

Contacts

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University of Minho
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Personal information and education

- Degree in Mathematics 1984-1988, University of Coimbra.
- M.Sc. (equivalent) 1992, University of Coimbra, Dissertation “Discrete Kinetic Model for a Detonation Wave Problem” (portuguese), Supervisor Artur Soares Alves, Coimbra, Portugal.
- D.Phil. 1997, University of Coimbra, Dissertation “Kinetic Theory of Chemically Reacting Gases. Detonation Waves” (portuguese), Supervisor Roberto Monaco, Turin, Italy.

Positions

At the University of Coimbra, Department of Mathematics

Lecture – October 1987 to July 1988.

Junior Researcher – October 1988 to October 1992.

Researcher – October 1992 to June 1997.

Assistant Professor – July 1997 to August 1999.

At the University of Minho, Department of Mathematics

Assistant Professor – September 1999 to February 2009.

Associate Professor – February 2009 to present.

Research Activity

Area Mathematical Physics & Mathematical Modelling & Biomathematics

Interests Kinetic theory of gases. Chemically reacting mixtures. Boltzmann Equation. PDE's. Hydrodynamic limits. Mathematical Biology. Landscape models.

Recent topics Reaction-diffusion equations. Mathematical models for human diseases. Mathematical models for landscape ecology. Porous medium equation. Hydrodynamic limits of the Boltzmann equation. Wave propagation problems. Linear stability of detonation wave solutions.

Editorial board

- Director of the *Boletim of the Portuguese Mathematical Society* from September 2011 to August 2023.
- Member of the editorial board of the *Boletim of the Portuguese Mathematical Society*, from May 2007 to August 2011.
- Editor of *Particle Systems and Partial Differential Equations II, III, IV, V*, Springer Proceedings in Mathematics & Statistics, volumes 129 (2015), 162 (2016), 209 (2017), 258 (2018) P. Gonçalves and A.J. Soares editors.
- Editor of *Particle Systems and Partial Differential Equations VI, VII and VIII*, Springer Proceedings in Mathematics & Statistics, volume 352 (2021) C. Bernardin, F. Golse, P. Gonçalves, V. Ricci and A.J. Soares editors
- Editor of *Particle Systems and Partial Differential Equations X*, Springer Proceedings in Mathematics & Statistics, volume 465 (2024) E. Carlen, P. Gonçalves and A.J. Soares editors
- Editor of *Particle Systems and Partial Differential Equations XI and XII*, Springer Proceedings in Mathematics & Statistics, G. Carinci, C. Franceschini, P. Gonçalves, F. Sau, and A.J. Soares editors, in preparation.
- Editor of *Inclusive mathematics education based on digital learning*, Book series Mathematics Education in the Digital Era, Springer, E. Bernard, A. Maffia, C. Ouvrier-Buffet, P. Rosário, F. Salvarani and A.J. Soares editors, in preparation.

Organizing activity

I have been involved in the organization of some national and international meetings. Some of them are the following.

Scientific events

- CIM International Conference Planet Earth (Scientific Committee) March 25-27, September 2-4, 2013, Calouste Gulbenkian Foundation, Lisbon <http://sqig.math.ist.utl.pt/cim/mpe2013/>
- Dynamics & Applications, Univ Minho, Braga, 2008 (Organizing Committee) http://w3.math.uminho.pt/dynappl2008/public_html/
- Particle Systems and PDEs, Univ Minho, Braga, Editions of 2012, 2013, 2014, 2015, 2016, in Braga-Portugal; 2017, in Nice-France; 2018, in Palermo-Italy; 2019 in Lisbon-Portugal; 2021, 2022, in Braga-Portugal; 2023, in Lisbon-Portugal; 2024, in Trieste, Italy; 2025, in Modena, Italy (Organizing Committee) <https://sites.google.com/view/pspdexii> <https://sites.google.com/view/pspde> <https://sites.google.com/view/pspdex> <http://w3.math.uminho.pt/PSPDEix> <https://sites.google.com/site/meetingpspdevii> <https://sites.google.com/site/meetingpspdevi>
- 3rd Emerging Trends in Applied Mathematics and Mechanics (ETAMM 2024), A Coruña, Spain, 2024 (Scientific Committee) <https://dm.udc.es/etamm24/>
- 2nd Women in Mathematics Meeting (WM22), Univ Minho, Braga, 2022 (Organization) <https://w3.math.uminho.pt/wm22/>
- 3rd Women in Mathematics Meeting (WM23), Univ Coimbra, Coimbra, 2023 (Organization) <https://www.uc.pt/events/wm23/>
- 4th Women in Mathematics Meeting (WM25), Univ Porto, Porto, 2025 (Organization) <https://www.fc.up.pt/wm25>

- 4th Portuguese Meeting in Mathematical Biology (4EPBM 2024), Univ Minho, Braga, 2024 (Organization) <https://w3.math.uminho.pt/4epbm>
- One-day Meeting in Mathematical Biology, Univ Minho, Braga, 2022 (Organization) <https://w3.math.uminho.pt/biomathmeet22>
- One-day Meeting in Mathematical Biology, Univ Minho, Braga, 2023 (Organization) <https://w3.math.uminho.pt/biomathmeet23>
- First and second one-day meetings on Mathematical Physics, at Univ Minho, 2009, 2010 (Organizing Committee) <http://w3.math.uminho.pt/%7Efmoura/FisMat/index.html>
- Workshop in Fluid Mechanics I, Univ Minho, Braga, June 2, 2023 (Organization) <https://w3.math.uminho.pt/complexfluids/2023/>
- Workshop in Fluid Mechanics II Univ Minho, Braga, June 12, 2024 (Organization) <https://w3.math.uminho.pt/complexfluids/2024/>
- Workshop in Fluid Mechanics III, Univ Minho, Braga, September 12, 2025 (Organization) <https://w3.math.uminho.pt/complexfluids>
- National Meeting of the Portuguese Mathematical Society, Bragança, 2018 (Scientific Committee).
- National Meeting of the Portuguese Mathematical Society, Online, 2021 (Organizing Committee) <https://pt.enspm2021.spm.pt/>
- Final Conference of the Cost Action MAT-DYN-NET *Mathematical Models for Interacting Dynamics on Networks*, Braga, Feb 2024 (Organizing and Scientific Committees). <https://w3.math.uminho.pt/FinalConfMatDynNet>

Events on Industrial Mathematics

- 181st European Study Group with Industry, 2024, UTAD, Vila Real, Portugal (Scientific Committee) <https://esgi181.utad.pt/>
- Industry Day Maths for Agriculture (M4A), Univ Coimbra, 2024 (Organization) <https://sites.google.com/view/maths4agriculture/>
- Workshop CIM & Enterprises, Online, 2021 (Organizing Committee) <https://www.cim.pt/agenda/event/220>
- amim'24 – autumn meeting of industrial mathematics, Oct 2024, Foz do Arelho, Portugal (Organizing Committee) <https://www.spm.pt/PT-MATHS-IN/amim24>
- Iberian Modelling Week, 2021, Online (Organizing Committee) <https://www.spm.pt/PT-MATHS-IN/7imw/english/index.html>
- Iberian Modelling Week, 2023, Palma, Spain (Scientific Committee) <http://math-in.net/9imw/en/presentation/>
- Iberian Modelling Week, 2024, Braga, Portugal (Scientific Committee) <https://www.spm.pt/PT-MATHS-IN/10imw/english>

Institutional or dissemination meetings

- Open day of CMAT, Univ Minho, Braga, 2015 (Organization).
- 1st Meeting of the CMAT PhD Students, Univ Minho, Braga, 2014 (Organization).
- CMAT LabsFest 2022, 2023, Univ Minho, Braga (Organization).
- 12th Annual Meeting of the Portuguese National Commission of Mathematics (CNM), Univ Minho, Braga, 2014 (Organization).

Publications

Ana Jacinta Soares has 50 articles published in international peer-reviewed journals and 46 articles published in Conference Proceedings, Lecture Notes and Book Chapters.

The publications are reported in the attached list, see pages 11–19. They are organized in research papers in refereed journals, conference proceedings and other locally published works.

Communications

I have presented several communications (including some invited talks) in International Meetings (3rd Emerging Trends in Applied Mathematics and Mechanics, 19th EWM General Meeting, Advances in Applied Mathematical Analysis and Numerical Methods, AIDAA Conference, AIMS Conference, Current Trends in Kinetic Theory and Related Models, European Conference on Numerical Mathematics and Advanced Applications, From Classical to Modern Analysis, Giornate di Studio sui Problemi Iperbolici, INdAM Workshop Recent Advances in Kinetic Equations and Applications, Kinetic and Transport Equations: Mathematical Advances and Applications, Mathematical Approaches to Complex Systems: Statistical Mechanics and Partial Differential Equations, Mathematics of Energy and Climate Change, Mechanics and Partial Differential Equations, Meeting Brazil-Portugal in Mathematics, Meeting on Numerical Methods for Differential Equations, Non-linear PDE's in Braga, Rarefied Gas Dynamics Symposium, Statistical Dynamics of Complex Systems, Transport Theory, Waves and Stability in Continuous Media, Workshop on Kinetics and Statistical Methods for Complex Particle Systems, Workshop on Numerical Analysis), as well as some communications in National Meetings (Computational Mechanics, 1st Day of Equations, Meeting in Douro: Differential Equations and Applications, 1st Open Day of CMAT, Portuguese Mathematical Society Meetings, 3^o Portuguese Meeting on BioMatemathics, III Workshop in BioMathematics, DMTalks - ISEL, National Meeting of Students from Mathematics Graduations, Pint of Science Portugal).

Seminars, Courses and Visits (scientific)

I have given several seminars at the Universities of Turin, Naples, Parma and Genoa in Italy, Graz in Austria, Federal do Paraná in Brazil, Novi Sad in Serbia, Santiago Compostela in Spain, and also at the Portuguese Universities of Aveiro, Coimbra, Lisboa, Nova de Lisboa, Porto, UTAD and Minho.

I gave a minicourse at Univ Nova of Lisbon, 6 hours, NOVAMATH Thematic Weeks 2024.

I have attended some courses (Braga and Lisbon in Portugal, Nice in France, Palermo, Udine and Porto Ercole in Italy).

I have made several academic visits of about 1-2 weeks to Politecnico di Torino and Universities of Florence, Naples, Parma, Palermo (Italy), Nice Sophia Antipolis, Paris Dauphine and Nantes (France), Graz (Austria), Novi Sad (Serbia), Federal do Paraná (Brazil), Texas University at Austin (Tx, USA), California State University (LA, USA).

Seminars (schools)

I have presented some seminars for professors and students of secondary schools. I quote the more recent ones.

- Talk in the meeting COMAT 2010, Famalicão, entitled “A thematic tour through some topics in Combinatorics”, April 2010 (in pt).
- Talk in the Secondary School of Vieira do Minho, entitled “Combinatorics and Applications”, January 2014 (in pt).

- Talk in the Secondary School of Vieira do Minho, entitled “Mathematical Modelling”, March 2014 (in pt).
- Talk in the public library Lúcio Craveiro, Braga, entitled “The menage problem in Combinatorics”, March 9, 2019 (in pt).
- Talk in the Secondary School Francisco de Holanda, Guimarães, entitled “Solutions to peculiar problems in Combinatorics”, May 15 and November 20, 2019, March 24, 2021 (in pt).
- Talk in the School of Sciences, Univ Minho, Braga, for secondary schools in the Braga region, entitled “Magic solutions to challenging problems with the help of combinatorics”, Feb 15, 2024 (in pt).

Funded Research Projects

Member of the following projects

- UTAustin/MAT/0035/2008, “Analysis of Nonlinear Partial Differential Equations”, based at the University of Coimbra, Principal Researcher - José Miguel Urbano. Duration: 5 years. Funding body: FCT-Portugal. Project cofunded by COMPETE. Funding budget: 100,000.00 €. Programme type: Colab project. Main research area: Mathematics. Keywords: Singular and degenerate PDEs; Free boundary problems; Ocean and climate modeling; Kinetic equations.
- PTDC/MAT/68615/2006, “Kinetic Models and Applications”, based at Universidade Nova de Lisboa, Principal Researcher - Filipe Serra de Oliveira. Duration: 3 years. Funding body: FCT-Portugal. Funding budget: 20,000.00 €. Programme type: Research project. Main research area: Mathematics. Secondary research area: Physical Sciences. Keywords: Kinetic Models; Boltzmann Equation; Drift-Diffusion Limits; Partial Differential Equations.
- FCT-CAPES/2502/14/2/2012/S, “Non-Equilibrium Statistical Mechanics of Stochastic Lattice Systems”, based at the University of Minho, Portuguese Coordinator - Patrícia Gonçalves, Brazilian Coordinator - Claudio Landim. Duration: 2 years. Funding body: FCT-Portugal and CAPES Brazil. Funding budget: 9,000.00 € for the Portuguese team. Programme type: Bilateral research project. Main research area: Mathematics. Keywords: Kinetic theory; Boltzmann equation; Particle Systems; Partial Differential Equations.
- FCT-PESSOA/406/4/4/2017/S, “Derivation of macroscopic PDE’s from kinetic theory (mesoscopic) and from interacting particle systems (microscopic)”, based at the University of Minho, Portuguese Coordinator - Patrícia Gonçalves, French Coordinator - Cédric Bernardin. Duration: 2 years. Funding body: FCT-Portugal and Campus France. Funding budget: 3,000.00 € for the Portuguese team. Programme type: Bilateral research project. Main research area: Mathematics. Keywords: Partial Differential Equations; Kinetic theory; Hydrodynamic limits; Interacting Particle Systems.
- MAT-DYN-NET Cost Action CA18232, “Mathematical models for interacting dynamics on networks”. Main researcher: Marjeta Kramar Fijavz, Univ. Ljubljana, Slovenia. Duration: 4 years. Funding body: COST ASSOCIATION European Cooperation in Science and Technology. Funding budget: 576 000 €. Main research area: Mathematics. Keywords: Modeling real-life situations. Nonlinear problems. Networks and similar structures. Numerical methods and applications.
- VALORAGUA CMAT-REN, “Development of a simulation model of many electro-producing systems that aims to satisfy demand while minimizing operating costs”. Main researcher: Ana Jacinta Soares. Duration: 2 years. Funding body: REN (Industry, Portugal) Funding budget: 90 057,45 €. Main research area: Mathematics. Keywords: Modeling. Simulation. Computing. Optimization.
- BREUCA POCI-01-0247-FEDER-048257, “Development of a high-precision Virtual Reality simulator designed to be used in a professional simulation and gaming environment (gaming

associated with real events)”. Main researcher: Pedro Patrício. Duration: 30 months. Funding body: FE- DER (Portugal) Funding budget: 1 762 728,70 €. Main research area: Mathematics. Keywords: Gamming. Modeling. Simulation. Computing. Optimization.

– FCT-PESSOA/2021.09255.CBM, “Kinetic theory, particle systems and their hydrodynamic limits”, based at the University of Minho, Portuguese Coordinator - Ana Jacinta Soares, French Coordinator - Francesco Salvarani Duration: 2 years. Funding body: FCT-Portugal and Campus France. Funding budget: 4,000.00 € for the Portuguese team. Programme type: Bilateral research project. Main research area: Mathematics. Keywords: Partial Differential Equations; Kinetic theory; Hydrodynamic limits; Interacting Particle Systems.

– 2021-1-FR01-KA220-HED-000023486, “Inclusive Mathematics Education based on Digital Learning”, based at the University of Minho, Portuguese Coordinator - Ana Jacinta Soares, Main Coordinator - Francesco Salvarani Duration: 2 years. Funding body: ERASMUS. Funding budget: 206 121,00 €. Main research area: Mathematics. Keywords: Mathematics learning; Inclusive mathematics, Hearing disabilities.

– 2022.03091.PTDC|3MControlSystems (CoSysM3), “Mathematical Modelling of Multi-scale Control Systems: applications to human diseases, Local Coordinator at Univ. Minho - Ana Jacinta Soares, Main Coordinator - Cristiana Silva (CIDMA) Duration: 3 years. Funding body: FCT. Funding budget for Univ Minho: 42 589,68 €. Main research area: Mathematics. Keywords: Behavioural epidemic models; Optimal control; Kinetic systems.

Administrative Positions

– Director, at UMinho, of the Doctoral Programme in Mathematics and Applications of the Universities of Minho, Aveiro and Porto, Sep 2020 - Sep 2024;

– Member of the Direction of the Portuguese Mathematical Society, September 2020 - September 2022;

– Director of the Research Centre of Mathematics of the University of Minho, from February 2013 to January 2016;

– Vice Director of the Research Centre of Mathematics of the University of Minho, from May 2018 to July 2020;

– Head of the Portuguese Network of Mathematics for Industry and Innovation (PT-MATS-IN), December 2020 - January 2025;

– Chairman of the General Meeting Board of the Portuguese Network of Mathematics for Industry and Innovation (PT-MATS-IN), July 2018-December 2020, and since February 2025;

– Member of the Scientific Committee of the Doctoral Programme in Mathematics and Applications of the Universities of Aveiro and Minho, from September 2009 to September 2011;

– Member of the Scientific Committee of the Doctoral Programme in Mathematics and Applications of the Universities of Minho, Porto, Trás-os-Montes e Alto Douro (Portugal) and Coruña, Santiago de Compostela and Vigo (Spain), since October 2019 (design of the course from October 2019 - May 2021);

– Head of the Geometry, Topology and Mathematical Physics Research Group of the Centre of Mathematics, 2010–2012;

– Head of the Mathematical Physics Research Group of the Centre of Mathematics, 2006-2008, 2011;

- Head of the Analysis and Applications Research Group of the Centre of Mathematics, July 2022 - October 2024;
- Member of the Directive Committee of the Centre of Mathematics, 2006-2008, 2011–2013;
- Member of the Scientific Council of the School of Sciences, from January 2013 to January 2018 and from September 2018 to July 2020, July 2022 to October 2024;
- Member of the Management Council of the School of Sciences, from January 2013 to January 2016;
- Member of the Directive Committee of the Dep. Mathematics, 2004, 2008-2009 and 2010-2011; September 2022-July 2024;
- Member of the Coordinating Committee of the Dep. Mathematics, 2005-2007;
- Member of the Doctoral College of UMinho, representing the School of Sciences of UMinho, since Feb 2022;
- Member of the Coordinating Committee for the Evaluation of Researchers at the School of Sciences, UMinho, since Feb 2022.

Pos-doctoral activity

Romina Travaglini, Topics: Kinetic Theory and Mathematical Biology, CMAT-UMinho, September 2022-August 2023.

Aziz Zaitri, Topics: Biomathematics and Optimal Control, CMAT-UMinho, October 2024-September 2025.

Training (scientific)

PhD Thesis – *Filipe Manuel Sampaio Carvalho*, “Mathematical methods for the solution to the Boltzmann equation”, in co-supervision with Filipe Oliveira (UNL, Lisbon, Portugal) (awarded in March 2013).

PhD Thesis – *Telmo José João Parreira*, “Networks a la Hotelling” in co-supervision with Alberto Pinto (UP, Porto, Portugal) (awarded in November 2014).

PhD Thesis – *Benjamin Anwasia*, “On the hydrodynamic limits of the Boltzmann equation for reactive mixtures” in co-supervision with Patrícia Gonçalves (UMinho, Braga, Portugal), awarded in February 2021.

PhD Thesis – *Laid Boudjellal*, “Mathematical modelling and analysis of biological and environmental systems” in co-supervision with Joana Torres (UMinho, Braga, Portugal), initiated in October 2021.

PhD Thesis – *Célio Fernandes*, “Mathematical and Numerical Analysis of Propagating Detonation Waves and Contact Problems for Shell Structures” in co-supervision with Ángel Arós Rodríguez (UCoruña, Coruña, Spain) initiated in October 2022.

PhD Thesis – *Rabilde Zage*, “Mathematical Approaches to Model and Control Human Diseases” in co-supervision with José Joaquim Oliveira (UMinho, Braga, Portugal) initiated in December 2024.

PhD Thesis – *Vanessa Assumma* – Local Supervisor for the long-term visit to the University of Minho, Guimarães, Portugal, November 1, 2018, to January 31, 2019. Scientific project “Integrated multidisciplinary evaluation methodology oriented to assess the resilience of an environmental system in the Douro Valley (Portugal)”.

PhD Thesis – *Rossella Della Marca* – Local Supervisor for the long-term visit to the University of Minho, Guimarães, Portugal, March 1- May 31, 2020. Scientific project “Mathematical models of ordinary differential equations and their application to problems in ecology and epidemiology”.

MSc Thesis – *Maria Manuela Jorge Martins Ferreira*, July 2002, “Numerical methods for the solution to the Boltzmann equation” (in portuguese, awarded in July 2002).

MSc Thesis – *Mónica Penarroias Branco Carneiro*, “Initial boundary value problems in fluid dynamics” (in portuguese, awarded in July 2005).

MSc Thesis (co-supervision) – *António Martins Correia*, “Qualitative Theory of Differential Equations and Applications to the Biology” (in portuguese, awarded in July 2009).

MSc Thesis – *Valeria Romanciuc*, “Optimizing kidney exchange programs with budget and time constraints” (in english, awarded in December 18, 2019).

MSc Thesis – *Diana Carrilho*, “Smart Traffic Signals” (awarded in January 22, 2021).

MSc Thesis – *Luís Albuquerque*, “Public Parking Enhancer” (started September 2021).

Training (more didactic)

MSc Thesis (co-supervision) – *Paulo Alexandre Ferreira Correia*, April 2008, “Combinatorial reasoning of 9th grade pupils” (in portuguese, awarded in April 2008).

MSc Thesis – *Maria do Carmo Lopes*, “The notions of limit and continuity in the transition from the undergraduate school to the university” (in portuguese, awarded in December 2013).

MSc Thesis – *Alexandra Ferraz*, “The Lucas Problem (or the «*Problème des Ménages*»)” (in portuguese, awarded in December 6, 2017).

Teaching

University of Minho (September 1999 to present)

- Calculus (math and engineering graduations).
- Analysis (math and engineering graduations).
- Combinatorics and Graph Theory (master in math education).
- Mathematical Methods in Physics (math graduation).
- Ordinary and Partial Differential Equations (physics and engineering graduations).
- Mathematical Modelling (master in math education).
- Mathematics of Things (math, physics, economics, engineering).
- Mechanics - Kinetic Theory and PDE's (master course).
- Project in Mathematics and Computation (master in Mathematics and Computation, tutoring and coordination).
- Seminar in Mathematics (Ph.D. in Mathematics and Applications, coordination).
- Project in Mathematics Research (Ph.D. in Mathematics and Applications, tutoring and coordination).
- Seminar in Mathematics (Ph.D. in Applied Mathematics, tutoring).

University of Coimbra (until 1999)

- Linear Algebra and Analytical Geometry (math graduation).
- Combinatorics and Graph Theory (math graduation and informatic engineering).
- Rational Mechanics (math graduation).
- Celestial Mechanics (Geographical Engineering, graduation).
- Statics (Architecture graduation).

Publications

• Referred Journals

1. "The Discrete Boltzmann Equation for Gases with Autocatalytic Reversible Reactions", *Commun. Appl. Nonlinear Anal.*, vol. 1, pp. 25-48, 1994 (in collaboration with M. Pandolfi Bianchi).
2. "Steady Detonation Waves in Classical and Discrete Kinetic Theory", *Commun. Appl. Nonlinear Anal.*, vol. 3, No. 3, pp. 1-19, 1996 (in collaboration with R. Monaco and M. Pandolfi Bianchi).
3. "A Kinetic Model for a Reacting gas Flow: Steady Detonation and Speeds of Sound", *Phys. Fluids*, vol. 8, pp. 3423-3432, 1996 (in collaboration with M. Pandolfi Bianchi).
4. "Numerical Simulations of a Boltzmann Model for Reacting Gases", *Appl. Math. and Comput.*, vol. 85, pp. 61-85, 1997 (in collaboration with R. Monaco and M. Pandolfi Bianchi).
5. "Initial-Boundary Value Problem for the Broadwell Model of a Gas Mixture with Bimolecular Reaction", *Math. Meth. in the Appl. Sci.*, vol. 21, pp. 501-517, 1998.
6. "Reactive Euler equations of discrete models with reversible reactions" *Continuum Mech. Thermodyn.*, vol. 12, pp. 53-67, 2000 (in collaboration with M. Pandolfi Bianchi).
7. "Kinetic formulation of linear stability for steady detonation waves" *Riv. Mat. Univ. Parma*, vol. 3, pp. 201-215, 2000 (in collaboration with M. Pandolfi Bianchi).
8. "First-order approximation for a chemically reactive gas mixture", *Continuum Mech. Thermodyn.*, vol. 17, pp. 53-67, 2004 (in collaboration with M. Pandolfi Bianchi).
9. "On the global well-posedness of discrete Boltzmann systems with chemical reaction", *Math. Meth. in the Appl. Sci.*, vol. 28, pp. 1491-1506, 2005 (in collaboration with Filipe Oliveira).
10. "BGK-type models in strong reaction and kinetic chemical equilibrium regimes", *J. Phys. A: Math. and General*, vol. 38, pp. 10413-10431, 2005 (in collaboration with R. Monaco and M. Pandolfi Bianchi).
11. "A relaxation kinetic model for transport phenomena in reactive flow", *Phys. Fluids*, vol. 18, pp. 037104, 2006 (in collaboration with G. M. Kremer and M. Pandolfi Bianchi).
12. "Analysis of the trend to equilibrium of a chemically reacting system", *J. Phys. A: Math. Theor.*, vol. 40, pp. 2553-2571, 2007 (in collaboration with G. M. Kremer and M. Pandolfi Bianchi).
13. "A non-trivial explicit solution for the 14-velocity Cabannes kinetic model", *Nonlinear Analysis TMA*, vol. 67, pp. 1167-1172, 2007 (in collaboration with Filipe Oliveira).
14. "Effect of reaction heat on Maxwellian distribution functions and rate of reactions", *J. Stat. Mech.*, P 12003, pp. 1-16, 2007 (in collaboration with G. M. Kremer).
15. "A note on a Discrete Boltzmann Equation with multiple collisions", *J. Math. Anal. Appl.*, vol. 341, pp. 1476-1481, 2008 (in collaboration with Filipe Oliveira).
16. "H-theorem and trend to equilibrium of chemically reacting mixture of gases", *Kinetic and Related Models*, vol. 2, pp. 333-343, 2009 (in collaboration with G. M. Kremer and Filipe Oliveira).

17. “From the transport coefficients of a relaxation kinetic model to harmonic wave solutions”, *Il Nuovo Cimento*, vol. 33, pp. 103-110, 2010 (in collaboration with G. M. Kremer and M. Pandolfi Bianchi).
18. “Modelling and solutions to the linear stability of a detonation wave in the kinetic frame”, *J. Difference Equations and Applications*, vol. 17, pp. 1169-1184, 2011 (in collaboration with M. Pandolfi Bianchi).
19. “A kinetic model for chemical reactions without barriers: transport coefficients and eigenmodes”, *J. Stat. Mech.*, P P03014, pp. 1-20, 2011 (in collaboration with G. M. Alves, W. Marques Junior and G. M. Kremer).
20. “On the dynamics and linear stability of one-dimensional steady detonation waves”, *J. Phys. A: Math. Theor.*, vol. 45, 255501, pp. 1-20, 2012 (in collaboration with F. Carvalho).
21. “On the Kinetic Modelling of Reactive Waves in the Hydrodynamic Limit” *Aerotecnica Missili & Spazio*, vol. 91, pp. 109-119, 2012 (in collaboration with G. Kremer and M. Pandolfi Bianchi).
22. “Dynamics of Robertson-Walker spacetimes with diffusion”, *Annals of Physics*, vol. 354, pp. 475-488, 2015 (in collaboration with A. Alho, S. Calogero and M. P. Machado Ramos).
23. “Equilibrium properties of detonation waves with a reversible reaction in the hydrodynamic limit of a kinetic model”, *J. Phys. A: Math. Theor.*, vol. 48, 235501, pp. 1-27, 2015 (in collaboration with W. Marques Junior, G. Kremer and M. Pandolfi Bianchi).
24. “On modified simple reacting spheres kinetic model for chemically reactive gases”, *Kinetic and Related Models*, vol. 10, pp. 513-539, 2017 (in collaboration with J. Polewczak).
25. “A network model for landscape evolution: stability analysis and numerical tests”, *Comm. Nonlinear Science and Numerical Simulation*, vol. 48, pp. 569-584, 2017 (in collaboration with E. Bonacini, M. Groppi, R. Monaco and C. Soresina).
26. “Modeling and analysis of time-dependent processes in a chemically reactive mixture”, *Continuum Mechanics and Thermodynamics*, vol. 30, pp. 127-144, 2018 (in collaboration with M.P. Ramos and C. Ribeiro).
27. “A BGK model for reactive mixtures of polyatomic gases with continuous internal energy”, *J. Phys. A: Math. Theor.*, vol. 51, 125501, pp. 1-29, 2018 (in collaboration with M. Bisi and R. Monaco).
28. “On the relaxation of the Maxwell-Stefan system to linear diffusion”, *Applied Mathematics Letters*, vol. 85, pp. 15-21, 2018 (in collaboration with F. Salvarani).
29. “Transport coefficients for the simple reacting spheres kinetic model I: Reaction rate and shear viscosity”, *Physica A*, vol. 505, pp. 1018-1037, 2018 (in collaboration with F. Carvalho, J. Polewczak and A.W. Silva).
30. “A Zel’dovich-von Neumann-Döring-like detonation wave in a multi-temperature mixture”, *J. Fluid Mech.*, vol. 869, pp. 674-705, 2019 (in collaboration with D. Madjarević, S. Simić).
31. “From the simple reacting sphere kinetic model to the reaction-diffusion system of Maxwell-Stefan type”, doi:10.4310/CMS.2019.v17.n2.a9 *Commun. Math. Sci.*, vol. 17, pp. 507-538, 2019 (in collaboration with B. Anwasia and P. Gonçalves).

32. “A kinetic model of T cell autoreactivity in autoimmune diseases”, *J. Math. Biology*, <https://doi.org/10.1007/s00285-019-01418-4>, vol. 79, pp. 2005–2031, 2019 (in collaboration with M.P. Ramos and C. Ribeiro).
33. “Hydrodynamic bidimensional stability of detonation wave solutions for reactive mixtures”, *J. Stat. Mech.: Theory and Experiment*, doi:10.1088/1742-5468/ab3341, vol. 2019, 083217, pp. 1–21, 2019 (in collaboration with F. Carvalho, G.M. Kremer, W. Marques Jr, M. Pandolfi Bianchi).
34. “An integrated evaluation methodology to measure ecological and economic landscape states for territorial transformation scenarios: an application in Piedmont (Italy)”, *Ecological Indicators*, doi:10.1016/j.ecolind.2019.04.071, vol. 105, pp. 156–165, 2019 (in collaboration with V. Assumma, M. Bottero, R. Monaco).
35. “On the Maxwell-Stefan diffusion limit for a reactive mixture of polyatomic gases in non-isothermal setting”, *Kinetic and Related Models*, vol. 13, pp. 63–95, 2020 doi:10.3934/krm.2020003 (in collaboration with B. Anwasia, M. Bisi, F. Salvarani).
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