

# Corrado Mascia

*Sapienza, University of Rome*

## Personal details

actual position Full Professor (MAT/05 - Mathematical Analysis)  
address Mathematics Department Guido Castelnuovo  
Sapienza, University of Rome (ITALY)

## Abridged version

### Education and appointments (unabridged at pp.3–5)

1988 – 1992 Four year degree in Mathematics, Sapienza University, 110 cum laude  
1992 – 1993 Scholarship, Istituto Nazionale di Alta Matematica, Roma  
1993 – 1997 PhD in Mathematics, Sapienza University,  
1996 – 2004 Assistant professor (MAT/05 - Analysis), Sapienza University  
1999, post-doc C.N.R. scholarship, Indiana University (USA) 6 months  
2005 – 2019 Associate professor (MAT/05 - Analysis), Sapienza University  
2019 – ongoing Full professor (MAT/05 - Analysis), Sapienza University  
2008 – 2011 Associate to Istituto per l'Applicazione del Calcolo (CNR)  
long visits 2004: European project HYKE, Université de Nice Sophia-Antipolis (France) 3m; 2006: Université de Lille (France) 1m; 2008: Indiana University (USA) 1m; 2010: Universidad Nacional Autonoma de México (Mexico) 1m; 2013: École Centrale de Paris (France) 1m; 2014: École Centrale de Paris (France) 1m; 2017: Universidad Nacional Autonoma de México (Mexico) 3w; 2019-20: Université Côte d'Azur (France) 4m.

### Scientific activity (unabridged at pp.5–14)

Research area Partial differential equations (mainly, evolution equations): stability, nonlinear waves, singular limits, well-posedness, large-time behavior.  
Mathscinet Publications 52. Citations 681. H-index 14 (more bibliometry at p.5)  
Author/Editor 65 regular papers (11 single authored), 2 special issues, 2 books editor, 4 didactic texts  
Phd advisor 5 PhD students: *M. Strani* (Mathematics, Sapienza University) defended in 2012; *A. Aspri* (Mathematics, Sapienza University) and *R. Folino* (Mathematics and Modeling, University of L'Aquila) defended in 2017; *T. T. Nguyen* (GSSI, L'Aquila) defended in 2018; *P. Moschetta* (Mathematics, Sapienza University) defended in 2020  
Lectures Selection: 19 invited seminars (since 2004), 13 invited speaker (since 2004)  
Highlights Invited speaker at *11th Conference on Hyperbolic Problems, Lyon 2006*. Colloquium especiales de Matemática Aplicadas at *UNAM, Mexico City 2010*. Seminars at *Université Pierre et Marie Curie (Paris) 2011*, *Université Paris-Sud 2013*. Plenary speaker at *IperGSSI, 16th Italian Meeting on Hyperbolic Equations, L'Aquila 2015*.

Funds as p.i.	Young researchers (Sapienza 2001, 10 Keuro); GNAMPA Project (Indam 2008, 4 Keuro); Research project (Sapienza 2013, 8 Keuro); Research project (Sapienza 2020, 12 Keuro)
Committees for PhD defence	5 <i>Mathematics</i> (G.Fabbri, L.Rossi 2006; E.Felaco, S.Melillo, A.Sepe 2010); 1 <i>Engineering and mathematical modelling</i> (A.Maurizi 2010); 3 <i>Mathematical models and methods</i> (M.Chiricotto, C.R.Filardo, I.Guaraldo 2012).
Miscellanea	4 advanced courses. 6 seminars cycles, conference and workshop organizations. Referee activity. Member of ERC Starting grant <i>ConsLaw</i> (p.i.: S.Bianchini). MIUR reviewer. Member HDR Committee of M. Ersoy
<b>Teaching activity (unabridged at pp.15–18)</b>	
Didactic material	<i>Note di Analisi Matematica</i> (on-line, 2008) with L.Lamberti; <i>EDO - Equazioni differenziali ordinarie</i> (Pitagora editrice, 2012); <i>Un invito alla Biomatematca. Equazioni differenziali ordinarie</i> (La Dotta editrice, 2014) with E.Montefusco; <i>BioMat1.0</i> (La Dotta editrice, 2018) with E.Montefusco, A.Terracina.
Inside Math: L	<i>Bachelor in Mathematics</i> (3yrs): Calculus 1 (2011/12), Calculus 2 (2008/09), Mathematical analysis (2002/03), Differential equations (2004/05, 2005/06, 2006/07, 2009/10, 2016/17), Real Analysis (2019/20).
Inside Math: M	<i>Master in Applied Mathematics</i> (2yrs): Mathematical modeling (2004/05, 2005/06, 2009/10, 2010/11, 2011/12, 2014/15, 2018/19, 2019/20).
Outside Math	Different basic courses for students in Architecture, Chemistry, Industrial chemistry, Informatics, Physics, Statistics.
Master thesis	33 students (11 Mathematics, 19 Applied Mathematics). Topics: Biomathematics (14), Hyperbolic equations (7), Didactic of Mathematics (5), Geomathematics (3), Mixed (4).
Bachelor thesis	40 students. Topics: Reaction-diffusion equations (8), Dynamical systems (10), Economy and finance (5), Control theory and differential games (3), Evolution equations (5), Functional analysis (3), Differential models (3), others (3).
Miscellanea	Participation to <i>Project PLS</i> (activities with high-school students). Seminar series for undergraduate students (INdAM and Sapienza Excellence courses in Mathematics). Lecture series for Informatics: Integral calculus (Sapienza–Unitelma), 25h.
<b>Management and third mission (unabridged at pp.19–20)</b>	
International relations	Academics Coordinator and Supervisor for International Mobility for the Department of Mathematics, Faculty of Science, since April 2020
Panels and boards	<i>Department Board (Giunta di Dipartimento)</i> 2000, representative of Researchers. <i>Scientific Research Panel</i> (Sapienza University) 2010, representative of Associate professors of the Science Faculty
PhD Boards	PhD in Applied Sciences for Environmental Protection and Cultural Heritage 2009–2011; PhD in Mathematics, 2011–2020
Selection committees	Member of Scientific Boards for 1 permanent position (L'Aquila 2002, Padova 2003), 9 PhD fellows in Mathematics (Sapienza 2012), 2 two-years research fellows (Sapienza 2013), 1 three-years research fellow (Campus Bio-Medico, Rome 2014), 1 one-year research fellow (Sapienza 2018)
Popularization of mathematics	<i>Explora</i> , contributions (RAI educational, 2004–06). <i>Alfabeto Matematico</i> , regular column in <i>MaddMaths!</i> (SIMAI+UMI, 2010–2016). <i>Modellare con carta e penna</i> , invited contribution in <i>S&amp;F scienzaefilosofia.it</i>

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## Education and appointments (unabridged)

### Education

- 1988 **High school diploma**, *Liceo Scientifico Statale "Farnesina"*, 60/60, (1987/1988).
- 1988 – 1992 **Four year degree in Mathematics**, *Sapienza University*, 110 cum laude, (November 24th, 1992).
- 1992 – 1993 **Scholarship**, *Istituto Nazionale di Alta Matematica*, Roma.
- 1993 – 1997 **PhD in Mathematics**, *Sapienza University*, (July 9th, 1998).
- PhD thesis **Onde Viaggianti ed Equazioni di Reazione-Convezione**, (*Traveling waves and reaction-convection equations*), summary in *Boll. U.M.I. (8) 2-A Suppl. (1999) 111–114*.  
<http://www1.mat.uniroma1.it/people/mascia/Articles/MasciaPhD.pdf>

### Appointments

- 1996 – 2004 **Assistant professor**, *Sapienza University*, Science Faculty, MAT/05 - Analysis.  
from July 18th, 1996 to December 31st, 2004
- 2005 – 2019 **Associate professor**, *Sapienza University*, Science Faculty, MAT/05 - Analysis.  
since January 1st, 2005
- 2008 – 2011 **Associate**, *Istituto per l'Applicazione del Calcolo*, CNR, Italy.
- 2019 – ongoing **Full professor**, *Sapienza University*, Science Faculty, MAT/05 - Analysis.  
since November 1st, 2019

### Awards

- december 2015 **Teaching prize**, *Award for outstanding undergraduate teaching*, Science Faculty, *Sapienza University*, a.y. 2014/15 (II edition).  
Prizes are the result of an on-line voting among students, organized by the Science Faculty

### Accreditations

- 2013 **Abilitazione di Prima Fascia**, *Ministero dell'Università e della Ricerca*, Italy, Sector 01/A3 - Analisi Matematica, Probabilità e Statistica Matematica, Full professor, Call 2012 (DD n.222/2012), no.8473. From 30/12/2013 until 30/12/2019.  
Committee: Alberto Barchielli, Rinaldo Maria Colombo, Gianni Dal Maso, Lubos Pick, Susanna Terracini
- february 2014 **Qualification a Professeur des universités**, *Ministere de l'enseignement superieur et de la Recherche*, France, Section 25. Mathématiques, dates: 05/02/2014 – 31/12/2018, no.14126260600.  
Committee: Jean-Philippe Anker, Philippe Briet
- february 2014 **Qualification a Professeur des universités**, *Ministere de l'enseignement superieur et de la Recherche*, France, Section 26. Mathématiques appliquées et applications des mathématiques, date: 12/02/2014 – 31/12/2018, no.14126260600.  
Committee: Raphael Danchin, Elisabeth Logak
- september 2014 **Public competition for 1 position of full professor**, *Politecnico di Milano*, Mathematical Analysis, **3rd classified**. Evaluation: 85/100 total points, divided into Curriculum: 29/40; Teaching activity: 18/20; Publications: 38/40 (1st classified: G.Arioli 36+16+35=87/100; 2nd classified: F.Cipriani 33+19+24=86/100) .  
Committee: Filippo Gazzola, Giovanni Leoni, Yehuda Pinchover
- december 2015 **Public competition for 1 position of full professor**, *Parma University*, Mathematical Analysis, **2nd classified** (ex-aequo with L.Giacomelli and L.Lorenzi), individual evaluations: optimum, optimum, optimum – joint evaluation: optimum (first classified: M.Morini, optimum, excellent, very good – optimum with distinction).  
Committee: Piermarco Cannarsa, Gianni Dal Maso, Alessandra Lunardi

- january 2016 **Public competition for 1 position of full professor**, *Politecnico di Torino*, Mathematical Analysis, **2nd classified**, Joint evaluations: 72 (1st classified: V. Chiadò Piat, 75). Committee: Leonardo Colzani, Gianni Dal Maso, Bruno Franchi, Vladimir Simeonov Gueorguiev, Luciano Pandolfi
- october 2016 **Public competition for 1 position of full professor**, *Sapienza, Università di Roma*, Mathematical Analysis, **2nd classified**, individual evaluations: excellent, excellent, optimum – joint evaluation: optimum (1st classified: A. Garroni, excellent, excellent, excellent – excellent). Committee: Alberto Bressan, Alessio Figalli, Andrea Malchiodi
- january 2017 **Public competition for 1 position of full professor**, *Università di Pavia*, Mathematical Analysis, **2nd classified**, joint evaluation: optimum (1st classified: G.F. Schimperna excellent). Committee: Pierluigi Colli, Sergio Polidoro, Paolo Tilli
- december 2017 **Public competition for 1 position of full professor**, *Sapienza, Università di Roma*, Mathematical Analysis and Calculus of Probability, **2nd classified**, individual evaluations: optimum, optimum, excellent – joint evaluation: optimum (1st classified: M. Ponsiglione, optimum, excellent, good – excellent). Committee: Italo Capuzzo Dolcetta, Nicola Fusco, Stefano Olla
- 2018 **Abilitazione di Prima Fascia**, *Ministero dell'Università e della Ricerca, Italy*, Sector 01/A3 - Analisi Matematica, Probabilità e Statistica Matematica, Full professor, Call 2016 (DD n.1532/2016), no.91055. From 27/07/2018 until 27/07/2024. Committee: Paolo Baldi, Luisa Di Piazza, Vittorino Pata, Biagio Ricceri, Fabio Zanolin
- january 2019 **Qualification a Professeur des universités**, *Ministere de l'enseignement superieur et de la Recherche, France*, Section 25. Mathématiques, dates: 31/01/2019 – 31/12/2023, no.19125260600. Committee: Philippe Briet, Benoit Grébert
- february 2019 **Qualification a Professeur des universités**, *Ministere de l'enseignement superieur et de la Recherche, France*, Section 26. Mathématiques appliquées et applications des mathématiques, date: 12/02/2019 – 31/12/2023, no.19125260600.
- june 2019 **Public competition for 1 position of full professor**, *Università di Milano–Bicocca*, Mathematical Analysis, **2nd classified**, joint evaluation: optimum (1st classified: G.F. Schimperna excellent). Committee: Stefano Meda, Roberta Musina, Raul Paolo Serapioni
- july 2019 **Public competition for 1 position of full professor**, *Sapienza, Università di Roma*, Mathematical Analysis, **1st classified**. Committee: Piero D'Ancona, Guido De Philippis, Sandro Salsa
- [Sabbatical years and periods of leave](#)
- 2013/14 **Sabbatical year**, *Destinations*, INRIA Sophia–Antipolis (Nice, France), UNAM Mexico City (Mexico), École central de Paris (France).
- jun–dec 2016 **Period of leave**, *Health issues*, from june 28th to august 10th (2016) and from september 20th to december 20th (2016), 44 days + 92 days = 136 days.
- [Research visits and collaborations](#)
- mar–aug 1999 **Indiana University**, *Mathematics Department*, Bloomington (Indiana, USA). C.N.R. scholarship
- oct–dec 2004 **Université de Nice Sophia–Antipolis**, *Laboratoire J.A.Dieudonné*, Nice-Ville (France). European project HYKE
- october 2006 **Université de Lille**, *Laboratoire Paul Painlevé*, Lille (France). visiting professor

- april 2008 **Indiana University**, *Mathematics Department*, Bloomington (Indiana, U.S.A.).  
visiting professor
- december 2010 **Universidad Nacional Autonoma de México, UNAM**, *Departamento de Matemáticas y Mecánica*, Mexico City (Mexico).  
visiting professor
- april 2013 **École Centrale de Paris**, *Laboratoire MAS (Mathematics Applied to Systems)*, Parigi (France).  
visiting professor
- may 2014 **École Centrale de Paris**, *Laboratoire MAS (Mathematics Applied to Systems)*, Parigi (France).  
visiting professor
- june 2017 **Universidad Nacional Autonoma de México, UNAM**, *Departamento de Matemáticas y Mecánica*, Mexico City (Mexico).  
visiting professor
- nov 2019 **Université Côte d'Azur**, *Laboratoire J.A.Dieudonné*, Nice-Ville (France).  
feb 2020 visiting professor

## Scientific activity (unabridged)

### Research area

- Differential equations Area: evolutive partial differential equations;  
General aim: understanding and description of dynamical properties generated by the interaction of terms corresponding to physical, chemical and biological phenomena.  
Specifically, the main research directions are:
- o Conservation laws: asymptotic behavior, stability and instability, singular limits
  - o Evolution equations: well-posedness, formation of discontinuities, front propagation
  - o Modeling: radiating gases, phase transitions, shallow water, particle-laden flow
  - o Biomathematics: tumor growth, chemotaxis, invasive fronts

### Bibliometric indexes (September 2021)

- legenda Sc=Scopus, WoS=Web of Science, MSN=Mathscinet, GS=GoogleScholar
- Publications Sc: 47, WoS: 47, MSN: 52, GS: 95
- Citations Sc: 655, WoS: 683, MSN: 681, GS: 1111
- H-Index Sc: 14, WoS: 14, MSN: 14, GS: 18

### Phd advisor

- 2009 – 2012 **M. Strani**, *Metastable dynamics of interfaces for a class of parabolic-hyperbolic systems*, PhD in Mathematics (defended on December 19th, 2012), Mathematics Department, Sapienza University.
- actual position RTD/B, 3 years, Ca' Foscari, University of Venice
- 2013 – 2016 **A. Aspri**, *Analysis of a linear elastic model relative to a small pressurized cavity embedded in the half-space*, PhD in Mathematics (defended on January 17th, 2017), Mathematics Department, Sapienza University.  
Co-advisor: Elena Beretta
- actual position Post-doc position, 1 year, University of Pavia
- 2014 – 2017 **R. Folino**, *Metastability for hyperbolic variations of Allen-Cahn equation*, PhD in Mathematics and Modeling (defended on March 30th, 2017), University of L'Aquila.  
Co-advisor: Corrado Lattanzio
- actual position Tenure-track position, UNAM – Universidad Nacional Autónoma de México

- 2014 – 2018 **T.T. Nguyen**,  *$L^p$ - $L^q$  decay estimates for dissipative linear hyperbolic systems*, Phd in Mathematics (defended on June 5th, 2018), GSSI, L'Aquila.  
 actual position Lecturer, Vietnam National University, Ho Chi Minh City
- 2016 – 2019 **P.Moschetta**, *Mathematical modeling and numerical investigation of traveling waves in biomedicine and geophysics*, Phd in Mathematics (defended on February 27th, 2020), Sapienza University, Rome.  
 Co-advisor: Chiara Simeoni  
 actual position High school teacher

#### Articles in Journals (complete list)

- JIFyr Journal Impact Factor as in <http://jcr.incites.thomsonreuters.com/> (if available, else n.e.+1st yr)
- 1996  **$L^1$  Nonlinear Stability of Travelling Waves for Hyperbolic System with Relaxation**, *Journal of Differential Equations* 132 (1996), 275–292, DOI: 10.1006/jdeq.1996.0180, JIF96: n.e.; JIF97: 0.569.  
 collaboration with R.Natalini
- 1997 **Travelling Wave Solutions for a Balance Law**, *Proceedings of the Royal Society of Edinburgh* 127A (1997) 567–593, DOI: 10.1017/s0308210500029917, JIF97: 0.426.  
 single authored
- 1997 **The Perturbed Riemann Problem for a Balance Law**, *Advances in Differential Equations* 2 (1997) no.5, 779–810, DOI: n.e., JIF97: n.e.; JIF11: 0.727.  
 collaboration with C.Sinestrari
- 1998 **Continuity in Finite Time of Entropy Solutions for Nonconvex Conservation Laws with Reaction Term**, *Communications in Partial Differential Equations* 23 (1998), 913–931, DOI: 10.1080/03605309808821372, JIF98: 0.724.  
 single authored
- 1999 **Large-Time Behavior for Conservation Laws with Source in a Bounded Domain**, *Journal of Differential Equations* 159 (1999), 485–514, DOI: 10.1006/jdeq.1999.3669, JIF99: 0.784.  
 collaboration with A.Terracina
- 2000 **Qualitative Behavior of Conservation Laws with Reaction Term and Nonconvex Flux**, *Quarterly of Applied Mathematics* 58 (2000) n.4, 739–761, DOI: 10.1090/qam/1788426, JIF00: 0.398.  
 single authored
- 2002 **First Order Singular Perturbations of Quasilinear Nonconvex Type**, *Journal of Differential Equations* 181 (2002), 31–57, DOI: 10.1006/jdeq.2001.4069, JIF02: 0.903.  
 single authored
- 2002 **Nonhomogeneous Dirichlet Problems for Degenerate Parabolic-Hyperbolic Equations**, *Archive for Rational Mechanics and Analysis* 163 (2002) no. 2, 87–124, DOI: 10.1007/s002050200184, JIF02: 1.585.  
 collaboration with A.Porretta, A.Terracina
- 2002 **Pointwise Green's Function Bounds and Stability of Relaxation Shocks**, *Indiana University Mathematics Journal* 51 (2002) no.4, 773–904, DOI: 10.1512/iumj.2002.51.2212, JIF02: 0.681.  
 collaboration with K.Zumbrun
- 2003 **Pointwise Green's Function Bounds for shock profiles with degenerate viscosity**, *Archive for Rational Mechanics and Analysis* 169 (2003) no. 3, 177–263, DOI: 10.1007/s00205-003-0258-5, JIF03: 1.736.  
 collaboration with K.Zumbrun

- 2004 **Stability of small-amplitude shock profiles for symmetric hyperbolic-parabolic systems**, *Communications in Pure and Applied Mathematics* 57 (2004) no. 7, 841–876, DOI: 10.1002/cpa.20023, JIF04: 1.694.  
collaboration with K.Zumbrun
- 2004 **Stability of large amplitude viscous shock profiles of hyperbolic-parabolic systems**, *Archive for Rational Mechanics and Analysis* 172 (2004) no.1, 93–131, DOI: 10.1007/s00205-003-0293-2, JIF04: 1.769.  
collaboration with K.Zumbrun
- 2005 **Front Formation and Motion in Quasilinear Parabolic Equations**, *Journal of Mathematical Analysis and Applications* 307 (2005) no. 2, 395–414, DOI: 10.1016/j.jmaa.2004.09.054, JIF05: 0.579.  
collaboration with J.Härterich
- 2005 **Stability of large-amplitude shock profiles of general relaxation systems**, *SIAM Journal of Mathematical Analysis* 37 (2005) no. 3, 889–913, DOI: 10.1137/S0036141004435844, JIF05: 1.059.  
collaboration with K.Zumbrun
- 2006 **Qualitative behaviour for one-dimensional strongly degenerate parabolic problems**, *Interfaces and free boundaries* 8 (2006) no. 3, 263–280, DOI: 10.4171/ifb/143, JIF06: 1.091.  
collaboration with A.Porretta, A.Terracina
- 2007 **Front speeds in the vanishing diffusion limit for reaction-diffusion-convection equations**, *Differential and Integral Equations* 20 (2007) no. 5, 499–514, JIF07: n.e.; JIF11: 0.584.  
collaboration with E.C.M.Crooks
- 2007 **Shock waves for radiative hyperbolic–elliptic systems**, *Indiana University Mathematics Journal* 56 (2007) no.5, 2601–2639, DOI: 10.1512/iumj.2007.56.3043, JIF07: 0.866.  
collaboration with C.Lattanzio, D.Serre
- 2009 **Spectral stability of weak relaxation shock profiles**, *Communications in Partial Differential Equations* 34 (2009) no.2, 119–136, DOI: 10.1080/03605300802553971, JIF09: 1.218.  
collaboration with K.Zumbrun
- 2009 **Stability of constant states of qualitative behavior of solutions to a one dimensional hyperbolic model of chemotaxis**, *Discrete and Continuous Dynamical Systems, Series B* 12 (2009) no.1, 39–76, DOI: 10.3934/dcdsb.2009.12.39, JIF09: 0.803.  
collaboration with F.R.Guarguaglini, R.Natalini, M.Ribot
- 2009 **Two-phase entropy solutions of a forward-backward parabolic equation**, *Archive for Rational Mechanics and Analysis* 194 (2009) no.3, 887–925, DOI: 10.1007/s00205-008-0185-6, JIF09: 2.331.  
collaboration with A.Terracina, A.Tesei
- 2009 **Stability of scalar radiative shock profiles**, *SIAM Journal Mathematical Analysis* 41 (2009/10) no.6, 2165–2206, DOI: 10.1137/09076026X, JIF09: 1.649.  
collaboration with C.Lattanzio, T.Nguyen, R.G. Plaza, K.Zumbrun
- 2010 **On relaxation hyperbolic systems violating the Shizuta–Kawashima condition**, *Archive for Rational Mechanics and Analysis* 195 (2010) no.3, 729–762,, DOI: 10.1007/s00205-009-0225-x, JIF10: 2.277.  
collaboration with R.Natalini
- 2012 **Numerical exploration of a forward-backward diffusion equation**, *Mathematical Models and Methods in Applied Sciences* 22 (2012) no.6, 1250004, 33 pp, DOI: 10.1142/s0218202512500042, JIF12: 1.874.  
collaboration with P.Lafitte



- 2013 **Small, medium and large shock waves for non-equilibrium radiation hydrodynamics**, *Physica D: Nonlinear Phenomena* 245 (2013) 46–56, DOI: 10.1016/j.physd.2012.11.008, JIF13: 1.829.  
single authored
- 2013 **Metastability for scalar conservation laws in a bounded domain**, *SIAM Journal on Mathematical Analysis* 45 (2013) no.5, 3084–3113, DOI: 10.1137/120875119, JIF13: 1.396.  
collaboration with M.Strani
- 2015 **Stability analysis for linear heat conduction with memory kernels described by Gamma functions**, *Discrete and Continuous Dynamical Systems A* 35 (2015) no.8, 3569–3584, DOI: 10.3934/dcds.2015.35.3569, JIF15: 1.127.  
single authored
- 2015 **Twenty-eight years with “Hyperbolic Conservation Laws with Relaxation”**, *Acta Mathematica Scientia* 35 (2015) no.4, 807–831, DOI: 10.1016/S0252-9602(15)30023-0, JIF15: 0.557.  
single authored
- 2016 **Exact representation of the asymptotic drift speed and diffusion matrix for a class of velocity-jump processes**, *Journal of Differential Equations* 160 (2016) 401–426, DOI: 10.1016/j.jde.2015.08.043, JIF16: 1.988.  
single authored
- 2016 **Analytical and numerical investigation of traveling waves for an Allen–Cahn model with relaxation**, *Mathematical Models and Methods in Applied Sciences* 26 (2016) no.5, 931–985, DOI: 10.1142/S0218202516500226, JIF16: 2.860.  
collaboration with C.Lattanzio, R.Plaza, C.Simeoni
- 2016 **Asymptotic expansion for harmonic functions in the half-space with a pressurized cavity**, *Mathematical Methods in the Applied Sciences* 39 (2016) no.10, 2415–2430, DOI: 10.1002/mma.3648, JIF16: 1.017.  
collaboration with A.Asprì, E.Beretta
- 2017 **Analysis of a Mogi-type model describing surface deformations induced by a magma chamber embedded in an elastic half-space**, *Journal de l'École Polytechnique* 4 (2017) 223–255, DOI: 10.5802/jep.42, JIF17: n.e.  
collaboration with A.Asprì, E.Beretta
- 2017 **Metastability for nonlinear convection-diffusion equations**, *Nonlinear Differential Equations and Applications* 24 (2017) 35–54, DOI: 10.1007/s00030-017-0459-5, JIF17: 1.048.  
collaboration with R.Folino, C.Lattanzio and M.Strani
- 2017 **Metastable dynamics for hyperbolic variations of Allen–Cahn equation**, *Communications in Mathematical Sciences* 15 (2017) no.7, 2055–2085, DOI: 10.4310/CMS.2017.v15.n7.a12, JIF17: 1.451.  
collaboration with R.Folino and C.Lattanzio
- 2017  **$L^p$ - $L^q$  decay estimates for dissipative linear hyperbolic systems in 1D**, *Journal of Differential Equations* 263 (2017) no.10, 6189–6230, DOI: 10.1016/j.jde.2017.07.011, JIF17: 1.782.  
collaboration with T.T. Nguyen
- 2019 **Kinetic schemes for assessing stability of traveling fronts for the Allen-Cahn equation with relaxation**, *Applied Numerical Mathematics* 141 (2019), 234–247, DOI: 10.1016/j.apnum.2018.10.009, JIF17: 1.263.  
collaboration with C.Lattanzio, R.Plaza, C.Simeoni
- 2019 **Slow dynamics for the hyperbolic Cahn–Hilliard equation in one space dimension**, *Mathematical Methods in the Applied Sciences* 42 (2019) 2492–2512, DOI: 10.1002/mma.5525, JIF19: 1.18.  
collaboration with R. Folino, C. Lattanzio



- 2019 **Metastability and layer dynamics for the hyperbolic relaxation of the Cahn-Hilliard equation**, *Journal of Dynamics and Differential Equations*, DOI: 10.1007/s10884-019-09806-6, JIF 2018: 1.475.  
collaboration with R. Folino, C. Lattanzio
- 2019 **Chorin's approaches revisited: Vortex Particle Method vs Finite Volume Method**, *Engineering Analysis with Boundary Elements* 106 (2019) 371–388, DOI: 10.1016/j.enganabound.2019.05.026, JIF 2019: 2.243.  
collaboration with O. Giannopoulou, A. Colagrossi, A. Di Mascio
- 2020 **Phase transitions of biological phenotypes by means of a prototypical PDE model**, *Communications in Applied and Industrial Mathematics* 11 (2020) 1–17, DOI: 10.2478/caim-2020-0001, JIF19: 0.95.  
collaboration with P. Moschetta, C. Simeoni
- 2020 **Motion of interfaces for a damped hyperbolic Allen-Cahn equation**, *Communications on Pure and Applied Analysis* 19 (2020) 4507–4543, DOI: 10.3934/cpaa.2020205, JIF19: 0.925.  
collaboration with R. Folino, C. Lattanzio
- 2020 **Numerical evidences of almost convergence of wave speeds for the Burridge–Knopoff model by means of a space-averaged wave speed estimate**, *SN Applied Sciences* 2 (2020) 2053, DOI: 10.1007/s42452-020-03856-y, JIF19: n.a..  
collaboration with P. Moschetta
- 2021 **Metastability and layer dynamics for the hyperbolic relaxation of the Cahn-Hilliard equation**, *Journal of Dynamics and Differential Equations* 33 (2021) 75–110, DOI: 10.1007/s10884-019-09806-6, JIF19: 1.473.  
collaboration with R. Folino, C. Lattanzio
- 2021 **Propagating fronts for a viscous Hamer-type system**, *Discrete and Continuous Dynamical Systems* (2021) 18pp, DOI: 10.3934/dcds.2021130, JIF20: 1.392.  
collaboration with G. Cianfarani Carnevale, C. Lattanzio
- 2022 **Propagation fronts in a simplified model of tumor growth with degenerate cross-dependent self-diffusivity**, *Nonlinear Analysis Real World and Applications* 63 (2022) 103387, DOI: 10.1016/j.nonrwa.2021.103387, JIF20: 2.763.  
collaboration with Th. Gallay
- [Proceedings and contributions in books](#)
- 1996 **Stabilità Asintotica di Onde di Shock per Leggi di Conservazione Perturbate Singolarmente**, *Annali dell'Università di Ferrara, Sez. VII, Scienze Matematiche, Suppl. V., XLI* (1996), 235–244.  
single authored
- 2003 **One-dimensional stability of viscous shock and relaxation profiles**, *Hyperbolic problems: theory, numerics, applications*, Springer, Berlin, 2003, 727–733.  
collaboration with K.Zumbrun
- 2007 **Asymptotic stability of steady-states for Saint-Venant equations with real viscosity**, *Advances in Mathematical Fluid Mechanics*, Birkhäuser, Basel, 2007, 155–162.  
collaboration with F.Rousset
- 2007 **Evolution of stable phases in forward–backward parabolic equations**, *Advanced Studies in Pure Mathematics*, 47 (2007) no.2, 451–478.  
collaboration with A.Terracina, A.Tesei
- 2008 **Stability and instability issues for relaxation shock profiles**, *Hyperbolic problems: Theory, Numerics, Applications*, Proceedings of the XIth International Conference on Hyperbolic Problems, Ecole Normale Supérieure, Lyon, July 17–21, 2006 (S.Benzoni-Gavage, D.Serre ed.) Springer–Verlag, Berlin, Heidelberg, 2008, 173–185.  
single authored

- 2008 **Nonlinear hyperbolic–elliptic coupled systems arising in radiation dynamics**, *Hyperbolic problems: Theory, Numerics, Applications*, Proceedings of the XIth International Conference on Hyperbolic Problems, Ecole Normale Supérieure, Lyon, July 17–21, 2006 (S.Benzoni-Gavage, D.Serre ed.) Springer–Verlag, Berlin, Heidelberg, 2008, 661–669.  
collaboration with C.Lattanzio, D.Serre
- 2010 **A dive into shallow water**, *Rivista di Matematica della Università degli studi di Parma*, (2010) no.1, 77–149.  
single authored
- 2014 **Study of a transition phase model of nonlinear diffusion type**, *Équations aux dérivées partielles et leurs applications, Actes du colloque Edp-Normandie. Caen 2013*, FNM Fédération Normandie Mathématiques (2014), 55–61.  
collaboration with P.Lafitte
- 2014 **Metastability for scalar conservation laws in a bounded domain**, *ESAIM: Proceedings and surveys*, 45 (2014), 247–254.  
collaboration with M.Strani
- 2018  **$L^p$ - $L^q$  decay estimates for dissipative linear hyperbolic systems in 1D**, *Hyperbolic problems: Theory, Numerics, Applications*, Proceedings of the XVI International Conference on Hyperbolic Problems, Aachen, Germany, August 01–05, 2016 (C. Klingenberg, M. Westdickenberg ed.) Springer Proceedings in Mathematics and Statistics, Springer–Verlag, Berlin, Heidelberg, 2008, 305–320.  
collaboration with T.T.Nguyen
- 2018 **Systems biology approach and mathematical modeling for analyzing phasespace switch during epithelial-mesenchymal transition**, *Methods in Molecular Biology* 1702 (2018) 95–123, DOI: 10.1007/978-1-4939-7456-6\_7.  
collaboration with C.Simeoni, S.Dinicola, A.Cucina, M.Bizzarri
- 2020 **Motion of interfaces for hyperbolic variations of the Allen–Cahn equation**, *Hyperbolic problems: Theory, Numerics, Applications*, Proceedings of the XVII International Conference on Hyperbolic Problems, Pennsylvania State University, University Park, June 25–29, 2018 (A.Bressan, M.Lewicka, D.Wang, Y.Zheng ed.), AIMS Series on Applied Mathematics, vol. 10, 434–441.  
collaboration with R. Folino, C. Lattanzio
- [ArXiv preprints \(unpublished papers included\)](#)
- march 2013 **Slow motion for compressible isentropic Navier–Stokes equations**, *arXiv:1303.5583 [math.AP]*, 22 Mar 2013, unpublished.  
collaboration with M. Strani
- july 2016 **Towards a continuum limit of the Burridge–Knopoff model**, *arXiv:1607.08267 [math.NA]*, 27 Jul 2016, unpublished.  
collaboration with P. Moschetta
- february 2018 **Spectral stability of traveling fronts for nonlinear hyperbolic equations of bistable type**, *arXiv:1802.08750 [math.AP]*, 23 Feb 2018.  
collaboration with C. Lattanzio, R. Plaza, C. Simeoni
- may 2020 **GPU-based parallel simulations of the Gatenby–Gawliniski model with anisotropic, heterogeneous acid diffusion**, *arXiv:2006.01748 [physics.med-ph]*, 30 May 2020.  
collaboration with D. Pera, C. Simeoni
- february 2021 **Hospital management in the COVID-19 emergency: Abelian Sandpile paradigm and beyond**, *arXiv:2102.11974 [math.OC]*, 23 Feb, 2021.  
collaboration with R. Martucci, F. Tassi, C. Simeoni

march 2021 **Numerical investigation of some reductions for the Gatenby-Gawlinski model**, *arXiv:2103.02657 [math.NA]*, 11 Mar, 2021.  
collaboration with P. Moschetta, C. Simeoni

#### Books' and Special Issues editor

2013 **HCDTE Lecture Notes. Part I, Nonlinear Hyperbolic PDEs, Dispersive and Transport Equations**, ISBN-10: 1-60133-014-6; ISBN-13: 978-1-60133-014-7, Contributions by I. Chueshov and I. Lasiecka, J.-F. Coulombel, S. Liu and R. Triggiani.  
co-editors: G.Alberti, F.Ancona, S.Bianchini, G.Crippa, C.De Lellis, A.Marson

2014 **HCDTE Lecture Notes. Part II, Nonlinear Hyperbolic PDEs, Dispersive and Transport Equations**, ISBN-10: 1-60133-015-4 ISBN-13: 978-1-60133-015-4, Contributions by S.Daneri and A.Figalli, A.Pratelli and S. Puglisi, G. Staffilani, L. Székelyhidi, M. Westdickenberg.  
co-editors: G.Alberti, F.Ancona, S.Bianchini, G.Crippa, C.De Lellis, A.Marson

2019 **Attempts of a mathematical uprising for restructuring biomedical sciences**, *Rendiconti di Matematica e delle sue Applicazioni (7) 40, no.3-4*, ISSN 1120-7183 (print); ISSN 2532-3350 (online), Contributions by H.Byrne, A.Giuliani, P.K.Maini, C.Málaga, W.D.Martinson, G.Montévil, P.Moschetta, I.Padilla, D.Pera, R.G.Plaza, L.Romagnoli, C.Simeoni.  
co-editor: D.Donatelli

2021 **Nonlinear diffusion problems, dedicated to Maria Assunta Pozio**, *Rendiconti di Matematica e delle sue Applicazioni (7) 42, no.3-4*, ISSN 1120-7183 (print); ISSN 2532-3350 (online), Contributions by E.Beretta, L.Boccardo, C.Bandle, A.Aspri, M.DeHoop, J.I.Diaz, R.Folino, J.Hernandez, M.Iannelli, A.Mazzuccato, G.Meglioli, M.M.Porzio, F.Punzo.  
co-editor: A. Terracina, A. Tesei

#### Minor publications

december 2019 **Mathematical modelling and simulation of EMT/MET biological transitions**, *Organisms 3 (2019) 65–74*, DOI: 10.13133/2532-5876/16448.  
collaboration with P. Moschetta, C. Simeoni

2020 **COVID-19 Calls for Mathematics, Part 1: Neuraminidase Inhibitors, Chloroquine and Hydroxychloroquine**, *Organisms 4 (2020), 115–127*, DOI: 10.13133/2532-5876/16968, Special Issue: The COVID-19 Epidemic.  
collaboration with V. Paparozzi, A. Ragni, E. Scanu, C. Simeoni, E. Tomellini

2020 **COVID-19 Calls for Mathematics, Part 2: Interleukin IL-6 and Myo-Inositol, Suicide-substrate Enzyme Inhibitors**, *Organisms 4 (2020), 128–139*, DOI: 10.13133/2532-5876/16969, Special Issue: The COVID-19 Epidemic.  
collaboration with P. Bernuzzi, R. Esposito, A. Massimi, F. Pallicca, A. Sanna, C. Simeoni

#### Seminars (period 2004 – ongoing)

may 2004 **Sistemi iperbolici di rilassamento: entropie dissipative e stabilità di maxwelliane**, Dipartimento di Matematica Pura ed Applicata, Università dell'Aquila (Italy).

october 2004 **Stability of large-amplitude shock profiles of general relaxation systems**, Laboratoire J.A.Dieudonné, Université de Nice Sophia-Antipolis, Nice-Ville (France).

october 2006 **Nonlinear stability of shock profiles of hyperbolic systems with relaxation**, Laboratoire Paul Painlevé, Université de Lille (France).

april 2008 **Hyperbolic models for chemotaxis**, Mathematics Department, Indiana University, Bloomington (Indiana, USA).

january 2009 **An overview on stability of shock profiles**, Department Mathematik, Universität Hamburg (Germany).

- december 2009 **Diffusione malposta e transizioni di fase**,  $\backslash Piz^2@TV(+IAC)$ , Dipartimento di Matematica, Università di Roma “Tor Vergata” (Italy).
- december 2010 **Two phase solutions for a forward-backward equation**, *Coloquios Especiales de Matemáticas Aplicadas*, Departamento de Matemáticas y Mecánica, Universidad Nacional Autónoma de México, UNAM (Mexico).
- march 2011 **Two phase solutions for a forward-backward equation**, *Seminar on Compressible Fluids*, Laboratoire Jacques-Louis Lions, Université Pierre et Marie Curie, Parigi (France).
- december 2011 **Dinamiche metastabili nelle leggi di conservazione**, Dipartimento di Matematica, Università di Brescia (Italy).
- april 2013 **Hyperbolic variations of the Allen-Cahn equation**, Laboratoire MAS (Mathematics Applied to Systems), École Centrale de Paris (France).
- may 2014 **Propagating fronts for the Allen-Cahn equation with relaxation**, Laboratoire LAGA (Laboratoire Analyse, Géométrie et Applications), Université Paris 13 (France).
- june 2014 **Hyperbolic traveling fronts: the bistable equation with relaxation**, Département de Mathématiques d'Orsay, Université Paris-Sud (France).
- november 2014 **Parabolic behavior of hyperbolic systems describing velocity-jump processes**, Dipartimento di Scienze Statistiche, Sapienza, Università di Roma (Italy).
- june 2015 **Hyperbolic traveling fronts: the bistable equation with relaxation**, Dipartimento di Matematica, Politecnico di Milano (Italy).
- june 2017 **Which drift/diffusion formulas for velocity-jump processes?**, *Coloquios Especiales de Matemáticas Aplicadas*, Departamento de Matemáticas y Mecánica, Universidad Nacional Autónoma de México, UNAM (Mexico).
- may 2018 **Time-asymptotic behavior of velocity jump processes: diffusion and traveling waves**, Dipartimento di Matematica e Informatica, Università di Ferrara (Italy).
- april 2019 **Modeling reaction-diffusion beyond the Fourier law**, Gran Sasso Science Institute, L'Aquila (Italy).
- october 2019 **Large-time dynamics of velocity-jump processes**, *Institut Fourier*, Université Grenoble Alpes, Grenoble (France).
- january 2020 **Large-time dynamics of velocity-jump processes with finite speeds**, *Laboratoire J.A. Dieudonné*, Université Côte d'Azur, Nice (France).
- [Conference invited talks \(period 2004 – ongoing\)](#)
- april 2004 **Hyperbolic systems with relaxation: asymptotic stability of traveling waves**, *Nonlinear PDEs: Theory, Numerics, and Applications*, Oslo (Norvegia).
- june 2005 **Asymptotic stability of steady-states for Saint-Venant equations with real viscosity**, *Mathematical methods in hydrodynamics*, Lille (France).
- august 2005 **Transition between stable phases in forward-backward parabolic equations**, *4th International Conference on Differential and Functional Differential Equations*, Mosca (Russia).
- july 2006 **Stability and instability issues for relaxation shock profiles**, *11th International Conference on Hyperbolic Problems: Theory, Numerics, Applications*, Lione (France).
- june 2007 **On relaxation hyperbolic systems: beyond the Shizuta-Kawashima condition?**, *5th Meeting on Hyperbolic Conservation Laws: Recent results and Research perspectives*, Trieste (Italy).

- september 2008 **Radiative shock waves for hyperbolic–elliptic systems (reprise)**, *SIMAI 9th congress*, workshop “Nonlinear Differential Equations in Applied Mathematics”, Roma (Italy).
- february 2011 **Una formulazione entropica per una equazione di diffusione di tipo forward-backward**, *iPerMe11*, 14th Italian Meeting Hyperbolic Equations, Messina (Italy).
- june 2014 **Hyperbolic variations of the Allen-Cahn equation**, Conference ‘Nonlinear Evolution Problems’, Roma (Italy).
- june 2015 **Hyperbolic traveling fronts**, *AMS–EMS–SPM Meeting*, session: Partial differential equations: ambitious Mathematics for real-life, Porto (Portugal).
- october 2015 **Macroscopic drift and diffusion of velocity-jump processes with a finite number of speeds**, *IperGSSI*, 16th Italian Meeting on Hyperbolic Equations, L’Aquila (Italy).
- june 2016 **Metastability for conservation laws without and with reaction term**, *11th Nonlinear Hyperbolic PDEs (in honour of Alberto Bressan)*, SISSA, Trieste (Italy).
- june 2017 **Which drift/diffusion formulas for velocity-jump processes?**, *Geometrical Methods, non Self-Adjoint Spectral Problems, and Stability of Periodic Structures*, Banff International Research Station, Casa Matemática Oaxaca, Oaxaca (Mexico).
- september 2021 **Shock profiles for fluid-particles flows in the flowing regime**, *Present REsearch TREnds in CONservation LAws*, INdAM workshop, Rome (Italy).

#### Advanced courses

- 2002/03 **Evolution equations**, *PhD School in Mathematics*, (30 lectures), Sapienza, University of Rome.
- july 2005 **1.Stability of waves for systems of conservation laws with real viscosity; 2.Point-wise Green’s function bounds of systems of conservation laws with real viscosity**, *Fronts and singularities: mathematics for other sciences*, (2 lectures), Summer school, Universidad Complutense de Madrid, San Lorenzo de El Escorial (Spain).
- september 2009 **A Dive into Shallow Water. An analytical glance on Saint-Venant model**, *7th Meeting on “Hyperbolic Conservation Laws and Fluid Dynamics: Recent Results and Research Perspectives”*, (5 lectures), Trieste (Italy).
- april 2014 **Hyperbolic Diffusion Equations**, *Gran Sasso Science Institute*, (14 lectures), L’Aquila (Italy).

#### Seminars, conferences and workshop organization

- 1997–2002 **Seminario di Equazioni Differenziali**, Mathematics Department “G. Castelnuovo” (Sapienza University).  
member of the organizing group
- october 1999 **IPERRoma99**, *VII Incontro Nazionale sui problemi di tipo iperbolico*, Consiglio Nazionale delle Ricerche.  
member of the organizing committee
- january 2001 **Nonlinear Evolution Problems**, National Academy of Lincei and Mathematics Department “G. Castelnuovo” (Sapienza University).  
member of the organizing committee
- may 2007 **Nonlinear Hyperbolic Problems**, *workshop INdAM*, Mathematics Department “G. Castelnuovo” (Sapienza University).  
member of the scientific and organizing committees
- december 2010 **Nonconvex Evolution Problems**, *workshop INdAM*, Mathematics Department “G. Castelnuovo” (Sapienza University).  
member of the scientific and organizing committees

- october 2013 **Two days meeting on Hyperbolic PDEs, Geometric Measure Theory and Optimal Transport**, *workshop ERC ConsLaw*, SISSA (Trieste).  
member of the scientific and organizing committees
- july 2018 **Attempts of a mathematical uprising for restructuring biomedical sciences**, *Mini-Symposium SIMAI*, Convegno SIMAI.  
member of the scientific and organizing committees
- september 2019 **Nonlinear Diffusion Problems**, *workshop dedicated to Maria Assunta Pozio*, Mathematics Department "G. Castelnuovo" (Sapienza University).  
member of the scientific and organizing committees
- [Funds \(as principal investigator\)](#)
- 2001 **Degenerate parabolic equations and conservation laws**, *Research project "Young researchers"*, Sapienza University, year 2001, 10 Keuro.
- 2008 **Hyperbolic models for chemotaxis**, *GNAMPA Research project*, INdAM, year 2008, 4 Keuro.
- 2013 **Mathematical modeling for the identification of magma reservoirs from gravitation and deformation data**, *Research project*, Sapienza University, year 2013, 8 Keuro.
- 2020 **Evolutionary PDEs in heterogeneous media**, *Research project*, Sapienza University, year 2020, 12 Keuro.
- [Funds \(as participant, selection\)](#)
- 2005 **Dinamica dei fluidi e leggi di conservazione**, *p.i.: Paolo Secchi*, a.i.: Stefano Bianchini, period 2006/07.  
PRIN project (funded by MIUR)
- 2007 **Sistemi nonlineari di leggi di conservazione e fluido-dinamica**, *p.i.: Stefano Bianchini*, a.i.: Roberto Natalini, period 2008/09.  
PRIN project (funded by MIUR)
- 2009 **Sistemi di leggi di conservazione e fluidodinamica: metodi e applicazioni**, *p.i.: Stefano Bianchini*, a.i.: Roberto Natalini, period 2010/12.  
PRIN project (funded by MIUR)
- ERC: 2009/13 **ConsLaw**, *Systems of Hyperbolic Conservation Laws: singular limits, properties of solutions and control problems*, ERC Starting Grant, p.i.: S.Bianchini.  
members: G.Alberti, F.Ancona, G.Crippa, C.De Lellis, A.Marson, C.Mascia
- 2012 **Equazioni a derivate parziali nonlineari di tipo iperbolico, dispersivo ed equazioni di trasporto: aspetti teorici e applicativi**, *p.i.: Stefano Bianchini*, a.i.: Pierangelo Marcati, period 2013/15.  
PRIN project (funded by MIUR)
- [Committee for PhD defence](#)
- december 2006 **Giorgio Fabbri**, *First order HJB equations in Hilbert spaces and applications*, Sapienza University (Italy), Mathematics.  
president of the jury: Giuseppe Da Prato
- december 2006 **Luca Rossi**, *Generalized principal eigenvalue in unbounded domains and applications to nonlinear elliptic and parabolic problems*, Sapienza University (Italy), Mathematics.  
president of the jury: Giuseppe Da Prato
- may 2010 **Alice Sepe**, *On the convergence of discrete kinetic approximations to hydrodynamic equations*, Università di Bari (Italy), Mathematics.  
president of the jury: Mario Michele Coclite



- july 2010 **Elisabetta Felaco**, *Global existence to the Cauchy problem for hyperbolic conservation laws with an isolated umbilic point*, Università de L'Aquila (Italy), Mathematics.  
president of the jury: Ingenuin Gasser
- july 2010 **Amelio Maurizi**, *Moving Bottlenecks in Car Traffic Flow: Modeling, Analysis and Simulations*, Università de L'Aquila (Italy), Engineering and mathematical modelling.  
president of the jury: Angelo Luongo
- july 2010 **Stefania Melillo**, *An analytical and computational study of a model for the actin based movement of bacteria*, Sapienza University (Italy), Mathematics.  
president of the jury: Mimmo Iannelli
- september 2012 **Maria Chiricotto**, *Multi-scale model problems in lubrication theory and strain-gradient plasticity*, Sapienza University (Italy), Mathematical models and methods for technology and society.  
president of the jury: Michiel Bertsch
- september 2012 **Cecilia Rita Filardo**, *A fast iterative algorithm to solve the magnetoencephalography inverse problem*, Sapienza University (Italy), Mathematical models and methods for technology and society.  
president of the jury: Michiel Bertsch
- september 2012 **Irene Guaraldo**, *Some analytical results for hyperbolic chemotaxis model on networks*, Sapienza University (Italy), Mathematical models and methods for technology and society.  
president of the jury: Michiel Bertsch

#### Other Commitees

- december 2020 **Mehmet Ersoy**, *From hydrostatic to non-hydrostatic models in fluid mechanics: modeling, mathematical and numerical analysis, and computational fluiddynamics*, Université de Toulon (France), Habilitation à Diriger des Recherches (HDR), spécialité: *Mathématiques appliquées*.  
President of the jury: Raphaèle Herbin. Members: Didier Bresch, Denys Dutykh, Thierry Gallouët, Cedric Galusinski, Theodoros Katsaounis, Corrado Mascia, Antonin Novotny, Enrique Zuazua

#### Miscellanea

- European projects TMR networks: *Hyperbolic Systems of Conservation Laws* (terminated) and *Nonlinear Parabolic Partial Differential Equations* (terminated)  
RTN networks: *Fronts Singularities* (terminated) and *Hyperbolic and Kinetic Equations (HyKE)* (terminated).
- referee *Reviewer for Annales de l'Institut Henri Poincaré (C) Analyse non lineaire, Annali della Scuola Normale Superiore di Pisa, Applied Mathematics Letters, Archive for Rational Mechanics and Analysis, Asymptotic Analysis, Bollettino dell'Unione Matematica Italiana, Boundary Value Problems, Communications in Partial Differential Equations, Discrete and Continuous Dynamical Systems, Indiana University Mathematics Journal, Journal of Differential equations, Journal de l'École Polytechnique (Mathématiques), Journal of Hyperbolic Differential Equations, Journal of Mathematical Analysis and Applications, Journal of Nonlinear Science, Mathematical Methods in the Applied Sciences, Network and Heterogeneous Media, NoDEA-Nonlinear Differential Equations and Applications, Nonlinear Analysis Series A: Theory Methods & Applications, Nonlinear Analysis Series B: Real World Applications, Nonlinearity, Physica D, Proceedings of the Royal Society A: Mathematical, Physical, Engineering Sciences, Proceedings of the Royal Society of Edinburgh Section A-Mathematics, Quarterly of Applied Mathematics, Scientific Reports, SIAM Journal on Mathematical Analysis, Transactions of the American Mathematical Society, Zeitschrift fur Angewandte Mathematik und Physik.*



MIUR Reviewer for the evaluation of research programs and products for the Italian MIUR, Ministry for Teaching, University and Research (since 2012)

## Teaching activity (unabridged)

### Didactic material

- 2008 **Note di Analisi Matematica**, freely available on-line, last version 2015, Licence Creative Commons, 282 pp. Collaboration with L.Lamberti.  
<http://www.mat.uniroma1.it/people/mascia/NotEsercizi/MasciaLamberti.pdf>
- 2012 **EDO - Equazioni differenziali ordinarie**, Pitagora editrice, 2012, x+257 pp. ISBN 88-371-1875-9
- 2014 **Un invito alla Biomatematca. Equazioni differenziali ordinarie**, La Dotta editrice, 2014, vi+174 pp. Collaboration with E.Montefusco. ISBN 978-88-98648-6-9
- 2018 **BioMat 1.0**, La Dotta editrice, 2018, vi+306 pp. Collaboration with E.Montefusco, A.Terracina. ISBN 978-88-98648-50-4

### Given Courses

legenda	A=Architecture, C=Chemistry, CI=Industrial Chemistry, F=Physics, I=Informatics, M=Mathematics, Ma=Applied Math., SEFA=Statistics, Economy, Finance and Applications		
	4=four years degree, 3=first degree (3 years), 5=second degree/master (2 years)		
1996/97	Analysis I, practice – I4	1997/98	Analysis II, practice – F4
1998/99	Analysis I, practice (group A–K) – F4	1998/99	Analysis I, practice (group L–Z) – F4
1999/2000	Analysis II, practice (group A–K) – F4	1999/2000	Analysis II, practice (group L–Z) – F4
2000/01	Analysis I, practice (group A–K) – F4	2000/01	Analysis I, practice (group L–Z) – F4
2001/02	Calculus 1 (group G–P) – F3	2001/02	Calculus 2 (group G–P) – F3
2002/03	Analysis 1 (group A–H) – M3	2003/04	Calculus 1 (group B) – F3
2004/05	Differential equations – M3	2004/05	Analytical models II – Ma5
2005/06	Differential equations – M3	2005/06	Analytical models II – Ma5
2006/07	Differential equations – M3	2006/07	Calculus 2 (group C) – F3
2007/08	Calculus 2 – M3	2008/09	Analysis – F3, 9cfu
2009/10	Differential equations – M3, 8cfu	2009/10	Analytical models, I – Ma5, 4cfu
2010/11	Differential calculus – I3, 6cfu	2010/11	Analytical models – Ma5, 6cfu
2011/12	Calculus 1 – M3, 9cfu	2011/12	Analytical models – Ma5, 6cfu
2012/13	Analysis – F3, 9cfu	2013/14	Sabbatical year
2014/15	Mathematics 2 – CI3, 6cfu	2014/15	Analytical models – Ma5, 6cfu
2015/16	Mathematics 1 – C3, 9cfu	2015/16	Mathematics 3 – SEFA3, 6cfu
2016/17	Differential equations – M3, 6cfu	2017/18	Mathematics 1 – C3, 9cfu
2017/18	Integral calculus (telematic) – I3, 6cfu	2018/19	Mathematics 1 – A3, 6cfu
2018/19	Analytical models – Ma5, 6cfu	2019/20	Mathematics 2 – C3, 6cfu
2021/22	Integral calculus – I3, 6cfu	2021/22	Mathematics 2 – C3, 6cfu

## Master thesis (laurea magistrale/specialistica)

- legenda PM=Pure Mathematics, AM=Applied Mathematics, HD= History and Didactic of Mathematics
- Topics Biomathematics (8, 11–12, 14–16, 21, 24–25, 27, 29–31), Hyperbolic equations (2–3, 6, 10, 22–23, 26), Didactic of Mathematics (4, 7, 13, 18–19), Geomathematics (17, 20, 28), others (1, 5, 9).
- february 2006 1. **S.De Ciccio**, *Membrana vibrante ed autovalori del laplaciano*, PM.
- february 2007 2. **C.Di Russo**, *Sistemi iperbolici con dissipazione: soluzioni classiche e formazione di singolarità*, PM.  
Subsequent position: PhD School, Mathematics, Roma Tre (Italy)
- july 2007 3. **F.Cavalletti**, *Stabilità asintotica di shock viscosi*, PM.  
Subsequent position: PhD School, Functional Analysis, SISSA-ISAS, Trieste (Italy)
- july 2007 4. **L.Regoliosi**, *La modellistica attraverso i sistemi dinamici discreti nella didattica della matematica*, co-advisor: E.Possamai (high-school teacher), HD.  
Subsequent position: high-school teacher in Mathematics
- february 2008 5. **V.Luzzi**, *Problemi di controllo stocastico in modelli legati ai fondi pensione*, co-advisor: F.Gozzi (Luiss "Guido Carli"), AM.
- september 2008 6. **S.Munaò**, *Leggi di conservazione e modelli tipo Saint-Venant*, co-advisor: E.Montefusco (Sapienza University), PM.  
Subsequent position: PhD School, Mathematics, Vrije University, Amsterdam (Netherlands)
- february 2009 7. **C.D'Acunto**, *Il ruolo delle applicazioni nella didattica della matematica: moti casuali e diffusione*, HD.
- october 2010 8. **R.Barni**, *Onde viaggianti per un modello di bioremediazione*, AM.
- march 2011 9. **C.Sorgentone**, *Un modello lagrangiano a particelle per la dispersione di inquinanti*, co-advisor: R.Sozzi (ARPA – Lazio), AM.  
Subsequent position: PhD School, Mathematics, Sapienza University (Italy)
- july 2011 10. **D.Sarrocco**, *Spazi di Besov ed equazioni di evoluzione*, PM.  
Subsequent position: PhD School, Mathematics, Sapienza University (Italy)
- july 2011 11. **A.Nicolai**, *Modelli differenziali per i miociti cardiaci*, AM.  
Subsequent position: stage at *Endosense*, society for medical technology (Switzerland)
- july 2011 12. **C.Spagnuolo**, *Elettrofisiologia cardiaca: modello bidomain ed equazione ed iconale*, AM.
- july 2011 13. **M.Caldera**, *L'evoluzione del concetto di integrale: dal metodo di esaurimento all'integrale calibrato*, HD.
- october 2011 14. **A.Libbi**, *Il metodo degli elementi finiti nello studio del modello cardiaco bidomain*, AM.
- december 2011 15. **A.De Antoni**, *Impulsi elettrici nei tessuti biologici: le fibre del miocardio*, AM.  
Subsequent position: Doctoral program in Computer, Communication and Information Sciences, EPFL, Losanna (Switzerland)
- july 2012 16. **C.Misano**, *Un modello per le corde tumorali basato su un problema di frontiera libera*, AM.
- october 2012 17. **L.Zezza**, *Soluzioni analitiche e simulazioni numeriche delle deformazioni elastiche*, AM.  
Subsequent position: stage at *IT Consulting*, software house (Italy).
- january 2013 18. **S.Rutigliano**, *L'instabilità di Turing come meccanismo per la formazione di pattern*, PM.
- january 2013 19. **D.Colella**, *Modelli matematici per la geometria delle conchiglie marine*, PM.

- march 2013 20. **A. Aspri**, *Deformazioni elastiche e variazioni gravitazionali generate da intrusioni ellissoidali con applicazioni alla vulcanologia*, AM.  
Subsequent position: PhD School, Mathematics, Sapienza University (Italy)
- march 2013 21. **E. Facco**, *Un modello di equazioni strutturate per la crescita e divisione cellulare*, AM.  
Subsequent position: PhD School, Physics and Chemistry of Biological Systems, SISSA-ISAS, Trieste (Italy)
- september 2013 22. **R. Folino**, *Onde viaggianti per equazioni iperboliche di reazione-diffusione*, AM.  
Subsequent position: PhD School, Mathematics and Modeling, Università di L'Aquila (Italy)
- january 2014 23. **S. Scialanga**, *Traffic flow models with non-local velocity*, co-advisor: Paola Goatin (INRIA–Sophia Antipolis, France), AM.  
Subsequent position: PhD School, School of Engineering, University of Glasgow
- march 2015 24. **F. Perugini**, *Onde a spirale per sistemi di reazione-diffusione*, AM.
- march 2015 25. **F. Testini**, *Analisi di modelli matematici per lo studio dei gliomi*, AM.
- march 2015 26. **A. Blasetti**, *Sistemi iperbolici con termine di reazione e applicazione al trasporto assonale*, PM.
- september 2015 27. **D. Palmigiani**, *Modelli stocastici e deterministici per dinamiche evolutive in presenza di selezione, mutazioni e movimento spaziale*, co-advisor: Roberto Natalini (IAC–CNR, Italy), AM.  
Subsequent position: PhD School, Mathematics, Sapienza University (Italy)
- december 2015 28. **P. Moschetta**, *Il modello di Burridge–Knopoff: studio e simulazione di fenomeni sismici*, AM.  
Subsequent position: PhD School, Mathematics, Sapienza University (Italy)
- march 2018 29. **L. Vespasiano**, *Descrizione dinamica della crescita tumorale tramite equazioni differenziali ordinarie*, AM.
- july 2018 30. **F. Altavilla**, *Studio numerico dei fronti di propagazione dell'equazione di Fisher-KPP*, AM.
- july 2020 31. **E. Scanu**, *Analysis and numerical simulation of the Gatenby–Gawlinski model for acid-mediated tumour invasion*, co-advisor: Chiara Simeoni (UCA, Nice, France), AM.  
Subsequent position: PhD School, Queen Mary, University of London (United Kingdom)
- july 2021 32. **F. Tassi**, *Hospital management in the COVID-19 emergency: Abelian Sandpile paradigm and beyond*, co-advisor: Chiara Simeoni (Université Côte Azur, Nice, France), AM.
- july 2021 33. **I. Anello**, *Sensitivity analysis and numerical simulations of the Gatenby-Gawlinski model for acid-mediated tumour invasion*, co-advisor: Chiara Simeoni (Université Côte Azur, Nice, France), M.  
Subsequent position: PhD School, SISSA, Trieste (Italy)

### Bachelor Thesis (laurea triennale)

- Topics Reaction-diffusion equations (2–3, 6, 15, 20, 24, 29, 40), Dynamical systems (16, 19, 22–23, 25–27, 35, 37–38), Economy and finance (4–5, 17, 21, 33), Control theory and differential games (10, 14, 30), Evolution equations (9, 12, 31, 36, 39), Functional analysis (1, 8, 11), Differential models (18, 28, 34), others (7, 13, 32).
- july 2005 1. F. Cavalletti, *Sul teorema spettrale per operatori tra spazi di Hilbert*
- september 2005 2. S. Cazzella, *Stabilità e instabilità per una classe di sistemi di Reazione-Diffusione*
- november 2005 3. L. Carvelli, *Teoria qualitativa per il modello di FitzHugh-Nagumo*
- february 2006 4. V. Luzzi, *Opzioni americane: equazione di Black-Scholes e disuguaglianze variazionali*
- february 2006 5. E. Martino, *Opzioni americane come problemi di arresto ottimale*

- november 2006 6. F.Caracciolo (co-advisor: E.Montefusco), *Instabilità di Turing per modelli di Reazione-Diffusione*
- november 2006 7. F.Di Leo (co-advisor: A.Garroni), *Omogeneizzazione di operatori ellittici lineari del secondo ordine*
- november 2006 8. S.Munaò, *Analisi spettrale dell'operatore di Laplace*
- february 2007 9. A.Lombardi, *L'equazione dei mezzi porosi*
- february 2007 10. E.Pallocchia, *Giochi differenziali a due persone*
- may 2007 11. V.Di Claudio, *Rappresentazione di spazi duali e teorema di Riesz-Kakutani*
- september 2007 12. A.Alla (co-advisor: M.Falcone), *Onde viaggianti per l'equazione di Nagumo semidiscreta*
- october 2007 13. A.Mengucci, *Il problema del trasporto di massa*
- october 2007 14. C.Pietrosanto, *L'equazione di Hamilton–Jacobi*
- october 2007 15. M.Strani, *Stabilità lineare per equazioni di diffusione*
- february 2008 16. I.De Bonis, *Fenomeni caotici nei sistemi dinamici discreti*
- february 2008 17. E.Giuliani, *Il modello di crescita economica di Solow–Swan*
- july 2008 18. R.Barni, *Analisi di un modello differenziale per la dinamica dell'HIV*
- july 2008 19. S.Fantasia, *Il teorema di Poincaré–Bendixson per sistemi competitivi o cooperativi*
- october 2008 20. A.Nota, *Onde viaggianti per equazioni di reazione–diffusione*
- january 2009 21. V.Prunestì, *Il metodo dei moltiplicatori di Lagrange in economia*
- july 2010 22. S.Ciano, *Il teorema di difetto nullo per reti di reazioni chimiche*
- july 2010 23. F.Castelli, *L'indice di Conley e il teorema di Wazewski*
- october 2010 24. F.Matano, *Metodo degli elementi finiti per equazioni di reazione-diffusione*
- october 2010 25. R.Scarpellino, *Fenomeni di biforcazione nelle equazioni differenziali ordinarie*
- december 2010 26. L.Luconi, *Equazioni differenziali lineari a coefficienti periodici*
- december 2010 27. L.Giuliani, *Le curve di inseguimento*
- july 2011 28. F.Iannaccone, *Modelli differenziali per il battito cardiaco*
- july 2013 29. D.Palmigiani, *L'instabilità di Turing come base matematica per la morfogenesi*
- july 2014 30. F.Pichi, *Equazioni differenziali ordinarie discontinue nella teoria del controllo*
- september 2014 31. G.Meglioli, *Equazioni differenziali lineari di tipo iperbolico*
- october 2014 32. G.Evangelista, *Modelli di reti reali ed applicazione neuronale*
- december 2014 33. N.Campana, *Opzioni europee: dalla formula di Cox–Ross–Rubinstein alla formula di Black–Scholes*
- december 2015 34. E.Di Vico, *Il battito cardiaco come oscillatore non lineare*
- february 2016 35. C.Marullo, *Fenomeni caotici nei sistemi dinamici discreti*
- december 2017 36. G.Valente, *Il flusso di Poiseuille per l'equazione di Navier-Stokes*
- december 2017 37. M.Bachetti, *L'equazione del calore come limite di un modello di diffusione di particelle*
- july 2018 38. A.Bisterzo, *Equazioni differenziali ordinarie: fattori integranti e simmetrie*
- july 2018 39. D.Morselli, *Stabilità delle onde di shock per leggi di conservazione scalari viscosse*
- july 2019 40. E.Serfilippi, *Onde viaggianti per modelli sulla guarigione delle ferite*

## Miscellanea

- 2005 – 2008 **Matematica in moto**, *Progetto lauree scientifiche*, (8 lectures+practical activities).  
Activity with group of high-school students (a.a. 2005/06: Liceo Scientifico Farnesina, Liceo Classico De Sanctis; a.a. 2006/07: Liceo Scientifico Farnesina, Liceo Scientifico Nomentano; a.a. 2007/08: Liceo Scientifico Nomentano, Liceo Scientifico Archimede)
- august 2006 **Light conversations on conservation laws**, *INdAM meeting for undergraduate students*, (4 lectures), Perugia (Italy).  
Lectures for third-year students in Mathematics (in italian)
- august 2006 **At the end of times (asymptotic behavior, stability and related problems)**, *INdAM meeting for undergraduate students*, Perugia (Italy).  
Lecture for second-year students in Mathematics (in italian)
- march/april 2011 **Beyond functions: an introduction to the theory of distributions**, *Percorso di Eccellenza*, Sapienza, Università di Roma (Italy), (5 lectures, 10 hours).  
Seminar for second-year students in Mathematics
- mar-apr 2011 **Beyond functions: an introduction to the theory of distributions**, *Excellence courses*, Sapienza University, (6 lectures, 12 hours).  
Lectures for second-year students in Mathematics (in italian)
- may-jun 2013 **Beyond functions: an introduction to the theory of distributions**, *Excellence courses*, Sapienza University, (6 lectures, 12 hours).  
Lectures for second-year students in Mathematics (in italian)
- jul-sep 2014 **Integral calculus**, *Informatics*, Sapienza–Unitelma, (25 lectures, 25 hours).  
Lectures series for first year students (in italian)

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## Management and third mission (unabridged)

### Panels and Boards

- 2000 **Department Board (Giunta di Dipartimento)**, *representative of researchers*, Dipartimento di Matematica “G.Castelnuovo”, Sapienza University.  
Period: since 18/01/2000 to 31/10/2000. Head of the Department: Giacomo Saban
- 2009 – 2011 **PhD in Applied Sciences for Environmental Protection and Cultural Heritage**, *member of the Scientific board*, Sapienza University (Italy).
- 2010 **Scientific Research Panel**, *member elected by the Science Faculty as representative of Associate Professors*, Sapienza University (Italy).
- 2011 – 2020 **PhD in Mathematics**, *member of the Scientific board*, Sapienza University (Italy), Dipartimento di Matematica “G.Castelnuovo”.
- march 2020 **Academics Coordinator and Supervisor for International Mobility**, *Sapienza University (Italy)*, Dipartimento di Matematica “G.Castelnuovo”.

### Selection committees (public competitions)

- 2002 **Member of the Committee**, *1 permanent position as researcher, MAT/05 (Mathematical analysis)*, University of L’Aquila, Science faculty.  
president: Giorgio Fusco
- 2003 **Member of the Committee**, *1 permanent position as researcher, MAT/05 (Mathematical analysis)*, University of Padova, Engineering faculty.  
president: Giuseppe De Marco
- 2012 **President of the Committee**, *9 positions at the PhD School in Mathematics*, Sapienza University, Dipartimento di Matematica “G.Castelnuovo”.  
other members: Andrea Sambusetti, Stefano Finzi Vita
- 2013 **Member of the Committee**, *2 temporary Research Fellows (2 years) in Mathematics*, Sapienza University, Dipartimento di Matematica “G.Castelnuovo”.  
president: Filomena Pacella

- 2014 **Member of the Committee**, 1 temporary position as Researcher TD-A (3 years) MAT/05 (Mathematical analysis), Campus Bio-Medico, Rome, Engineering school.  
president: Carlo Sbordone
- 2020 **President of the Committee**, 2 temporary Research Fellows (2 years) in Mathematics, Sapienza University, Dipartimento di Matematica "G.Castelnuovo".  
members: Elena Agliari, Simone Diverio
- Popularization lectures and meetings**
- april 2007 **Matematica in moto**, *Mathematics popularization lectures*, Centro Linceo Interdisciplinare, Accademia Nazionale dei Lincei, Roma (Italy).  
Lecture for high-school students
- dec 2009; apr 2010; oct 2015 **Chi ha paura degli spettri?**, *Salotti di Numeria (Comune di Roma and Dipartimento di Matematica "G.Castelnuovo")*, december 2009; *Assaggi di Scienza in Biblioteca, forma-Scienza (Biblioteca Casa del Parco, Roma)*; *La scienza illumina, 2015 International year of light (Sapienza University)*.  
Lecture for high-school students (prepared in collaboration with G.Panati)
- november 2011 **Forme & formule**, *MaddMaths! incontra*, Libreria Assaggi di Scienza, Roma.  
Meeting with Marco Oliverio (biologist) on mathematics and morphogenesis
- march 2012 **La matematica del leopardo**, Technotown, Roma.  
Meeting for children
- may 2012 **Sua maestà la matematica**, *Incontri con gli scienziati*, ENEL – PlayEnergy, Politecnico di Bari (Italy).  
Meeting with Silvia Bencivelli and Roberto Natalini for high-school students
- december 2018 **Vito Volterra: l'alba della biomatematica. E oltre**, *Cinquantennale del Liceo Volterra*, Liceo Scientifico Statale "Vito Volterra", Ciampino (RM).  
Meeting with V. Volterra, G. Paoloni, M. E. Cadeddu for high-school students
- september 2019 **L'alba della biomatematica. E oltre**, *Piano Nazionale Lauree Scientifiche*, Scuola estiva 2019, Tipologia A.  
Interactive laboratory for high-school students
- november 2020 **L'irragionevole (in)efficacia della Matematica nella Biomedicina**, *Notte Europea dei Ricercatori 2020*, Science together, NET.  
Open lecture
- Popularization contributions**
- 2004 – 2006 **Explora, la TV delle scienze**, *RAI educational*, years 2004, 2005 e 2006.  
Three (short) contributions in each edition within the sections *L'angolo dell'esperto* and *Dizionario*.
- 2010 – 2016 **Alfabeto Matematico**, *MaddMaths! Matematica Divulgazione Didattica*, SIMAI & UMI, <http://maddmaths.simai.eu> (french version in <http://smi.emath.fr/maddmaths>).  
Regular column
- 2010 **Modellare con carta e penna. La matematica e il mondo reale**, *S&F scienzae-filosofia.it*, no. 3 (2010), 7–17.  
Contribution (upon invitation) to the on-line journal <http://www.scienzaefilosofia.it/>
- 2013 **Parabolico o iperbolico?**, *MaddMaths! Matematica, Divulgazione, Didattica*, Madd-Spot #5, 1–4.  
Contribution (upon invitation) to the column Madd-Spot in MaddMaths!
- Rome, September 21, 2021