", funded by GNAMPA, 2020.
- PI of the Research Project "Analisi microlocale e tempo-frequenza, con applicazioni", funded by GNAMPA, 2017.
- PI of the Research Project "Analisi Tempo frequenza ed applicazioni alle equazioni alle derivate parziali", funded by GNAMPA, 2010.

GEV Member

- 2020 - 2022, Member of the Group of evaluation experts (GEV) in Mathematics, for the Italian Evaluation of Research Quality 2015-2019 (VQR 2015-2019).

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Awards

- Awarded the National Full Professor habilitation (Abilitazione Scientifica Nazionale per I fascia), 10/05/2019
- Awarded the National Full Professor habilitation (Abilitazione Scientifica Nazionale per I fascia), 2013
- *Optime Prize for Best Master Theses*, Unione Industriale di Torino, in collaboration with Università degli Studi di Torino and Politecnico di Torino, 1997.

National Fundings

- Principal Investigator of the Research Project "Analisi tempo-frequenza applicata alla teoria dei segnali", funded by GNAMPA, 2020. Amount of the contribution: 1.350,00 euros
- Member of the project: "Optimal Shapes in Boundary Value Problems", funded by INdAM, 2018
- Recipient of the fund "Fondo per il Finanziamento delle Attività di Base di Ricerca - FFABR", 2017. Amount of the contribution: 3.000,00 euros
- Principal Investigator of the Research Project "Analisi microlocale e tempo-frequenza, con applicazioni", funded by GNAMPA, 2017 (From March to July 2017). Amount of the contribution: 1.600,00 euros
- Principal Investigator of the Research Project "Analisi Tempo frequenza ed applicazioni alle equazioni alle derivate parziali", funded by GNAMPA, 2010 Amount of the contribution: 2.000,00 euros
- Member of the following PRIN projects: PRIN2012: *Variational and perturbative aspects of nonlinear differential problems*, 2014-2017. PRIN2008: *Operatori Pseudo-Differenziali ed Analisi Tempo-Frequenza*, 2010-2012. PRIN2006: *Analisi Microlocale ed Applicazioni*, 2006-2008.

Local Fundings

- Principal Investigator of the Research Project "Microlocal and time-frequency analysis, with applications", funded by the University of Torino, 2017. Amount of the contribution: 19.847,68 euros
- Principal Investigator of the Research Project "Analisi di Fourier per equazioni alle derivate parziali ed operatori pseudo-differenziali", funded by the University of Torino, 2013. Amount of the contribution: 19.818,16 euros
- Principal Investigator of the Research Project "Analisi di Fourier e equazioni alle derivate parziali", funded by the University of Torino, 2011. Amount of the contribution: 8438,12 euros.

Organization of Conferences

- Member of the Organizing Committee of the *XL Convegno Nazionale di Analisi Armonica*, Politecnico di Torino, DISMA, May 26-28, 2021, <http://www.aatorino21.polito.it>
- Member of the Organizing Committee of the Conference: *ATFA19: Aspects of Time-Frequency Analysis, Politecnico di Torino, DISMA, Torino, Italy, June 25-27, 2019*, <http://www.atfa19.polito.it>
- Member of the Organizing Committee of the Conference: *Micro and pseudo..., but Great! MicroLocal and Time Frequency Analysis 2018, Università di Torino, Torino, Italy, July 2-6, 2018*, www.mltf18.unito.it
- Member of the Organizing Committee of the Conference: *ATFA17: Aspects of Time-Frequency Analysis, Politecnico di Torino, Torino, Italy, June 5-7, 2017*

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- Member of the Organizing Committee of the *XXXIII Convegno Nazionale di Analisi Armonica*, Alba, June 17-20, 2013, <http://calvino.polito.it/anfunz/Alba/alba2013.htm>
- Member of the Organizing Committee of the *XXIX Convegno Nazionale di Analisi Armonica*, Bardonecchia, June 15-19, 2009
- Member of the Organizing Committee of *The Italian-Bulgarian Workshop on PDE and Time-Frequency Analysis*, University of Torino, Turin, Italy, September 8-9, 2005. Talk: "Symbolic calculus for localization operators"
- Member of the Organizing Committee of the special two months: *Microlocal Analysis and Related Subjects*, May-July 2003, Università and Politecnico di Torino.

Recent Invited Talks

- Conference: *Advances in Pseudo-Differential Operators*, Ghent Analysis & PDE Center, Ghent University, Belgium, July 7-8, 2020. Talk: "Properties of Eigenfunctions of Pseudodifferential operators via Gabor frames"
- *Workshop INDAM "Anomalies in PDE's"*, September 9-13, 2019, Dipartimento di Matematica "G. Castelnuovo", Università "La Sapienza", Roma. Talk: "Decay and Smoothness for Eigenfunctions of Localization Operators"
- *Zurich Colloquium in Applied and Computational Mathematics*, ETH Zurich, Zurich, Switzerland, December 5, 2018. (Invited by Prof. Rima Alaifari) Talk: "Generalized Born-Jordan Distributions and Applications", <https://www.math.ethz.ch/sam/news-and-events/zhacm-colloquia.html?y=2018>
- *New Trends in Harmonic Analysis*, May 24-25, 2018, Politecnico di Torino. Talk: "Born-Jordan distribution, quantization, interferences and pseudodifferential calculus"
- *7th International Conference on Computational Harmonic Analysis (ICCHA7) in conjunction with the 33rd annual Shanks Lecture*, May 14-18, 2018, Vanderbilt University, Nashville, USA. Talk: "On the reduction of the interferences in the Born-Jordan distribution"
- *Quantum Harmonic Analysis and Symplectic Geometry*, April 21-24, 2018, Strobl, Austria. Talk: "Symplectic Harmonic Analysis: from quantum mechanics to PDEs".

Courses, Conferences and Main Talks

- *IWOTA 2021, International Workshop on Operator Theory and its Applications*, August 9-13, 2021, Chapman University, ORANGE, CA. Talk: "Wigner analysis of operators".
- *Quantum Harmonic Analysis and Applications to Operator Theory*, August 3-5, 2021, NTNU, Norway. Talk: "Wigner analysis of operators". <https://wiki.math.ntnu.no/qha21/start>
- *13th ISAAC Congress*, August 2-6, 2021
- *Generalized Functions Online Workshop*, May 12, 2021
- *An Introduction to EMI (English as a Medium of Instruction)* 20-hour online course delivered by the British Council, from the 29th of June to 9th of July, 2020
- *XXXIX Convegno di Analisi Armonica, Bologna, June 3-5, 2020*. Talk: "Eigenfunctions of Localization Operators and Gabor frames"
- *Jubilee of Fourier Analysis and Applications: A Conference Celebrating John Benedetto's 80th Birthday*, University of Maryland, College Park, MD, USA, September 19-21, 2019
- *Convegno Nazionale di Analisi Armonica*, May 27-29, 2019, Bergamo, Italy. Talk: "Signal Analysis via generalized Born-Jordan distributions"
- *Conference: L'eredità matematica e civile di Francesco Faà di Bruno*, September 22, 2017, Politecnico di Torino, Italy

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- Conference on “Time-Frequency Analysis and Related Topics”, June 6-11, 2016, Strobl, Austria. Talk: “Gabor Frames of Gaussian Beams for the Schrödinger equation”
- Workshop on “Time-Frequency Analysis”, Erwin Schrödinger Institute (Univ. Vienna), January 13-17, 2014, Viena, Austria. Talk: “Time-frequency analysis of Schrödinger Equations with Bounded Potentials”
- Helsinki ECM Satellite 2012- Fourier Analysis and Pseudo-Differential Operators, June 25-30, 2012, Helsinki, Finland. Talk: “Gabor Analysis of Fourier Integral Operators”
- XXXII Convegno di Analisi Armonica, Genova, Italy, June 4-8, 2012. Talk: “Gabor Analysis of Fourier Integral Operators”
- XXX Convegno di Analisi Armonica, Palazzo Feltrinelli, Gargnano, June 7-11, 2010. Talk: “The Cauchy Problem for the Vibrating Plate Equation”
- 7th ISAAC Congress, July 13-18, 2009, Imperial College, London. Talk: “Sharp Results for the STFT and Localization Operators”
- Second conference on Pseudo-Differential Operators and related topics, June 23-27, 2008, Växjö University, Svezia. Talk: “Sparse Approximation of Fourier Integral Operators using Gabor frames”
- ICMS 2008 - Classical and Modern Harmonic Analysis: from Theory to Numerical Computation, April 30- May 2, 2008, Edinburgh, Scotland. Invited speaker. Talk: “Sparse Approximation of Fourier Integral Operators using Gabor frames”
- Trends in Harmonic Analysis, June 17-23, 2007, Strobl (Austria). Talk: “Strichartz Estimates in Wiener Amalgam Spaces for the Schrödinger Equation”
- XXVI Convegno Nazionale di Analisi Armonica, May 22-27, 2006, Cortona. Talk: “Reproducing groups for the metaplectic representation”
- Wavelet Workshop at Washington University in St. Louis, April 3-7, 2006, St. Louis, Missouri, USA Talk: “Reproducing groups for the metaplectic representation”
- Joint Mathematics Meetings, Henry B. Gonzalez Convention Center, January 12-15, 2006, San Antonio, Texas, USA. Talk: “Short-Time Fourier Transform Analysis of Localization Operators”
- 5th ISAAC Congress, July 25-30, 2005, Catania, Italy. Talk: “Analytic features of reproducing groups for the metaplectic representation”
- Coherent States, Wavelets, and Applications, Satellite Symposium to G24 & Group de Contact FNRS, July 10-12, 2002, UCL, Louvain-La-Neuve. Talk: “Time-frequency techniques for the study of anti-Wick operators”
- Wavelet Course in Cortona, July-August 2001, held by Professor G. Weiss (Washington University, St. Louis) and A. Aldroubi (Vanderbilt University).

Editorial Activity

- 2020-now **Editorial board member of the *Journal of Fourier Analysis and Applications*, Springer, ISSN: 1069-5869.**
- 2022 **Associate Editor of the Volume “Microlocal and Time-Frequency Analysis”, Printed Edition of the Special Issue Published in *Mathematics*, MDPI, Basel, Switzerland. ISBN 978-3-0365-3173-1.**
- 2020-2021 **Guest Editor for the (open access) journal *Mathematics*, Springer, ISSN: 1069-5869.**

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- 2020 **Associate Editor of the Volume "Advances in Microlocal and Time-Frequency Analysis"**, *Applied and Numerical Harmonic Analysis*, Birkhäuser/Springer, 2020. ISBN 978-3-030-36137-2, <https://doi.org/10.1007/978-3-030-36138-9>.
- 2020 **Associate Editor of the Volume "Landscapes of Time-Frequency Analysis, ATFA19"**, *Applied and Numerical Harmonic Analysis*, Birkhäuser/Springer, 2020. ISBN 978-3-030-56004-1, <https://www.springer.com/gp/book/9783030560041>.
- 2019 **Associate Editor of the Volume "Landscapes of Time-Frequency Analysis"**, *Applied and Numerical Harmonic Analysis*, Birkhäuser/Springer, 2019. ISBN 978-3-030-05209-6, <https://www.springer.com/la/book/9783030052096>.

Membership in scientific bodies/juries

- 2021, Panel member for the **Research Council of Norway** (19 projects; First assessor for 3 projects, Second assessor for 4 projects)
- 2020 - 2022, Member of the Group of evaluation experts (**GEV**) in Mathematics, for the Italian Evaluation of Research Quality 2015-2019 (VQR 2015-2019)
- 2020-21, Member of the Scientific Committee for the selection procedure for Researcher *RT-B* (Settore concorsuale 01/A3), Università di Bologna, Italy
- 2020, Member of the Committee for the PhD Disputation of Anders Israelsson - Department of Mathematics, (Uppsala University), Sweden
- 2020, First Opponent of the Adjudication Committee for the PhD Disputation of Ulrik Bo Rufus Enstad - Department of Mathematics, (University of Oslo), Norway
- 2019, Member of the Scientific Committee for the selection procedure for Researcher *RT-B* (Settore concorsuale 01/A3), Università di Genova, Italy
- 2018, Member of the Scientific Committee for the selection procedure of 1-year researcher positions for the Department of Mathematics G. Peano, Università di Torino, Italy.

Reviewer Activity

- *Referee for*: Advances in Mathematics, Advances in Nonlinear Analysis, Analysis and Applications, Applied and Computational Harmonic Analysis (ACHA) (*Certificate of Outstanding Contribution in Reviewing, January 2018*), Bollettino dell'Unione Matematica Italiana (BUMI), Communications in Partial Differential Equations, Discrete and Continuous Dynamical Systems - Series A (DCDS-A), Inverse Problems, Georgian Mathematical Journal, Journal of Functional Analysis (JFA), Journal of Fourier Analysis and Applications (JFAA), Journal of Pseudo-Differential Operators and Applications, Journal of Mathematical Analysis and Applications (JMAA), Journal of Inequalities and Applications, Journal of Computational and Applied Mathematics, Linear Algebra and Its Applications, Michigan Mathematical Journal, Rend. Sem. Mat. Univ. Pol. Torino, SIMA, Transaction of the AMS
- *Reviewer for*: Mathematical Reviews/MathSciNet
- *Reviewer for*: Faculty of Mathematics, University of Vienna, Habilitationsschrift (Habilitation thesis, April 2016)
- *Reviewer for*: The Italian Ministry of University and Research (M.I.U.R.)
- *Reviewer for*: FWF Der Wissenschaftsfonds (Austrian Science Fund), Austria
- *Reviewer for*: Research Foundation - Flanders (Fonds Wetenschappelijk Onderzoek - Vlaanderen, FWO), Belgium.

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Istitutional Offices

- From 2012 member of the Scientific Committee of the *Ph.D. Program in Pure and Applied Mathematics*, Università and Politecnico di Torino, Italy
- From 2012 member of *Giunta del Consiglio del Corso di Studi*, Corso di Laurea in Matematica, Università di Torino, Italy
- From 2015 member of *Giunta del Consiglio del Corso di Studi*, Master Degree in Stochastics and Data Science, Università di Torino, Italy
- From 2018 member of *Giunta del Dipartimento di Matematica*, Università di Torino, Italy.

Participation in National Research Groups

- Member of the *Gruppo Nazionale per l'Analisi Matematica, la Probabilità e le loro Applicazioni (GNAMPA)* of the Istituto Nazionale di Alta Matematica (INdAM)
- Member of the Unione Matematica Italiana (UMI)
- From 2020, member of the UMI group *Matematica per l'Intelligenza Artificiale ed il Machine Learning*
- From 2020, member of the UMI group *Teoria dell'Approssimazione e Applicazioni (T.A.A.)*.

Areas of research interest

- Harmonic analysis, time-frequency analysis and applications to Schrödinger equations
- Fourier integral operators (FIOs), generalized metaplectic operators, pseudodifferential operators
- Strichartz estimates for the Schrödinger equation in Wiener amalgam spaces
- Reproducing subgroups for the (extended) metaplectic representation
- Frame theory, wavelet frames, Gabor frames
- Semiclassical analysis, in particular applications to semi-classical Schrödinger type equations
- Born-Jordan, τ -quantizations and related pseudodifferential calculus
- Quadratic time-frequency representations and the problem of interferences
- Convolutional neural networks

Teaching activity

Ph.D. Courses

- AY 2019-20: *Microlocal and time-frequency analysis with applications*, PhD in Pure and Applied Mathematics, Università and Politecnico di Torino.
- AY 2017-18: *Symplectic Harmonic Analysis*, PhD in Pure and Applied Mathematics, Università and Politecnico di Torino.
- AY 2012-13: *Applications of Fourier Analysis* (10 hours), Dottorato in Matematica, Scuola di Dottorato in Scienze della Natura e Tecnologie Innovative, Università di Torino.
- AY 2011-12: *Operatori pseudo-differenziali ed analisi tempo-frequenza* (10 hours), Dottorato in Matematica, Scuola di Dottorato in Scienze della Natura e Tecnologie Innovative, Università di Torino.
- AY 2007-08: *Analisi tempo-frequenza e applicazioni allo studio delle equazioni alle derivate parziali* (10 hours), Dottorato in Matematica, Scuola di Dottorato in Scienze della Natura e Tecnologie Innovative, Università di Torino.
- AY 2006-07: *Analisi tempo-frequenza* (10 hours), Dottorato in Matematica, Scuola di Dottorato in Scienze della Natura e Tecnologie Innovative, Università di Torino.

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Master Level

Holder or co-holder of the following courses:

- AY 2020-21: *Analysis* (56 hours), Master Degree in Stochastics and Data Science, Dipartimento di Matematica G. Peano, Università di Torino; *Analisi superiore* (24 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2019-20: *Analysis* (40 hours), Master Degree in Stochastics and Data Science, Dipartimento di Matematica G. Peano, Università di Torino; *Analisi superiore* (24 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2018-19: *Analysis* (56 hours), Master Degree in Stochastics and Data Science, Dipartimento di Matematica G. Peano, Università di Torino; *Analisi superiore* (26 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2017-18: *Analysis* (56 hours), Master Degree in Stochastics and Data Science, Dipartimento di Matematica G. Peano, Università di Torino; *Analisi microlocale ed operatori lineari* (24 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2016-17: *Analysis* (56 hours), Master Degree in Stochastics and Data Science, Dipartimento di Matematica G. Peano, Università di Torino; *Analisi microlocale ed operatori lineari* (24 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2015-16: *Analysis* (40 hours), Master Degree in Stochastics and Data Science, Dipartimento di Matematica G. Peano, Università di Torino; *Analisi microlocale ed operatori lineari* (28 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2014-15: *Analisi microlocale ed operatori lineari* (48 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2013-14: *Analisi superiore* (32 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2012-13: *Analisi superiore* (32 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino; *Modelli matematici applicati alle scienze della Terra* (32 hours), Corso di Laurea Magistrale in Scienze Geologiche Applicate, Dipartimento di Scienze della Terra, Università di Torino.
- AY 2011-12: *Analisi superiore* (40 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2010-11 *Modelli matematici applicati alle scienze della Terra* (32 hours), Corso di Laurea Magistrale in Scienze Geologiche Applicate, Dipartimento di Scienze della Terra, Università di Torino.
- AY 2009-10: *Analisi superiore* (32 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2008-09: *Analisi superiore* (28 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2007-08 *Analisi superiore* (24 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2006-07 *Analisi superiore* (28 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2005-06 *Analisi superiore* (28 hours), Corso di Laurea Magistrale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.

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Teacher in the following course:

- AY 2011-12 *Introduzione al linguaggio MATLAB ed applicazioni* (16 hours), Corso di Laurea Magistrale in Scienze Geologiche Applicate, Dipartimento di Scienze della Terra, Università di Torino.

Bachelor Level

Holder or co-holder of the following courses:

- AY 2020-2021 *Analisi II* (46 hours), Corso di Laurea in Fisica, Dipartimento di Fisica, Università di Torino.
- AY 2019-2020 *Analisi II* (56 hours), Corso di Laurea in Fisica, Dipartimento di Fisica, Università di Torino.
- AY 2018-19 *Analisi II* (50 hours), Corso di Laurea in Fisica, Dipartimento di Fisica, Università di Torino.
- AY 2017-18 *Analisi II* (50 hours), Corso di Laurea in Fisica, Dipartimento di Fisica, Università di Torino.
- AY 2016-17 *Analisi II* (50 hours), Corso di Laurea in Fisica, Dipartimento di Fisica, Università di Torino.
- AY 2015-16 *Analisi matematica I* (56 hours), Corso di Laurea in Matematica per la Finanza e l'Assicurazione, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2013-14 *Analisi matematica I* (64 hours), Corso di Laurea in Matematica per la Finanza e l'Assicurazione, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2012-13 *Analisi matematica I* (56 hours), Corso di Laurea in Matematica per la Finanza e l'Assicurazione, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2011-12 *Analisi matematica I* (40 hours), Corso di Laurea in Matematica per la Finanza e l'Assicurazione, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2009-10 *Mathematical Analysis I* (64 hours), Prima Facoltà, Politecnico di Torino.
- AY 2008-09 *Calcolo differenziale e integrale* (64 hours), Corso di Laurea Triennale in Fisica, Dipartimento di Fisica, Università di Torino.

Teacher in the following courses:

- AY 2011-12 *Calcolo delle probabilità e statistica* (14 hours), Corso di Laurea Triennale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2010-11 *Calcolo delle probabilità e statistica* (14 hours), Corso di Laurea Triennale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino.
- AY 2009-10 *Analisi matematica I* (32 hours), Corso di Laurea Triennale in Matematica, Dipartimento di Matematica G. Peano, Università di Torino; *Analisi I* (16 hours), Corso di Laurea Triennale in Fisica, Dipartimento di Fisica, Università di Torino.

Student supervision

Ph.D. Students

- 2019-now **Federico Bastianoni**, *Decay and Smoothness for Eigenfunctions of Localization Operators*, (Co-Tutor with F. Nicola).
- 2017-2021 **S. Ivan Trapasso**, *Quantizations and Path Integrals: a Time-Frequency Analysis Approach*, (Co-Tutor with F. Nicola).
- 2012-2015 **Michele Berra**, *Frame Based Gaussian Beams for Evolution Equations*.

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Graduate (magistrali)

- 2020 **Tommaso Bucciarelli**, *"Methods of simplified analyses for the estimation of the power spectral density in thermal space applications"*.
- 2020 **Emanuele Gamba**, *"Signal Processing and Speech"*.
- 2020 **Francesco Moraglio**, *"Rudiments of Neural Cryptography"*, Master Degree in Stochastics and Data Science.
- 2019 **Federico Bastianoni**, *"Decay and Smoothness for Eigenfunctions of Localization Operators"*.
- 2019 **Giacomo Cerutti**, *"La Trasformata di Bargmann e applicazioni ai frames di Gaussiane"*.
- 2018 **Francesco Tresso**, *"Gabor Frames. An excursus in the world of time-frequency reconstructions and its basic results"*.
- 2017 **S. Ivan Trapasso**, *"Pseudodifferential Operators on Wiener Amalgam and Modulation Spaces"*.
- 2017 **Lorenza D'Elia**, *"Boundedness of Pseudodifferential Operators on Modulation Spaces"*.
- 2016 **Francesca Pedrazzoli**, *"Wavelets: Theory and Applications"*.
- 2016 **Noemi Montobbio**, *"Variational techniques in encoding fMRI data for cortical architecture modeling"*.
- 2016 **Pietro Donà**, *"Proprietà ottimali di continuità della distribuzione di Wigner negli spazi di modulazione"*.
- 2015 **Serena Mattalia**, *"Introduzione alle Wavelets"*.
- 2015 **Chiara Picco**, *"Analisi Tempo Frequenza e Principio di Indeterminazione di Heisenberg"*.
- 2015 **Elena Marongiu**, *"Rappresentazioni integrali di trasformazioni affini sullo spazio delle fasi"*.
- 2013 **Iulia Martina Bulai**, *"Analisi Tempo-frequenza Discreta"*.
- 2013 **Luca Vogliotti**, *"Gabor Representation of Evolution Operators"*.
- 2012 **Enrico Gianotti**, *"Wiener Property for Fourier Integral Operators"*.
- 2011 **Michele Berra**, *"Time-Frequency Analysis of Fourier Integral Operators and Applications"*.
- 2008 **Davide Zucco**, *"Stime dispersive e di Strichartz per l'equazione di Schrödinger"*.
- 2007 **Francesca Piazza**, *"Analisi Tempo-Frequenza e Teoria dei Frames"*.
- 2007 **Miriam Gastaldi**, *"La rappresentazione metaplettica estesa e applicazioni alla teoria delle ondine"*.
- 2007 **Alice Bidoia**, *"Teoria dell'Interpolazione Reale e Spazi di Lorentz"*.
- 2007 **Sara Arese**, *"Teoria dei frames ed applicazioni ai frames di Gabor"*.

Undergraduate (triennali)

- 2012 **Francesca Stroppiana**, *"Serie di Fourier e sue Applicazioni"*.
- 2016 **Ludovica Vittoria Magnano**, *"I Modelli di Markowitz e Sharpe"*.

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Visiting Student

September- **Eva Primo**, *Ph.D. Student at Departament d'Anàlisi Matemàtica, Universitat de*
December *València, Dr. Moliner 50, 46100-Burjassot, València (Spain)*, Visiting position at
2017 Department of Mathematics G. Peano, University of Torino.

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Publications

Book

E. Cordero and L. Rodino. *Time-Frequency Analysis of Operators*, volume 75 of *De Gruyter Studies in Mathematics*. De Gruyter, Berlin, 2020. ISBN 978-3-11-053035-3

Preprints

2. F. Bastianoni and E. Cordero. Quasi-Banach modulation spaces and localization operators on locally compact abelian groups. *Submitted*. arXiv:2107.10352
1. P. Balazs, F. Bastianoni, E. Cordero, H.G. Feichtinger and N. Schweighofer. Comparisons between Fourier multipliers and STFT Multipliers: the smoothing effect of the Short-time Fourier transform. *Submitted*. arXiv:2203.01142

Journal Articles

66. E. Cordero and L. Rodino. Wigner analysis of operators. Part I: pseudodifferential operators and wave fronts. *Appl. Comput. Harmon. Anal.*, 58:85–123, 2022.
65. F. Bastianoni and E. Cordero. Characterization of smooth symbol classes by Gabor matrix decay. *J. Fourier Anal. Appl.*, 28(3), 2022. DOI:10.1007/s00041-021-09895-2.
64. E. Cordero, F. Nicola and S. I. Trapasso. Dispersion, spreading and sparsity of Gabor wave packets for metaplectic and Schrödinger operators. *Appl. Comput. Harmon. Anal.*, 55:405–425, 2021. DOI:10.1016/j.acha.2021.06.007
63. E. Cordero. On the local well-posedness of the nonlinear heat equation associated to the fractional Hermite operator in modulation spaces. *J. Pseudo-Differ. Oper. Appl.*, 12(1):Paper No. 13, 13, 2021. DOI:10.1007/s11868-021-00394-y
62. F. Bastianoni, E. Cordero and F. Nicola. Decay and Smoothness for Eigenfunctions of Localization Operators. *J. Math. Anal. Appl.*, 492(2):124480, 19, 2020. DOI:10.1016/j.jmaa.2020.124480
61. E. Cordero, M. de Gosson, M. Döfler and F. Nicola. Generalized Born-Jordan Distributions and Applications. *Adv. Comput. Math.*, 46(4):Paper No. 51, 22, 2020. DOI:10.1007/s10444-020-09788-w
60. E. Cordero, M. de Gosson and F. Nicola. A characterization of modulation spaces by symplectic rotations. *J. Funct. Anal.*, 278(11):108474, 19, 2020. DOI:10.1016/j.jfa.2020.108474
59. E. Cordero and S. I. Trapasso. Linear perturbations of the Wigner distribution and the Cohen's class. *Anal. Appl. (Singap.)*, 18(3):385–422, 2020. DOI:10.1142/S0219530519500052
58. E. Cordero, M. de Gosson and F. Nicola. On the Positivity of Trace Class Operators. *Adv. Theor. Math. Phys.*, 23(8):2061–2091, 2019. DOI:10.4310/atmp.2019.v23.n8.a4
57. E. Cordero, F. Nicola and S. I. Trapasso. Almost diagonalization of τ -pseudodifferential operators with symbols in Wiener amalgam and modulation spaces. *J. Fourier Anal. Appl.*, 25(4):1927–1957, 2019. DOI:10.1007/s00041-018-09651-z

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56. E. Cordero, L. D'Elia and S. I. Trapasso. Norm Estimates for τ -Pseudodifferential operators in Wiener Amalgam and Modulation Spaces. *J. Math. Anal. Appl.*, 471(1-2):541–563, 2019. DOI:10.1016/j.jmaa.2018.10.090
55. E. Cordero and F. Nicola. Kernel Theorems for Modulation Spaces. *J. Fourier Anal. Appl.*, 25(1):131–144, 2019. DOI:10.1007/s00041-017-9573-3
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43. E. Cordero, F. Nicola and L. Rodino. Gabor Representations of evolution operators. *Trans. Amer. Math. Soc.*, 367(11):7639–7663, 2015. DOI:10.1090/S0002-9947-2015-06302-8
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9. E. Cordero. M -channel MRA and application to anisotropic Sobolev spaces. *Int. J. Wavelets Multiresolut. Inf. Process.*, 3(2):153–166, 2005. DOI:10.1142/S0219691305000865

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Book Chapters

17. E. Cordero, M. de Gosson, M. Döfler and F. Nicola. Signal Analysis using Born-Jordan-type Distributions. *Excursions in Harmonic Analysis, Volume 6*, M. Hirn, S. Li, K. Okoudjou, S. Saliani, Ö. Yilmaz (eds.), Birkhäuser Basel, 2021. ISBN 978-3-030-69636-8
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15. D. Bayer, E. Cordero, K. Gröchenig and S. I. Trapasso. Linear perturbations of the Wigner transform and the Weyl quantization. In *Advances in microlocal and time-frequency analysis*, Appl. Numer. Harmon. Anal., pages 79–120. Birkhäuser/Springer, Cham, 2020. ISBN 978-3-030-36137-2
14. E. Cordero, F. Nicola and L. Rodino. Gabor Analysis for Schrödinger Equations and Propagation of Singularities. In *Recent trends in operator theory and partial differential equations*, volume 258 of *Oper. Theory Adv. Appl.*, pages 257–274. Birkhäuser/Springer, Cham, 2017. ISBN 978-3-319-47079-5
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