Daniele Ritelli

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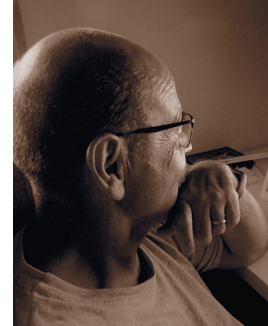phone +39 0512094340
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I cannot resist an integral. G.H. Hardy

Professional Experience

1991–1993	Teaching Assistant in Mathematical Economics University of Bologna
1993–2004	Lecturer in Mathematical Economics University of Bologna
2004–2017	Associate Professor in Mathematical Economics University of Bologna
2020–2023	Component of Scientific Committee of CISIA
2017–today	Associate Professor in Mathematical Analysis University of Bologna
2008–today	Reviewer for the American Mathematical Society

Education

1979–1989	Degree magna cum laude, in Pure Mathematics University of Bologna

Thesis

1989	Variational methods for elliptic semilinear equations in $\mathbb{R}^n$
Supervisor	Ermanno Lanconelli

Languages

Italian	Mother tongue
English	Fluent
Spanish	Basic
French	Reading
Romanian	Reading
German	Reading

Computer skills

Operating System	macOS Sonoma, Ubuntu Linux
Computer Algebra	Mathematica® 14.2
Typesetting	LaTeX 2_ε

Areas of interests in Mechanics and Applied Mathematics

- Particle dynamics
- Nonlinear oscillations
- Mathematical modelling via ordinary differential equations
- EOQ models
- Minimum cost in management and production planning
- History of ordinary differential equation in 18th century
- Exact solutions of ordinary differential equations and boundary value problems
- Symmetries of ordinary differential equations

Areas of interests in Mathematical Analysis

- Classical Analysis
- Special functions: gamma, beta, hypergeometric functions and integrals
- Special functions: Appell functions, Lauricella functions, elliptic functions and integrals
- Generalized trigonometric functions
- Hyperelliptic integrals

Editorial contributions

2011	Referee for Journal of Number Theory
2010	Referee for Bulletin of Mathematical Analysis and App
2010	Referee for Journal of the Franklin Institute
2010	Referee for Tamkang Journal of Mathematics
2011	Referee for International Journal of Mathematics and Mathematical Sciences
2011	Associate editor for Current Applied Mathematics
2013	Editor for Journal of Applied Mathematics and Physics
2013	Referee for Journal of Inequalities and Applications
2013	Referee for Applied Mathematical Modelling
2013	Referee for Studia Scientiarum Mathematicarum Hungarica
2014	Editor for Asia Pacific Journal of Mathematics
2014	Referee for Journal of Mathematical Analysis and Applications
2014	Referee for Abstract and Applies Analysis
2014	Referee for Applied Mathematics and Computation
2014	Referee for The Scientific Word Journal
2014	Referee for Meccanica
2014	Referee for Bulletin of the Korean Mathematical Society
2014	Referee for Integral Transform and Special Functions
2015	Referee for Decision in Economics and Finance
2015	Referee for Mediterranean Journal of Mathematics
2015	Referee for American Mathematical Monthly
2015	Referee for Complex Analysis and Operator Theory
2015	Referee for Applied Mathematics & Information Sciences
2016	Editor for Asian Journal of Mathematics and Physics
2017	Referee for Science Asia
2018	Editor for Open Journal of Mathematical Sciences
2018	Referee for International Journal of Non-Linear Mechanics
2018	Editor for Far East Journal of Applied Mathematics
2019	Editor in Chief of Journal of Mathematical Sciences and Computational Mathematics
2020	Associate Editor for Statistica
2020	Referee for International Journal of Mathematical Education in Science and Technology
2020	Referee for Mathematics
2020	Referee for Journal of fractional calculus and applications
2021	Referee for Symmetry
2021	Referee for Statistical Papers
2021	Referee for Journal of Classical Analysis
2022	Referee for La Matematica
2022	Referee for Fractal and Fractional
2023	Editor for International Journal of Mathematics and Computer in Engineering
2024	Referee for Malaysian Journal of Mathematical Sciences
2024	Referee for Bulletin of the Iranian Mathematical Society
2024	Referee for Axioms
2024	Referee for Algorithms
2024	Referee for Mathematical Methods of Applied Sciences
2024	Referee for Mathematical and Computational Applications
2024	Editor in Chief for Open Journal of Mathematical Sciences
2025	Award for Outstanding Reviewer for Axioms

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Recent invited conferences

June 4th 2020	Separation of variables: the Jacopo Riccati's legacy and the solution of some "forgotten" differential equations. Anand International College of Engineering
June 13th 2020	Identities for Catalan's constant arising from integrals depending on a parameter. Online international conference on mathematical techniques and applications
June 17th 2020	Quintic and Quinticated Oscillators @ International webinar at Poornima college of engineering
July 17th 2020	Nonlinear Differential Equations & Computer Algebra @ Lakshimi Narain College of technology
Feb. 6th 2021	Keplerian Trignometry @ International conference on emerging trends in mathematical sciences & computing (IEMSC-21)
Nov. 24th 2021	Keplerian Trignometry @ Modern Mathematical Methods and High-Performance Computing in Science & Engineering
July 12th 2023	Generalized Trigonometric Functions @ 7th International Conference on Mathematics, Istanbul

Previous Teaching

• 2013-2014	Analisi Matematica cdl Scienze statistiche SSD MAT05
• 2013-2014	Modelli Matematici per la finanza 1 cdl Finanza intermediari e mercati SSD MAT05
• 2013-2014	Matematica finanziaria cdl Management e marketing SSD SECS/S-06
• 2013-2014	Introduzione alle funzioni speciali dottorato in Scienze Statistiche SSD MAT/05
• 2015-2016	Mathematical Analysis undergraduate
• 2015-2016	Mathematical Methods for Quantitative Finance graduate
• 2015-2016	Linear Algebra undergraduate
• 2015-2016	Introduction to Special Functions PhD in Statistics
• 2016-2017	Mathematical Analysis undergraduate
• 2016-2017	Mathematical Methods for Quantitative Finance graduate
• 2016-2017	Linear Algebra undergraduate
• 2016-2017	Introduction to Special Functions PhD in Statistics
• 2016-2017	Laboratorio Fintech: Finanza simbolica Mathematica
• 2017-2018	Mathematical Analysis undergraduate
• 2017-2018	Mathematical Methods for Quantitative Finance graduate
• 2017-2018	Linear Algebra undergraduate
• 2017-2018	Introduction to Special Functions PhD in Statistics
• 2017-2018	Differential Equations

Recent Teaching

• 2019-2024	Mathematical Analysis undergraduate
• 2019-2024	Mathematical Methods for Quantitative Finance graduate
• 2019-2024	Introduction to Special Functions PhD in Statistics
• 2019-2024	Differential Equations

List of publications

[1] *Predation among technologies on the market: a modellistic analysis.* With Giancarlo Barbiroli and Paolo Fabbri. Journal of Mathematical Economics **27** (1997) 347–374.

[2] *Dynamical Systems in Analyzing Competitivness among technologies.* International Journal of System Science London (1997) vol. 28 no. 4, 347-356. With Giancarlo Barbiroli.

[3] *A historical outline of the theorem of implicit functions.* With Giovanni Mingari Scarpello. Divulgaciones Matemáticas, **10** (2002), no. 2, 171-180.

[4] *A new method for the explicit integration of Lotka Volterra Equation.* With Giovanni Mingari Scarpello. Divulgaciones Matemáticas, **11** (2003), no. 1, 1-17.

[5] *The Solow model improved through the logistic manpower growth law.* With Giovanni Mingari Scarpello. Annali Università di Ferrara -Sez VII -Sc. Mat. Vol. IL, 73-83 (2003).

[6] *Closed form integration of the rotating plane pendulum nonlinear equation.* With Giovanni Mingari Scarpello. Tamkang Journal of Mathematics, Vol. 34, No. 4, (2003) 327-350.

[7] *Higher order approximation of the period-energy function for single degree of freedom Hamiltonian Systems.* With Silvia Foschi e Giovanni Mingari Scarpello. *Meccanica* Vol. 39, 2004, 357-368.

[8] *A non-linear oscillator modelling the transverse vibrations of a rod.* With Giovanni Mingari Scarpello. Rend. Sem. Mat. Univ. Pol. Torino Vol. 61, no. 1 (2003) 55-69.

[9] *A nonlinear oscillation induced by two fixed gravitating centres.* With Giovanni Mingari Scarpello. Intern. Math. Journal, Vol. 4, no. 4, (2003) 337-350.

[10] *Circular motion of a particle under friction and hydraulic dissipation.* With Giovanni Mingari Scarpello. Tamkang Journal of Mathematics, vol. 36 No. 1 (2005) 1-16.

[11] *Frictionless planar motion of a couple of hinged rods.* With Giovanni Mingari Scarpello. Nonlinear Oscillations, vol. 9, no. 1, 2006 48-60.

[12] *A nonlinear boundary problem by the inventory's optimisation of a productive system with not wholly quadratic costs.* With Giovanni Mingari Scarpello. Journal of Interdisciplinary Mathematics vol. 8 no. 2 (2005) 133-145.

[13] *A nonlinear model of the unsteady heat transfer through an electron tube.* With Giovanni Mingari Scarpello. Quaderni di Ricerca in Didattica, no. 15, (2005) 132-143.

[14] *Planar brachistochrone of a particle attracted in vacuo by an infinite rod.* With Giovanni Mingari Scarpello. New Zealand Journal of Mathematics Volume 36 (2007), 241-252.

[15] *Relativistic brachistochrones under electric or gravitational uniform fields.* With Giovanni Mingari Scarpello. Z. Angew. Math. Mech. **86**, (2006) no. 9, 736-743.

[16] *Exact integration of a nonlinear model of steady heat conduction/radiation in a wire with internal power.* With Giovanni Mingari Scarpello and Arsen Palestini. Journal of Geometry and Symmetry in Physics vol. 4 (2005) 59-67.

[17] *A nonlinear variational problem of profit maximization with convex costs.* With Giovanni Mingari Scarpello. International Journal of Contemporary Mathematical Sciences, **1**, (2006) no. 6, 267-283.

[18] *A 3-dimensional Eulerian array.* With Giorgio Nicoletti and Matteo Silimbani. Annali Università di Ferrara -Sez VII -Sc. Mat. **56** (2006) no. 1 107-126.

[19] *Elliptic integral solutions of spatial elastica of a thin straight rod bent under concentrated terminal forces.* With Giovanni Mingari Scarpello. Meccanica **41** (2006) no. 5 519-527.

[20] *Actuarial values calculated using the incomplete Gamma function.* With Giovanni Mingari Scarpello and Dario Spelta. Statistica 56 no. 1 (2006) 77-84.

[21] *The Goodwin cycle improved with generalized wages: phase portrait, periodic behaviour.* With Giovanni Mingari Scarpello. Journal of Interdisciplinary Mathematics (2007) vol. 10 no. 1 71-87.

[22] *Elliptic integrals solution to elastica's boundary value problem of a rod bent by axial compression.* With Giovanni Mingari Scarpello. Journal of Analysis and Applications vol. 5 (2007) no. 1, 53-69.

[23] *Dynamical analysis of a demand governed market in relation to innovative commodities.* With Giancarlo Barbiroli and Arsen Palestini. Applied Sciences vol. 9 (2007) 22-32.

[24] *Closed form solution of a periodically forced logistic model.* With Giovanni Mingari Scarpello. Annali Università di Ferrara -Sez VII -Sc. Mat. Vol. 54 (2008) no. 1, 85-94.

[25] *Straight and circular motions of a particle in the field of two fixed attractors.* With Giovanni Mingari Scarpello and Arsen Palestini. Journal of Geometry and Symmetry in Physics vol. 11 (2008) 49-66.

[26] *Exact curvature elastica of a thin cantilever under terminal loads.* With Giovanni Mingari Scarpello. Journal of Geometry and Symmetry in Physics vol. 12 (2008) 75-92

[27] *Nonlinear Dynamics of a Two-Degree of Freedom Hamiltonian System: Bifurcation and Integration.* With Giovanni Mingari Scarpello. Nonlinear Dynamics and Systems Theory **8** (1) (2008) 97-108.

[28] *EOQ when holding costs grow with the stock level: well-posedness and solutions.* With Giovanni Mingari Scarpello. Advanced Modeling and Optimization, Volume 10, Number 2, (2008) 233-240.

[29] *The Solow model with logistic manpower: a stability analysis.* With Giovanni Mingari Scarpello and J. G. Brida. The Journal of World Economic Review, vol. 3, Number 2, (2008) 161-166.

[30] *The hyperelliptic integrals and π.* With Giovanni Mingari Scarpello. Journal of Number Theory, 10 (2009) 3094-3108.

[31] *EOQ under exogenous and periodic demand.* With Enrico Bernardi and Giovanni Mingari Scarpello. Advanced Modeling and Optimization, Volume 11, Number 3, (2009) 279-287.

[32] *EOQ problem well-posedness: an alternative approach establishing sufficient conditions.* With Giovanni Mingari Scarpello. Applied Mathematical Sciences Vol. 4, 2010, no. 25, 1213 - 1219.

[33] *Closed form solutions to generalized logistic-type nonautonomous systems.* With Giovanni Mingari Scarpello and Arsen Palestini. Applied Sciences, Vol 12 (2010) 134-145.

[34] *Exact solution to a first-fifth power nonlinear unforced oscillator.* With Giovanni Mingari Scarpello. Applied Mathematical Sciences, Vol. 4, 2010, no. 72, 3589 - 3594.

[35] *π and the hypergeometric functions of complex argument.* With Giovanni Mingari Scarpello. Journal of Number Theory Volume 131 Number 11 (2011) 1887-1900.

[36] *Exact solutions of nonlinear equation of rod deflections involving the Lauricella hypergeometric functions.* With Giovanni Mingari Scarpello. International Journal of Mathematics and Mathematical Sciences, Volume 2011 (2011), Article ID 838924.

[37] *Closed form integration of a hyperelliptic, odd powers, undamped oscillator.* With Giovanni Mingari Scarpello. Meccanica: Volume 47, Number 4 (2012) 857-862.

[38] *Mathematical properties of EOQ models with special cost structure.* With Alessandro Gambini and Giovanni Mingari Scarpello. Applied Mathematical Modelling: Volume 37 (2013) 659–666.

[39] *A thin heavy flagpole bent under a transverse wind: his elastica by hypergeometric functions.* With Giovanni Mingari Scarpello. Applied Mathematical Sciences: Volume 6 no. 49 (2012) 2419 - 2429.

[40] *Probability of digits by dividing random numbers: a ψ and ζ functions approach.* With Alessandro Gambini and Giovanni Mingari Scarpello. Expositiones Mathematicæ: Volume 30 (2012) 223–238.

[41] *Another proof of $\zeta(2) = \dfrac{\pi^2}{6}$ using double integrals.* American Mathematical Monthly: Volume 120 (2013) 642–645

[42] *Legendre Hyperelliptic integrals, π new formulae and Lauricella functions through the elliptic singular moduli.* With Giovanni Mingari Scarpello. Journal of Number Theory 135C (2014) 334–352

[43] *Existence of EOQ and its evaluation: some cases of stock blow-down dynamics depending on its level.* With Giovanni Mingari Scarpello e Alessandro Gambini. In Handbook of EOQ Inventory Problems International Series in Operations Research & Management Science Volume 197, 2014, pp 59-78, Editor Tsan-Ming Choi, Springer 2014

[44] *Closed-form Solution to Nonlinear Equilibria and Oscillations of a Damped Eccentric Rotor.* With Giovanni Mingari Scarpello. British Journal of Mathematics & Computer Science vol. 4 no. 13 (2014) 1786-1796.

[45] *Nonlinear 1-D oscillations of a charge particle under Coulomb forces and dry friction.* With Giovanni Mingari Scarpello: Journal of Geometry and Symmetry in Physics vol. 34 (2014) 77-85

[46] *Some hidden harmonies between new and old geometric loci.* With Aldo Scimone, Elemente der Matematik (2014) **69**, 178–185.

[47] *The meridian curve of a wetting drop: a boundary value problem and its elliptic integrals solution.* With Giovanni Mingari Scarpello, Meccanica (2014) **49** nᵒ9, 2257–2264

[48] *On computing some special values of multivariate hypergeometric functions* With Giovanni Mingari Scarpello: Journal of Mathematical Analysis and Applications (2014) **420** nᵒ2 1693–1718.

[49] *Some limits of sequences of Euler Mascheroni kind.* With Calogero Salvatore Siracusa, International Mathematical Forum (2014) **9** nᵒ 29–32 1447–1450

[50] *On sone new inequalities involving generalized Erdélyi-Kober fractional q-integral operator.* With Junesang Choi and Praveen Agarwal: Applied Mathematical Sciences, Vol. 9, 2015, no. 72, 3577–3591

[51] *Closed-Form Solution for the Solow Model with Constant Migration*. With Joáo Plinio Juchem Neto, Julio Cesar Ruiz Claeyssen and Giovanni Mingari Scarpello: Tendéncias em Matematica Aplicada e Computacional, 16, N. 2 (2015), 1-13.

[52] *Certain new unified integrals associated with the product of generalized Bessel functions*. With Praveen Agarwal, Adem Kilicman and Shilpi Jain: Communications in Numerical Analysis 2016 No.1 (2016) 50-56.

[53] *A new way for old loci*. With Aldo Scimone: International Journal of Geometry: Volume 6 (2017), No. 2, 86–92.

[54] *Hypergeometric solutions to a three-dimensional dissipative oscillator driven by aperiodic forces*. With Alessio Bocci and Giovanni Mingari Scarpello: Applied Mathematical Modelling: Volume 53 (2018) 71–82.

[55] *On a class of new hypergeometric transformations*. With Giovanni Mingari Scarpello: Open Journal of Mathematical Science: Volume 2018, No. 1, Pages 84-92. http://dx.doi.org/10.30538/oms2018.0019

[56] *Evaluation of Harmonic Sums with Integrals*. With Vivek Kaushik Quarterly of Applied Mathematics 2018 LXXVI, No. 3 September 2018, Pages 577-600

http://dx.doi.org/10.1090/qam/1499

[57] *Motions about a fixed point by hypergeometric functions: new non-complex analytical solutions and integration of the herpolohode*. With Giovanni Mingari Scarpello: Celestial Mechanics and Dynamical Astronomy: Volume 130 No. 6 page 42, 2018

[58] *Unsteady roto-translational viscous flow: analytical solution to Navier-Stokes equations in cylindrical geometry*. With Alessio Bocci and Giovanni Mingari Scarpello: Journal of Geometry and Symmetry in Physics Volume 48 (2018) 1–21

[59] *Aircraft planar trajectories in crosswind navigation: some hypergeometric solutions* With Giovanni Mingari Scarpello and Giulia Spaletta: European Journal of Physics **40** 2019 105110 http://iopscience.iop.org/article/10.1088/1361-6404/aae7a1/meta

[60] *Johann Bernoulli's first lecture from the first integral calculus textbook ever written: an annotated translation* https://doi.org/10.1080/0020739X.2018.1543810 With Giovanni Mingari Scarpello: International Journal of Mathematical Education in Science and Technology

[61] 2018. *New methods of Classical Loci Determination* With Giulia Spaletta and Aldo Scimone pp.149-175. in Series in Applied Sciences vol. 1: Mathematical Modelling, Numerical and Data Analysis

[62] *First order differential equations: early history following Jacopo Riccati and Gabriele Manfredi* With Giovanni Mingari Scarpello: Volume 2. (2019) Series in Applied Sciences (ed. by M. Carletti, G. Spaletta)

[63] *Identities for Catalan's constant arising from integrals depending on a parameter* https://doi.org/10.1007/s10114-020-9451-9 With Federica Ferretti and Alessandro Gambini: Acta Mathematica Sinica English edition **36** 1083–1093 (2020)

[64] *Hypergeometric identities related to Roberts reductions of hyperelliptic integrals* https://link.springer.com/article/10.1007/s00025-020-01288-z With Santosh B. Yoshi Results in Mathematics **75**, Article number: 169 (2020)

[65] *Special functions and rod nonlinear theory* With Giovanni Mingari Scarpello: Chapter 2: in Special Functions and Analysis of Differential Equations 2020 CRC Press https://doi.org/10.1201/9780429320026

[66] *Introductory Mathematical Analysis for Quantitative Finance* With Giulia Spaletta CRC Press 2020

[67] *Keplerian Trigonometry* With Alessandro Gambini and Giorgio Nicoletti Monatshefte für Mathematik **2021** 195, 55–72 https://link.springer.com/article/10.1007/s00605-021-01512-0

[68] *The Lambert function, the quintic equation and the proactive discovery of the Implicit Function Theorem* With Silvia Foschi, Open Journal of Mathematical Sciences **2021**, 5, 101–114 doi:10.30538/oms2021.0149

[69] *Trinomial equation: the Hypergeometric way* With Giulia Spaletta, Open Journal of mathematical Sciences **2021**, 5, 236–247 doi:10.30538/oms2021.0160

[70] *A forgotten differential equation studied by Jacopo Riccati revisited in terms of Lie symmetries* Mathematics **2021**, 9(11), `10.3390/math9111312`

[71] *Generalized Logistic Equations in Covid-Related Epidemic Models*: Chapter 6 in Analysis of Infectious Disease Problems (Covid-19) and Their Global Impact, edited by Praveen Agarwal, Juan J. Nieto, Michael Ruzhansky, Delfim F. M. Torres. Springer 2021 eBook ISBN 978-981-16-2450-

[72] *The importance to be mean* With Aldo Scimone and Giulia Spaletta International Journal of Geometry Vol. 11 (2022), No. 1, 122–137

[73] *Explicit Solution for a Family of Hermann Riccati Differential Equations* Contemporary Mathematics Volume 3 Issue 1 (2022) 72–80 `https://ojs.wiserpub.com/index.php/CM/article/view/1302`

[74] *Connections between normalized Wright Functions with families of analytic Functions with negative coefficients* With Santosh B. Joshi, Sayali S. Joshi, Haridas H. Pawar Analysis (2022) `https://doi.org/10.1515/anly-2021-1027`

[75] *On a particular spiral similarity* With Aldo Scimone and Giulia Spaletta International Journal of Geometry Vol. 12 (2023), No. 2, 54–69

[76] *Fuzzy Esscher Changes of Measure and Copula invariance in Lévy markets* With Enrico Bernardi ad Silvia Romagnoli Fuzzy Sets and Systems Vol. 466 (2023) page 108466 `https://doi.org/10.1016/j.fss.2023.01.001`

[77] *A structural approach to Gudermannian functions* With Alessandro Gambini and Giorgio Nicoletti Results in Mathematics Volume 79, article number 10, (2024) `https://link.springer.com/article/10.1007/s00025-023-02038-7`

[78] *Exact time-integral inversion via Čebyšëv quintic approximations for nonlinear oscillators* With Martina Boschi and Giulia Spaletta Journal of Mathematical Analysis and Applications Volume 533, Issue 1, 1 May 2024, 128015 `https://www.sciencedirect.com/science/article/pii/S0022247X23010181`

[79] *A five-step block method coupled with symmetric compact finite difference scheme for solving time-dependent partial differential equations* With Komalpreet Kaur, Gurjinder Singh to Symmetry, **2024**, 16, 307 `https://doi.org/10.3390/sym16030307`.

[80] *Sharp second-order Hankel determinant bounds for alpha-convex functions connected with modified sigmoid function* With Muhammad Abbas, Reem K. Alhefthi and Muhammad Arif to Axioms **2024**, 13(12), 844 `https://doi.org/10.3390/axioms13120844`

[81] *Two Approaches for Evaluating the Period Function of Some Hamiltonian Systems* with Giulia Spaletta Chapter 3 in Mathematical Analysis and its Applications Edited By Ferit Gürbüz CRC Press 2025

[82] *The Wallis products for Fermat curve* With Alessandro Gambini and Giorgio Nicoletti Vietnam Journal of Mathematics Volume 53, pages 1–16, (2025) `https://doi.org/10.1007/s10013-023-00617-3`

[83] *A Novel Family of Starlike Functions Involving Quantum Calculus and a Special Function* With Baseer Gul, Muhammad Arif and Reem K. Alhefthi Fractal and Fractional **Accepted 2025**