

Curriculum vitae

Personal information

<i>First name:</i>	Roberto
<i>Family name:</i>	Garrappa
<i>Office address:</i>	Università degli Studi di Bari “Aldo Moro” Dipartimento di Matematica Via E. Orabona, 4 70125 Bari - Italy Phone: +39.080.5442685
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Education

<i>Diploma :</i>	Secondary School Diploma - Scientific studies State Scientific Liceum - Monopoli, Italy
<i>Degree :</i>	Degree in Computer Science University of Bari - Italy

Work experience

<i>from 14/10/1993 to 28/12/1994</i>	Teacher of Mathematics Secondary schools in Bergamo, Italy
<i>from 29/12/1994 to 30/09/2001</i>	Data processing specialist Faculty of Science - University of Bari, Italy
<i>from 1/10/2001 to 29/10/2015</i>	Researcher of Numerical Analysis Department of Mathematics, University of Bari, Italy
<i>from 30/10/2015 to March, 3 2024</i>	Associate Professor of Numerical Analysis Department of Mathematics, University of Bari, Italy
<i>from March, 4 2024 till now</i>	Full Professor of Numerical Analysis Department of Mathematics, University of Bari, Italy

Research activity

Main research topics

- numerical methods for fractional differential equations;
- numerical methods for non-integer partial differential equations and for fractional Laplacian;
- analysis and numerical approximation of special functions (Mittag-Leffler, Le Roy, Volterra functions and others);
- approximation of matrix functions and related linear algebra problems;
- development of robust and efficient methods for the solution of fractional differential equations;
- analysis of fractional pseudo-differential operators for applications in computational electromagnetism (Prabhakar derivative and Havriliak-Negami models and introduction of new variable-order operators).

Scientific publications

Papers in peer reviewed journals

1. A.Giusti, I.Colombaro, R.Garra, R. Garrappa, A.Mentrelli *On variable-order fractional linear viscoelasticity*, Fractional Calculus and Applied Analysis, 2024
2. L.Beghin, L.Cristofaro, R.Garrappa, *Renewal processes linked to fractional relaxation equations with variable order*, Journal of Mathematical Analysis and Applications, 2024, 531(1), Art. no. 127795
3. R.Garrappa, A.Giusti, *A computational approach to exponential-type variable-order fractional differential equations*, Journal of Scientific Computing, 2023, 96, Art. no. 63
4. D.Mortari, R.Garrappa, L.Nicoló, *Theory of Functional Connections Extended to Fractional Operators*, Mathematics, 2023, 11(7), 1721
5. S.Luo, F.L. Lewis, Y.Song, R.Garrappa, S.Li, *Dynamic Analysis and Fuzzy Fixed-Time Optimal Synchronization Control of Unidirectionally Coupled FO Permanent Magnet Synchronous Generator System*, IEEE Transactions on Fuzzy Systems, 2023, 31(5), 1743-1755
6. R.Garrappa, M.Popolizio, *A computationally efficient strategy for time-fractional diffusion-reaction equations*, Computers & Mathematics with Applications, 2022, 116, 181-193
7. D.Biolek, R.Garrappa, V.Biolková, *Impulse response of commensurate fractional-order systems: multiple complex poles*, Fractional Calculus and Applied Analysis, 25(5) 2022
8. E.Darve, M.D'Elia, R.Garrappa, A.Giusti, N.L.Rubio, *On the fractional Laplacian of variable order*, Fractional Calculus and Applied Analysis, 2022, 25(1), 15-28
9. R.Garrappa, A.Giusti, F.Mainardi, *Variable-order fractional calculus: a change of perspective*, Communications in Nonlinear Science and Numerical Simulation, 2021, 102, 105904
10. P.Lino, G.Maione, R.Garrappa, S.Holm, *An approach to optimal integer and fractional-order modeling of electro-injectors in compression-ignition engines*, Control Engineering Practice, 2021, 115, 104890

11. H.T.Tuan, H.D.Thai, R.Garrappa, *An analysis of solutions to fractional neutral differential equations with delay*, Communications in Nonlinear Science and Numerical Simulation, 2021, 100, 105854
12. O.Brandibur, R.Garrappa, E.Kaslik, *Stability of systems of fractional-order differential equations with Caputo derivatives*, Mathematics, 2021, 9(8), 914
13. S. Luo, F.L. Lewis, Y. Song, R. Garrappa, *Dynamical analysis and accelerated optimal stabilization of the fractional-order self-sustained electromechanical seismograph system with fuzzy wavelet neural network*, Nonlinear Dynamics, 2021, 104(2), pp. 1389-1404
14. S.Luo, Y.Song, F.L.Lewis, R.Garrappa, *Neuroadaptive Optimal Fixed-Time Synchronization and Its Circuit Realization for Unidirectionally Coupled FO Self-Sustained Electromechanical Seismograph Systems*, IEEE Transactions on Cybernetics, 2021, 53(4), pp. 2454-2466
15. A.Giusti, R.Garrappa, G.Vachon, *On the Kuzmin model in fractional Newtonian gravity*, Eur. Phys. J. Plus, 2020, 135(10), 798
16. R.Garrappa, E.Kaslik, *Stability of fractional-order systems with Prabhakar derivatives*, Nonlinear Dynamics, 2020, 102 567-578
17. K.Diethelm, R.Garrappa, A.Giusti, M.Stynes, *Why fractional derivatives with nonsingular kernels should not be used* Fractional Calculus and Applied Analysis, 2020, 23(3), 610-634
18. R.Garrappa, E.Kaslik, *On initial conditions for fractional delay differential equations*, Communications in Nonlinear Science and Numerical Simulation, 2020, 90, 105359
19. K.Diethelm, R.Garrappa, M.Stynes, *Good (and not so good) practices in computational methods for fractional calculus*, Mathematics, 2020, 8(3), 324
20. A.Giusti, I.Colombaro, R.Garra, R.Garrappa, F.Polito, M.Popolizio, F. Mainardi, *A practical guide to Prabhakar fractional calculus*, Fractional Calculus and Applied Analysis, 2020, 23(1), 9-54
21. K.Gorska, A.Horzela, R.Garrappa, *Some results on the complete monotonicity of Mittag-Leffler functions of Le Roy type*, Fractional Calculus and Applied Analysis, 2019, 22(5), 1284-1306
22. R.Garrappa, E.Kaslik, M.Popolizio, *Evaluation of fractional integrals and derivatives of elementary functions: overview and tutorial*, Mathematics, 2019, 7(5), 407
23. R.Garrappa, *Neglecting nonlocality leads to unreliable numerical methods for fractional differential equations*, Communications in Nonlinear Science and Numerical Simulation, 2019, 70, 302-306
24. Garrappa R., M.Popolizio, *Computing the matrix Mittag-Leffler function with applications to fractional calculus*, Journal of Scientific Computing, 2018, 77(1), 129-153
25. R.Garrappa, E.Messina, A.Vecchio, *Effect of perturbation in the numerical solution of fractional differential equations* Discrete and Continuous Dynamical Systems - Series B, 2018, 23(7), 2679-2694
26. R.Garra, R.Garrappa, *The Prabhakar or three parameter Mittag-Leffler function: theory and application*, Communications in Nonlinear Sciences and Numerical Simulation, 2018, 56, 314-329
27. R.Garrappa, *Numerical Solution of Fractional Differential Equations: A Survey and a Software Tutorial*, Mathematics, 2018, 6(2), 16
28. R.Garrappa, F.Mainardi, S.Rogosin, *On a generalized three-parameter Wright function of Le Roy type*, Fractional Calculus and Applied Analysis, 2017, 20(5), 1196-1215

29. R.Garrappa, I.Moret, M.Popolizio, *On the time-fractional Schrödinger equation: theoretical analysis and numerical solution by matrix Mittag-Leffler functions*, Computers and Mathematics with Applications, 2017, 74(5), 977-992
30. Garrappa R, F.Mainardi, G.Maione, *Models of dielectric relaxation based on completely monotone functions*, Fractional Calculus and Applied Analysis, 2016, 19(5), 1105-1160
31. R.Garrappa, F.Mainardi, *On Volterra functions and Ramanujan integrals*, Analysis, 2016, 36(2), 89-105
32. R.Garrappa, *On Grünwald-Letnikov operators for fractional relaxation in Havriliak-Negami models*, Communications in Nonlinear Sciences and Numerical Simulation, 2016, 38, 178-191
33. R.Garrappa, P.Lino, G.Maione, F.Saponaro, *Model Optimization and Flow Rate Prediction in Electro-injectors of Diesel Injection Systems*, IFAC PapersOnLine, 2016, 49(11), 484-489
34. R.Garrappa, *Numerical evaluation of two and three parameter Mittag-Leffler functions*, SIAM Journal of Numerical Analysis, 2015, 53(3), 1350-1369
35. R.Garrappa, I.Moret, M.Popolizio, *Solving the time-fractional Schrödinger equation by Krylov projections methods*, Journal of Computational Physics, 2015, 293, 115-134
36. F.Mainardi, R.Garrappa, *On complete monotonicity of the Prabhakar function and non-Debye relaxation in dielectrics*, Journal of Computational Physics, 2015, 293, 70-80
37. R.Garrappa, *Trapezoidal methods for fractional differential equations: theoretical and computational aspects*, Mathematics and Computers in Simulation, 2015, 110, 96-112
38. M.F.Danca, R.Garrappa, *Suppressing chaos in discontinuous systems of fractional order by active control*, Applied Mathematics and Computation, 2015, 257, 89-102
39. S.Esmaeili, R.Garrappa, *A pseudo-spectral scheme for the approximate solution of a time-fractional diffusion equation*, Intern. Journal of Computer Mathematics, 2015, 92(5) 980-994
40. R.Garrappa, M.Popolizio, *Exponential Quadrature Rules for Linear Fractional Differential Equations*, Mediterranean Journal of Mathematics 12(1) (2015), 219-244;
41. R.Garrappa, *On some generalizations of the implicit Euler method for discontinuous fractional differential equations*, Mathematics and Computers in Simulation, 95 (2014), 213-228,
42. R.Garrappa, *Exponential integrators for time-fractional PDEs*, European Physical Journal Special Topics 222(8) (2013), 1913-1925
43. M.F.Danca, R.Garrappa, W.K.S.Tang, G.Chen, *Sustaining stable dynamics of a fractional-order chaotic financial system by parameter switching*, Computers and Mathematics with Applications, 66 (5) (2013), 702-716
44. R.Garrappa, *A family of Adams exponential integrators for fractional linear systems*, Computers and Mathematics with Applications, 66 (5) (2013), 717-727
45. R.Garrappa, M.Popolizio, *Evaluation of generalized Mittag-Leffler functions on the real line*, Advances in Computational Mathematics 39 (1) (2013), 205-225
46. M.Y.Ongun, R.Garrappa, D.Arslan, *Nonstandard finite difference schemes for fractional order Brusselator system*, Advances in Difference Equations 2013(102) (2013)
47. R.Garrappa, *Stability-preserving high-order methods for multiterm fractional differential equations*, International Journal of Bifurcation and Chaos 22 (4) (2012), 1-13
48. R.Garrappa, M.Popolizio, *Generalized exponential time differencing methods for fractional order problems*, Computers and Mathematics with Applications 62(3) (2011), 876-890

49. R.Garrappa, M.Popolizio, *On accurate product integration rules for linear fractional differential equations*, Journal of Computational and Applied Mathematics 235 (2011), no. 5, 1085–1097
50. R.Garrappa, M.Popolizio, *On the use of matrix functions for fractional partial differential equations*, Mathematics and Computers in Simulation 81 (2011), no. 5, 1045–1056;
51. R.Garrappa, *On linear stability of predictor–corrector algorithms for fractional differential equations*, International Journal of Computer Mathematics 87 (2010) no. 10, 2281–2290;
52. R.Garrappa, *Order conditions for Volterra Runge–Kutta methods*, Applied Numerical Mathematics 60 (2010), no. 4, 561–573;
53. R.Garrappa, *On some explicit Adams multistep methods for fractional differential equations*, J. Comput. Appl. Math. 229 (2009), no. 2, 392–399;
54. L.Galeone, R.Garrappa, *Explicit methods for fractional differential equations and their stability properties*, J. Comput. Appl. Math. 228 (2009), no. 2, 548–560;
55. L.Galeone, R.Garrappa, *Fractional Adams–Moulton methods*, Mathematics and Computers in Simulation 79 (2008), no. 4, 1358–1367;
56. R.Garrappa, *The use of geometric meshes in product integration Simpson’s rules*, J. Comput. Appl. Math. 210 (2007), no. 1–2, 200–209;
57. R.Garrappa, *Some formulas for sums of binomial coefficients and gamma functions*, International Mathematical Forum 2 (2007), no. 15, 725–733;
58. L.Galeone, R.Garrappa, *On multistep methods for differential equations of fractional order*, Mediterranean Journal of Mathematics 3 (2006), no. 3–4, 565–580;
59. R.Garrappa, *An analysis of convergence for two-stage waveform relaxation methods*, J. Comput. Appl. Math. 169 (2004), no. 2, 377–392;
60. L.Galeone, R.Garrappa, *Convergence analysis of time-point relaxation iterates for linear systems of differential equations* J. Comput. Appl. Math. 80 (1997), no. 2, 183–195;

Edited books:

61. A.Cardone, M.Donatelli, F.Durastante, R.Garrappa, M.Mazza, M.Popolizio, *Fractional Differential Equations. INDAM 2021*, Springer INdAM Series, Volume 50. Springer, 2023 ISBN: 978-981-19-7715-2 <https://doi.org/10.1007/978-981-19-7716-9>
62. L.Beghin, R.Garrappa, F.Mainardi, *Nonlocal and Fractional Operators*. SEMA SIMAI Springer Series, Volume 26. Springer, 2021. ISBN: 978-3-030-69235-3 <https://doi.org/10.1007/978-3-030-69236-0>

Chapter books:

63. F.V.Difonzo, R.Garrappa, *A Numerical Procedure for Fractional-Time-Space Differential Equations with the Spectral Fractional Laplacian*. In: Cardone, A., Donatelli, M., Durastante, F., Garrappa, R., Mazza, M., Popolizio, M. (eds) “Fractional Differential Equations. INDAM 2021”, Springer INdAM Series, vol 50. Springer, Singapore, 2023 ISBN: 978-981-19-7715-2
64. R.Garrappa, M.Popolizio, *Fast methods for the computation of the Mittag-Leffler function*. Chapter book in: George Em Karniadakis (Ed.) “Handbook of Fractional Calculus with

Applications. Volume 3: Numerical Methods”, pp. 329-346, De Gruyter, 2019. ISBN: 978-3-11-057168-4

65. R.Garrappa, G.Maione, *Fractional Prabhakar derivative and applications in anomalous dielectrics: a numerical approach*. Chapter book in “Theory and Applications of Non-Integer Order Systems” (editors: Babiar, A., Czornik, A., Klamka, J., Niezabitowski, M.), Springer, 2017. ISBN: 978-3-319-45474-0
66. R.Garrappa, M.Popolizio, *Exponential Integrators for Fractional Differential Equations*. Chapter book in “Fractional Calculus: Theory” (editors: Roy Abi Zeid Daou and Xavier Moreau), Nova Science Publishing (US), 2015. ISBN: 978-1-63463-027-6

Peer-reviewed proceedings

67. R.Garrappa, A.Giusti, F.Mainardi, *Variable-Order Fractional Calculus: from Old to New Approaches*, 2023 International Conference on Fractional Differentiation and Its Applications (ICFDA), Ajman, United Arab Emirates, 2023, pp. 1-6, doi: 10.1109/ICFDA58234.2023.10153379.
68. R.Garrappa, P.Lino, G.Maione, F.Saponaro, *Modeling and numerical analysis of fractional-order dynamics in electro-injectors pipes*, Proceedings of the 2015 54th IEEE Conference on Decision and Control (CDC), Osaka, Japan, December 15-18, 2015, 5984-5989
69. R.Garrappa, *A Grunwald-Letnikov scheme for fractional operators of Havriliak-Negami type* In Mathematics and Computers in Science and Engineering Series, vol. 34, p. 70-76, ISBN: 978-960-474-398-8, ISSN: 2227-4588. Proceedings of the 8th Intern. Confer. on Applied Mathematics, Simulation, Modelling (ASM '14), Firenze, Italy, November 22-23 2014.
70. R.Garrappa, G.Maione, M.Popolizio, *Time-domain simulation for fractional relaxation of Havriliak-Negami type*, IEEE Proceedings of the 2014 Intern. Confer. on Fractional Differentiation and Its Applications (ICFDA), Catania, Italy, June 23-25, 2014.
71. R.Garrappa, M.Popolizio, *Fast evaluation of the Mittag-Leffler function on the imaginary axis*, IEEE Proceedings of the 2014 Intern. Confer. on Fractional Differentiation and Its Applications (ICFDA), Catania, Italy, June 23-25, 2014.
72. R.Garrappa, G.Maione, *Model Order Reduction on Krylov Subspaces for Fractional Linear Systems*, IFAC Proceedings of the 6th Workshop on Fractional Differentiation and Its Applications, Part of 2013 IFAC Joint Conference SSSC, FDA, TDS, Grenoble, France, February 4-6, 2013.
73. Pisano A. R.Garrappa, D.Nessi, M.Rapaic, *Pseudo-Recursive Trapezoidal Rule for the Numerical Solution of Linear Fractional Differential Equations*, IFAC Proceedings of the 6th Workshop on Fractional Differentiation and Its Applications, Part of 2013 IFAC Joint Conference SSSC, FDA, TDS, Grenoble, France, February 4-6, 2013.
74. R.Garrappa, *A comparison of some explicit methods for fractional differential equations*, AIP Conference Proceedings 1048 (2008), 217-220.

Scientific communications

Invited speaker as plenary or keynote speaker

1. The 4th International Symposium on “Operational and Stochastic Methods in Fractional Dynamics (MFD23)”, Kraków (Poland), September 5-9, 2023. Talk: A new variable-order approach to fractional calculus (Invited speaker)
2. The Seventh International Symposium on Applied Fractional Calculus, Beijing Jiaotong University (China), July 1, 2023. Talk: A new approach to variable-order fractional calculus: theory and computation (Invited speaker - online)
3. Workshop on “Fractional Calculus, Special Functions and Applications”, Roma (Italy), May 12, 2023, Talk: A new variable-order approach to fractional calculus (Invited speaker) <https://sites.google.com/view/fcsf2023>
4. International Conference on “Fractional Differentiation and its Applications” (ICFDA), Ajman (United Arab Emirates), March 14-16, 2023. Talk: Variable-Order Fractional Calculus: from Old to New Approaches (Keynote speaker) <https://www.ajman.ac.ae/en/icfda2022>
5. Convegno su ”Calcolo Scientifico e Modelli Matematici: alla Ricerca delle Cose Nascoste attraverso le Cose Manifeste”: Roma, 6-8 aprile, 2022: Talk: Fractional calculus: from physics to mathematical models (and numerical simulations). (Invited speaker) <https://www1.mat.uniroma1.it/ricerca/convegni/2022/CS2022/info.html>
6. II Brazilian Symposium on Fractional Calculus, Sociedade Brasileira de Matemática Aplicada e Computacional (Brasil), January 17-21, 2022 (on-line). Talk: A new approach for variable-order fractional calculus based on Laplace transform (Invited speaker) <https://sites.google.com/view/bsfc2022en>
7. International Workshop on Fractional Derivatives: Theory & Computations with Applications-2021, Indian Institute of Technology, Banaras Hindu University (India), November 12-14, 2021 (on-line). Talk: A new approach for fractional calculus of variable-order (Invited speaker) <https://conferences.iitbhu.ac.in/FDTCA2021/>
8. Conference on Fractional Calculus: Analysis and Applications, Pune (India), August 20-21, 2021 (on-line). Talk: Variable-Order Fractional Calculus based on Laplace Transform (Invited speaker) <http://math.unipune.ac.in/CFCAA2021.php>
9. 51th Annual Iranian Mathematics Conference, Kashan (Iran), February 16-19, 2021 (online). Talk: *On the use of matrix Mittag-Leffler functions in fractional calculus: from theory to applications* (Keynote speaker). <https://aimc51.kashanu.ac.ir/Home/>
10. 4th Conference on Numerical Methods for Fractional-Derivative Problems, Beijing (China), October 22-24, 2020 (online). Talk: *The matrix Mittag-Leffler function: applications in fractional calculus and computational aspects* (Invited speaker). <https://www.csrc.ac.cn/en/event/workshop/2020-01-10/103.html>
11. Workshop on “Non local and fractional operators” (NLFO), Roma (Italy), April 12-13, 2019. Talk: Development of efficient and reliable numerical tools for fractional-order problems (Invited speaker). <https://sites.google.com/view/lfo12-13aprile2019>
12. Workshop on “Fractional Models in Science and Engineering Theory and Computation” (FMSE18), Dhahran (Saudi Arabia), December 10, 2018. Talk: *On Special Fractional Operators in Computational Electromagnetism: Theory and Numerical Methods* (Invited speaker) <https://fmse.kfupm.edu.sa/FMSE18/index.htm>

13. Workshop on “Fractional calculus and applications”, Potsdam (Germany), September 6-7, 2018. Talk: *Computation of Mittag-Leffler functions and applications in fractional calculus* (Plenary speaker)
14. ICERM’s topical Workshop “Fractional PDEs: theory, algorithms and applications”, Providence (USA), June 18-22, 2018. Talk: *Numerical methods for non-standard fractional operators in the simulation of dielectric materials* (invited speaker) https://icerm.brown.edu/topical_workshops/tw18-4-fpde/
15. Summer School on “Fractional and Other Nonlocal Models”, Bilbao (Spain), May 28-31, 2018. Talk: *Generalized exponential integrators for fractional differential equations* (invited speaker)
16. Workshop on “Modeling, Analysis and Numerics for Nonlocal Applications” (MANNA), Santa Fe (USA), December 13-15, 2017. Talk: *Use and computation of Mittag-Leffler functions in fractional-order problems* (invited speaker) <https://sites.google.com/site/manna2017abq/home>
17. Workshop on Operational methods in Fractional Dynamics, Crakow (Poland), November 7-9, 2016. Talk: *On the Prabhakar derivative: theory, numerical treatment and applications* (invited speaker)
18. Workshop on Fractional Calculus and its Applications, Roma (Italy), March 11, 2015. Talk: *Numerical methods for fractional operators involved in anomalous polarization processes* (invited speaker)
19. Workshop on Numerical Simulation of Evolutionary Processes, Bari (Italy), January 14-17, 2014. Talk: *Exponential integrators for fractional differential equations* (plenary speaker)
20. International Symposium on Fractional PDEs: Theory, Numerics and Applications, Salve Regina University, Newport RI (USA), June 3 - 5, 2013. Talk: *Exponential Integrators for Fractional PDEs* (invited speaker) <https://www.dam.brown.edu/International%20Symposium/internationalsymposiumonfractionalPDEs.htm>

Invited speaker in Minisymposia or Special Sessions:

21. Conference on Functional Analysis, Approximation Theory and Numerical Analysis (FAATNA), Matera (Italy), July 5-8, 2022. Talk: *Efficient computation of solutions of time-fractional diffusion-reaction equations* (in Special Session on “Recent Advances in the Analysis and Numerical Solution of Evolutionary Integral Equations”) <http://web.unibas.it/faatna22/>
22. Conference on the Numerical Solution of Differential and Differential-Algebraic Equations (NUMDIFF-16), Halle (Germany), September 6-10, 2021. Talk: *A change of perspective in variable-order fractional calculus* (in Minisymposia on “Numerical methods in fractional calculus”) <https://sim.mathematik.uni-halle.de/numdiff/Numdiff16/>
23. XXI Congresso Unione Matematica Italiana (UMI 2019), Pavia (Italy), September 2-7, 2019. Talk: *Metodi numerici per operatori differenziali frazionari in problemi di elettromagnetismo computazionale* (in Session on “Sistemi dinamici e metodi numerici per le equazioni differenziali”) <https://umi.dm.unibo.it/congresso2019/>
24. International Congress on Industrial and Applied Mathematics (ICIAM 2019), Valencia (Spain) July 15-19, 2019. Talk: *Numerical computation of electromagnetic fields in systems with special fractional-order operators* (in Minisymposium on “Advances in Fractional Partial Differential Equations: Modeling, Theory and Computation”) <https://iciam2019.com/>
25. Scientific Computation and Differential Equations (SCICADE 2013), Valladolid (Spain), September 16-20, 2013. Talk: *Numerical solution of fractional differential equations with discon-*

tinuous right-hand side (in Minisymposium on “Discontinuous dynamical systems: theory and numerical methods”)

Contributed communications:

26. IMACS World Congress, Roma (Italy), September 11-15, 2023. Talk: *A Computational Approach for Variable-order Fractional Differential Equations*. <https://www.imacs2023.eu/index.php/IMACS2023/IMACS2023>
27. International Conference on Scientific Computation and Differential Equations (SciCA ∂ E 2022), Reykjavík (Iceland), July 25-29, 2022. Talk: *An efficient computational approach for time-fractional diffusion-reaction equations*. <https://scicade2021.hi.is/>
28. Workshop: Efficient high-order time discretization methods for PDEs, Villa Orlandi, Anacapri (Italy), May 11-13, 2022. Talk: *A computationally efficient strategy for time-fractional diffusion-reaction equations*. <https://www.dma.unina.it/izzo/pdetsd22/>
29. Workshop: Software for Approximation (SA2022), University of Turin (Italy), February 3-4, 2022. Talk: *Numerical computation of the Mittag-Leffler function*. <https://sites.google.com/view/sa2022torino>
30. INdAM workshop on Fractional Differential Equations: Modeling, Discretization, and Numerical Solvers, Rome (Italy), July 12-14, 2021. Talk: *Variable-order fractional calculus: a change of perspective* <https://fractionalworkshop.github.io/>
31. Cost Action “CA15225 Fractional Systems” Final Annual Workshop, Online March 24, 2021. Talk: *New fractional derivatives: all that glitters is not gold*
32. EI Workshop of the Cost Action “CA15225 Fractional Systems”, January 10-11, 2019, Dublin (Ireland). Talk: *Development of efficient codes for fractional-order problems*
33. Conference on the “Numerical Solution of Differential and Differential-Algebraic Equations” (NUMDIFF-15), Halle (Germany) September 3-7, 2018. Talk: *Numerical simulation of Maxwell’s systems in media with anomalous dielectric properties*
34. Cost Action Workshop on “Current progress in fractional-order systems and their utilization”, October 5-6, 2017, San Sebastian (Spain). Talk: *A fractional-order operator for dielectric models*
35. International conference on “Transform Methods and Special Functions”, August 27-30, 2017, Sofia (Bulgaria). Talk: *The Prabhakar function: theory and applications*
36. Giornata sul “Fractional Calculus and its Applications”, Roma (Italy), January 27, 2017. Talk: *On the Prabhakar derivative: applications, theory and numerics*
37. 8th Conference on “Non-integer Order Calculus and its Applications” (RRNR 2016), Zakopane (Poland), September 20–21, 2016. Talk: *Fractional Prabhakar derivative and applications in anomalous dielectrics: a numerical approach*
38. International Conference on “Fractional Differentiation and its Applications” (ICFDA ’16), Novi Sad (Serbia), July 18-20, 2016. Talk: *Numerical solution of Maxwell’s equations in fractional dielectrics of Havriliak-Negami type*
39. International Conference on “Non-Linear Analysis, Non-Linear Systems and Chaos” (NOLA-SC 2015), Roma (Italy) November 7-9, 2015. Talk: *On Finite Difference Approximations of Havriliak-Negami Operators*
40. Conference on “New Directions in Numerical Computations”, Oxford (United Kingdom), August 25-28, 2015. Talk: *On the computation of the Mittag-Leffler function*

41. Conference on “New Trends in Numerical Analysis” (NETNA 2015), Falerna (Italy), June 18-21, 2015. Talk: *Numerical methods for Maxwell’s equations in anomalous dielectrics of Havriliak-Negami type.*
42. International Conference on “Applied Mathematics, Simulation, Modelling” (ASM 2014), Firenze (Italy), November 22-24, 2014. Talk: *A Grunwald-Letnikov Scheme for fractional operators of Havriliak-Negami type.*
43. 8th NAI - Workshop on “Numerical Analysis of Evolution Equations on Fractional Differentiation and its Applications”, Innsbruck (Austria), October 14-17, 2014. Talk: *Exponential integrators for fractional differential equations.*
44. International Conference on “Fractional Differentiation and its Applications” (ICFDA 2014), Catania (Italy), June 23-25, 2014. Talk 1: *Fast evaluation of the Mittag-Leffler function on the imaginary axis.* Talk 2: *Time-domain simulation for fractional relaxation of Havriliak-Negami type.*
45. International Workshop on Approximation Theory and Applications (IWATA), Rifreddo PZ (Italy), September 12-13, 2013. Poster: *Numerical approximation of the Mittag-Leffler function and applications in fractional calculus.*
46. 6th Workshop on Fractional Differentiation and Its Applications (FDA 2013), Grenoble (France), February 4-6, 2013. Talk: *Model Order Reduction on Krylov Subspaces for Fractional Linear Systems.*
47. Convegno Annuale GNCS 2012, Montecatini Terme, Italy, November 15-16, 2012. Talk: *Integratori esponenziali per equazioni differenziali di ordine frazionario.*
48. Numerical Solution of Differential and Differential-Algebraic Equations (NUMDIFF-13), Halle, Germany, 10-14/09/2012. Talk: *Numerical approximation of the Mittag-Leffler function and applications in fractional calculus.*
49. Workshop on Structural Dynamical Systems: Computational Aspects (SDS 2012), Capitolo, Monopoli (Ba), Italia, 12-15/06/2012. Poster: *Implicit methods for discontinuous fractional differential equation.*
50. 5th Symposium on Fractional Differentiation and Applications (FDA 2012), Nanjing, China, 14-17/5/2012. Talk: *A family of Adams exponential integrators for fractional linear systems.*
51. International Conference on Scientific Computing (SC 2011), S. Margherita di Pula (CA) - Italy, October 10-14 2011. Talk: *Generalized exponential integrators for fractional differential equations.*
52. XIX Congresso U.M.I., Bologna - Italy, September 12-17, 2011. Talk: *Integratori di tipo esponenziale per problemi frazionari.*
53. Conference In Numerical Analysis (NUMAN 2010), Chania - Greece, September 15-18, 2010. Poster: *On the use of Product Integration in Fractional Differential Equations.*
54. Workshop on Structural Dynamical Systems: Computational Aspects (SDS 2010), Monopoli (BA) - Italy, June 8-11, 2010. Poster: *Higher order Product Integration rules for linear fractional differential equations.*
55. 12th Seminar on Numerical Solution of Differential and Differential-Algebraic Equations (NUMDIFF-12), Halle - Germany, September 14-18, 2009. Talk: *Numerical solution of semilinear systems of Fractional Differential Equations.*
56. International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2008), Psalidi, Kos - Greece, September 16-20, 2008. Talk: *A comparison of some explicit methods for fractional differential equations.*

57. Workshop on Structural Dynamical Systems: Computational Aspects (SDS 2008), Monopoli (BA) - Italy, June 17-20, 2008. Poster: *Numerical approximation of a generalized Mittag-Leffler matrix function.*
58. Convegno Biennale G.N.C.S. 2008, Montecatini Terme (PT) - Italy, February 4-6, 2008. Talk: *Studio di un metodo predittore-correttore per equazioni differenziali frazionarie.*
59. XVIII Congresso U.M.I., Bari - Italy, September 24-29, 2007. Talk: *Metodi di Adams per equazioni differenziali frazionarie.*
60. International Conference on SCientific Computation And Differential Equations (SCICADE 2007), Saint-Malo, France, July 9 - 13, 2007. Talk: *On multistep methods of Adams type for fractional differential equations.*
61. Second International Workshop on Analysis and Numerical Approximation of Singular Problems (IWANASP 2006), Karlovassi, Samos - Greece, September 6-8, 2006. Talk: *New methods for differential equations of fractional order.*
62. Workshop on Innovative Methods for Solving Evolutionary Problems with Memory, Capri (NA) - Italy, June 19-21, 2006. Talk: *Numerical methods for differential equations of fractional order.*
63. Workshop on Structural Dynamical Systems: Computational Aspects (SDS 2006), Monopoli (BA) - Italy, June 13-16, 2006. Poster: *Numerical methods for differential equations of fractional order.*
64. Conference on Numerical Analysis: the State of the Art (NAC 2005), Rende (CS) - Italy, May 19-21, 2005. Poster: *The use of geometric meshes in product integration Simpson's rules.*
65. Workshop su Metodi Numerici e Software Matematico, Montecatini (PT), Italy, 31 Gennaio - 1 Febbraio, 2005. Talk: *Utilizzo di mesh geometriche per il calcolo di integrali singolari.*
66. International Workshop on Numerical Linear Algebra and Its Applications, Monopoli (BA) Italy, September 22-24, 2003. Talk: *Convergence analysis of waveform relaxation methods by the theory of iterative methods for linear algebraic systems.*

Invited seminars, higher degree courses and other lectures

- Lecture on “An introductory overview to fractional integrals and fractional derivatives”, Cost Action Training School on “Computational Methods for Fractional-Order Problems”, Bari (Italy) July 22-26 2019.
- PhD Course “Numerical methods for fractional calculus and matrix functions”, PhD School Polytechnic University of Bari (Italy), May-July 2019.
- Seminars on “Derivate, integrali ed equazioni differenziali di ordine non intero: introduzione, applicazioni e metodi numerici”, Dipartimento di Matematica, Università degli Studi di Salerno, Fisciano (SA), (Italy), December 20 and 21, 2018.
- Short course on “Computational Techniques for Fractional Models”, Department of Mathematics and Statistics, King Fahd University of Petroleum and Minerals, Dhahran (Saudi Arabia), December 11, 2018.
- Seminar on “Integrators of Mittag-Leffler type for fractional differential equations”, Department of Mathematical Sciences, Middle Tennessee State University, Murfreesboro (TN), USA, June 25, 2018

- Seminars on “Derivate ed integrali di ordine non intero: introduzione, applicazioni e metodi numerici”, Dipartimento di Matematica e Applicazioni, Università degli Studi di Napoli Federico II, Napoli (Italy), May 15 and 16, 2018
- Seminar on “Introduzione al calcolo frazionario”, presso Dipartimento di Matematica e Fisica “E. De Giorgi”, Università del Salento, Lecce (Italy), May 7, 2018
- PhD course on “Differential Equations of Fractional Order”, PhD Programme in Computer Science and Mathematics, Università degli Studi di Bari (Italy), March-May 2018
- Course on Modeling, Analysis and Numerics for Nonlocal Applications (MANNA), Santa Fe (USA), December 11-12, 2017. Lecture: *Introduction to fractional-order operators* (plenary lecture)
- Seminar on “Il calcolo della funzione di Mittag-Leffler” (Colloqui Matematici), Dipartimento di Matematica, Università degli Studi di Bari, May 20, 2015

Research projects (national or international) with a responsible role

- Management Committee (substitute) of the European project Cost Action CA 15225 “Fractional-order systems; analysis, synthesis and their importance for future design” (4-years project starting on 03/10/2016). Principal investigator: prof. Jaroslav Koton (Brno University of Technology, Česká republika). <https://www.cost.eu/actions/CA15225/> <https://fractional-systems.eu/>
- Principal Investigator GNCS-INdAM Project 2016: *Metodi numerici per operatori non-locali nella simulazione di fenomeni complessi*
- Principal Investigator GNCS-INdAM Project 2014: *Metodi numerici per modelli di propagazione di onde elettromagnetiche in tessuti biologici*
- Principal Investigator GNCS-INdAM Project 2012: *Integratori esponenziali per equazioni differenziali di ordine frazionario*

Participation in national and international research projects

- Project MIUR-PRIN PNRR 2022: *SAFER MESH: Sustainable management of water resources: models and numerical methods* PRIN P2022M7JZW (Principal investigator prof. Giuseppe Vacca);
- Project MIUR-PRIN 2017: *Discontinuous dynamical systems: theory, numerics and applications* PRIN 2017E844SL (Principal investigator prof. Nicola Guglielmi);
- Project PRIN 2009: *High-performance robust fractional controllers for applications in industry and mechatronics* in MIUR National project PRIN 2009F4NZJP *Non integer order systems in modelling and control*, (Principal investigator prof. Riccardo Caponetto);
- Project PRIN 2007: *Metodi numerici per sistemi differenziali con struttura e con struttura variabile* in MIUR National project PRIN 2007ASRK CJ *Metodi numerici per sistemi evolutivi di equazioni differenziali funzionali ordinarie ed alle derivate parziali*, (Principal investigator prof. Alfredo Bellen).
- GNCS-INdAM Project 2023: *Metodi numerici per modelli descritti mediante operatori differenziali e integrali non locali* (Principal investigator dott.ssa Sabrina Francesca Pellegrino)

- GNCS-INdAM Project 2022: *Modelli di evoluzione non locali: analisi, trattamento numerico e algoritmi* (Principal investigator prof.ssa Angelamaria Cardone)
- GNCS-INdAM Project 2020: *Metodi numerici per problemi con operatori non locali* (Principal investigator prof. Paolo Novati)
- GNCS-INdAM Project 2019: *Metodi numerici efficienti per problemi di evoluzione basati su operatori differenziali ed integrali* (Principal investigator dott. Giuseppe Izzo)
- GNCS-INdAM Project 2018: *Risoluzione numerica di equazioni di evoluzione integrali e differenziali con memoria* (Principal investigator prof. Eleonora Messina)
- GNCS-INdAM Project 2017: *Analisi numerica per modelli descritti da operatori frazionari* (Principal investigator dott. Marina Popolizio)
- GNCS-INdAM Project 2015: *Metodi numerici per problemi di diffusione anomala* (Principal investigator prof. Lidia Aceto);
- GNCS-INdAM Project 2013: *Metodi numerici per equazioni differenziali alle derivate frazionarie* (Principal investigator prof. Paolo Novati);
- Progetto EuroSeeds (ID S29) Università degli Studi di Bari: *Tecnologie verdi al plasma per produzioni agroalimentari sostenibili (PlaTEC)*, (Principal investigator prof. Milvia De Miccolis), Progetto in corso dal 15/04/2022;
- Progetto PON 02_00563_3470993: *Un Ambiente Virtuale di Collective Intelligence Abilitante lo Sviluppo di Ecosistemi per L'impresarialità Tecnologica Sostenibile (VINCENTE)*, (Principal investigator prof. Donato Malerba), Durata progetto: 31/05/2012-30/11/2015
- Progetto PON MI01_00294: *LOGistica INTEGRATA (LOGIN)*, (Principal investigator prof. Prof.ssa Maria Costabile), Durata progetto: 01/07/2012-01/07/2017
- Partenariato Antinia Srl - Dip. Matematica: *Ottimizzazione dei processi di raccolta differenziata*, nell'ambito del bando pubblico "Aiuti a sostegno dei partenariati regionali per l'innovazione"
- Nel corso degli anni ha preso parte inoltre a diversi progetti di ricerca di Ateneo

Awards

- Winner of the Riemann-Liouville Award for best paper (theory section) in 2023 International Conference on "Fractional Differentiation and its Applications" (ICFDA), Ajman (United Arab Emirates), March 14-16, 2023
- V.Q.R. 2015-2019: valutazione positiva avendo ricevuto il massimo del punteggio per tutti e quattro i prodotti presentati nell'ambito della valutazione dell'Università degli Studi di Bari (si allegano i risultati)
- Winner of the 2019 "Mathematics Best Paper Award" (second award) of the publisher MDPI for the paper "Evaluation of Fractional Integrals and Derivatives of Elementary Functions: Overview and Tutorial" (Mathematics 2019, 7(5), 407): CHF 300 award. https://www.mdpi.com/journal/mathematics/awards.pdf/0/pdf_154_2019_2_award.pdf
- Winner of the 2018 "Mathematics Best Paper Award" (first award) of the publisher MDPI for the paper "Numerical Solution of Fractional Differential Equations: A Survey and a Software Tutorial" (Mathematics 2018, 6(2), 16): CHF 500 award. https://www.mdpi.com/journal/mathematics/awards.pdf/0/pdf_154_2018_3_award.pdf

- Superato positivamente la procedura di valutazione per l'attribuzione dell'incentivo una tantum di cui all'art. 1 comma 629 della legge n. 205/2017 e dal D.M. 197/2018
- Abilitazione Scientifica Nazionale (ASN) per la posizione di professore di I Fascia conseguita in data 02/08/2017 con valutazione positiva unanime da parte dei commissari.
- V.Q.R. 2011-2014: valutazione positiva avendo ricevuto il massimo del punteggio per tutti e tre i prodotti presentati nell'ambito della valutazione dell'Università degli Studi di Bari (si allegano i risultati)
- Assegnatario del "Fondo per il finanziamento delle attività base di ricerca" (FFABR) del MIUR per l'anno 2017 a seguito dell'avviso pubblico di cui all'art. 1, commi 295 e seguenti della legge 232/2016 (elenchi disponibili presso <https://www.anvur.it/attivita/ffabr/ffabr-2017/elenco-dei-beneficiari/>).
- Abilitazione Scientifica Nazionale (ASN) per la posizione di professore di II Fascia conseguita in data 07/10/2014 con valutazione positiva unanime da parte dei commissari.
- Assegnatario dell'incentivo ministeriale, per l'anno 2012, in base alle procedura selettiva di cui all'art. 29, comma 19, L. 240/2010.
- Award "*Best oral presentation*" in 2012 FDA Symposium on Fractional Differentiation and Applications, Nanjing (China), May 14-17 2012.

Scientific initiatives and international experience

Editorial activity

- Member of the editorial board of the following journals;
 - *Numerical Algorithms* (Springer)
 - *Applied Numerical Mathematics* (Elsevier)
 - *Fractional Calculus and Applied Analysis* (Springer)
 - *International Journal of Computer Mathematics* (Taylor & Francis)
 - *Mathematics and Computers in Simulations* (Elsevier)
 - *Mediterranean Journal of Mathematics* (Birkhauser)
 - *Fractional Differential Calculus* (Ele-Math editore)
 - *Computational and Applied Mathematics* (Springer): from 2016 to 2024;
 - *Progress in Fractional Differentiation and Applications* (Natural Science Publishing): from 2014 to 2020;
- Guest editor of Special Issues in the following journals:
 - *Applied Numerical Mathematics* (Elsevier), Volume 155 (2020)
 - *Discrete and Continuous Dynamical Systems - B* (AMS), Volume 27(3) (2018)
 - *Mathematics and Computers in Simulations* (Elsevier), Volume 125 (2016)
 - *European Physical Journal* (Springer), Volume 222(8) (2013)
 - *Tbilisi Mathematical Journal* (De Gruyter Open), Volume 10(1) (2017)
- Reviewer for “MathSciNet” - American Mathematical Society (AMS): 46 papers reviewed
- Reviewer for several scientific journals such as *Applied and Mathematical Computation*, *Applied Mathematical Letter*, *Bit*, *Calcolo*, *Communications in Nonlinear Science and Numerical Simulation*, *European Physical Journal*, *IMA Journal of Numerical Analysis*, *Journal of Computational and Applied Mathematics*, *Journal of the Franklin Institute*, *Mathematics and Computers in Simulation*, *Mediterranean Journals of Mathematics*, *Numerical Algorithms*, *Numerical Functional Analysis and Applications*, *International Journal of Computer Mathematics*, *Nonlinear Dynamics*, *Computers & Mathematics with Applications*, *SIAM Journal of Scientific Computation*, *Zeitschrift fuer Angewandte Mathematik und Physik*.
- WoS public profile: <https://www.webofscience.com/wos/author/record/381125>

Organization of scientific activities

- Member of the scientific and organizing committee of the Workshop “*Structural Dynamical Systems*” (SDS) 2024 - Monopoli (Italy), June 11-14 2024;
- Organizer of Minisymposia: “*Numerical methods for fractional-derivative differential equations*” in “21st IMACS World Congress”, Roma (Italy), September 11-15, 2023 (Joint organizer with Martin Stynes, Beijing Computational Science Research Center, China).

- Member of the Scientific and Organizing Committee of Workshop on *Numerical analysis, porous media and water resources: a fruitful contamination (INTRUSION 2023)*, Bari (Italy), July 3-5 2023.
- Organizer of the Workshop “FRActional CALculus MOdelling at its best FRACALMO”, Bologna (Italy), 20-21 October 2022.
- Member of the scientific and organizing committee of the Workshop “*Structural Dynamical Systems*” (SDS) 2022 - Monopoli (Italy), June 7-10 2022;
- Invited organizer of Minisymposia: “*Numerical methods in fractional calculus*” in “Conference on the Numerical Solution of Differential and Differential-Algebraic Equations” (NUMDIFF-16), Halle (Germany), September 6-10, 2021.
- Main organizer of Workshop INdAM *Fractional Differential Equations: Modeling, Discretization, and Numerical Solvers*, Rome (Italy), July 12-14, 2021.
- Main organizer of Cost Action Training School *Computational Methods for Fractional-Order Problems*, Bari (Italy) July 22-26 2019. <https://fractional-systems.eu/ts-bari-2019-pub/>
- Co-organizers (together with A.Q.Khaliq e J.Macias-Diaz) of the minisymposia “*Advances in Fractional Partial Differential Equations: Modeling, Theory and Computation*” in “International Congress on Industrial and Applied Mathematics” (ICIAM 2019), Valencia (Spain) July 15-19, 2019.
- Co-organizers (together with L.Aceto e R.Spigler) of the minisymposia “*New Perspectives in Theory, Numerics and Applications of Nonlocal Operators*” in “Bi-annual congress of the Italian Society of Applied and Industrial Mathematics” (SIMAI 2018) - Roma (Italy), July 2-6 2018;
- Member of the organizing committee of the Workshop “*Structural Dynamical Systems*” (SDS) 2018 - Monopoli (Italy), June 12-15 2018;
- Co-organizers (together with X.Zhao e G.E.Karniadakis) of the special session “*Recent trends in numerical methods for fractional PDEs*” in “International Conference on Fractional Differentiation and Applications” (ICFDA 2016) - Novi Sad (Serbia), July 18-20 2016;
- Member of the organizing committee of the Workshop “*Structural Dynamical Systems*” (SDS) 2016 - Monopoli (Italy), June 14-17 2016;
- Organizer of the special session “*Innovative methods for differential equations of fractional order*” in “International Conference on Fractional Differentiation and Applications” (ICFDA 2014) - Catania (Italy), June 23–25 2014;
- Member of the organizing committee of the Workshop “*Structural Dynamical Systems*” (SDS) 2014 - Monopoli (Italy), June 10-13 2014;
- Member of the International Program Committee of the following editions of *International Conference on Fractional Differentiation and Applications (ICFDA)*: Ajman UAE, March 14-16, 2023; Warsaw (Poland), September 6-8, 2021; Amman (Jordan), July 18-20 2018; Novi Sad (Serbia), July 18-20 2016; Catania (Italy), June 23–25 2014.

Affiliations and other activities

- Membro del Gruppo Nazionale per il Calcolo Scientifico (GNCS) presso l'INdAM
- Iscritto alle società scientifiche SIAM, IMACS, UMI e SIMAI

- Member of the Steering Committee of the conference series *International Conference on Fractional Differentiation and Applications (ICFDA)*;

Main international scientific collaborations

1. Prof. Eric Darve (Stanford University, USA) and Marta D'Elia (Sandia National Laboratories, USA) sul tema della estensione all'ordine variabile del Laplaciano frazionario. Published papers:
 - E.Darve, M.D'Elia, R.Garrappa, A.Giusti, N.L.Rubio, *On the fractional Laplacian of variable order*, Fractional Calculus and Applied Analysis, 2022, 25(1), 15-28
2. Prof. Dalibor Bielek (Brno University of Technology, Czech Republic) sul tema dell'utilizzo di funzioni di tipo Mittag-Leffler per l'analisi transiente di sistemi di ordine frazionario con poli complessi multipli (e relativo trattamento numerico). Published papers:
 - D.Bielek, R.Garrappa, V.Biolková, *Impulse response of commensurate fractional-order systems: multiple complex poles*, Fractional Calculus and Applied Analysis, 25(5) 2022
3. Prof. K.Diethelm (Technical University of Applied Sciences Würzburg-Schweinfurt, Germany) and Prof. Martin Stynes (Beijing Computational Science Research Center, China) on the topic of correct use of operators and numerical methods in fractional calculus. Published papers:
 - K.Diethelm, R.Garrappa, A.Giusti, M.Stynes, *Why fractional derivatives with nonsingular kernels should not be used* Fractional Calculus and Applied Analysis, 2020, 23(3), 610-634
 - K.Diethelm, R.Garrappa, M.Stynes, *Good (and not so good) practices in computational methods for fractional calculus*, Mathematics, 2020, 8(3), 324
4. Prof. Shaohua Luo and Prof Frank L. Lewis (University of Texas at Arlington, USA) on emerging applications of fractional calculus in engineering. Published papers:
 - S.Luo, F.L. Lewis, Y.Song, R.Garrappa, S.Li *Dynamic Analysis and Fuzzy Fixed-Time Optimal Synchronization Control of Unidirectionally Coupled FO Permanent Magnet Synchronous Generator System*, IEEE Transactions on Fuzzy Systems, 2023, 31(5), 1743-1755
 - S. Luo, F.L. Lewis, Y. Song, R. Garrappa, *Dynamical analysis and accelerated optimal stabilization of the fractional-order self-sustained electromechanical seismograph system with fuzzy wavelet neural network*, Nonlinear Dynamics, 2021, 104(2), pp. 1389-1404
 - S.Luo, Y.Song, F.L.Lewis, R.Garrappa, *Neuroadaptive Optimal Fixed-Time Synchronization and Its Circuit Realization for Unidirectionally Coupled FO Self-Sustained Electromechanical Seismograph Systems*, IEEE Transactions on Cybernetics, 2021, 53(4), pp. 2454-2466
5. Dott. Andrea Giusti (ETH Zurich, Switzerland) on the topic of specialized operators in fractional calculus and their numerical treatment. Published papers:
 - R.Garrappa, A.Giusti *A computational approach to exponential-type variable-order fractional differential equations*, Journal of Scientific Computing, 2023, 96, Art. no. 63
 - R.Garrappa, A.Giusti, F.Mainardi, *Variable-order fractional calculus: a change of perspective*, Communications in Nonlinear Science and Numerical Simulation, 2021, 102, 105904
 - E.Darve, M.D'Elia, R.Garrappa, A.Giusti, N.L.Rubio, *On the fractional Laplacian of variable order*, Fractional Calculus and Applied Analysis, 2022, 25(1), 15-28

- A.Giusti, R.Garrappa, G.Vachon, *On the Kuzmin model in fractional Newtonian gravity*, Eur. Phys. J. Plus, 2020, 135(10), 798
 - A.Giusti, I.Colombaro, R.Garra, R.Garrappa, F.Polito, M.Popolizio, F. Mainardi, *A practical guide to Prabhakar fractional calculus*, Fractional Calculus and Applied Analysis, 2020, 23(1), 9-54
6. Prof. Hoang The Tuan (Vietnam Academy of Science and Technology, Viet Nam) on the topic of stability analysis of fractional differential equations with delay. Published papers:
- H.T.Tuan, H.D.Thai, R.Garrappa, *An analysis of solutions to fractional neutral differential equations with delay*, Communications in Nonlinear Science and Numerical Simulation, 2021, 100, 105854
7. Prof. Eva Kaslik (West University of Timisoara, Romania) on different topics of fractional calculus. Paper published:
- O.Brandibur, R.Garrappa, E.Kaslik, *Stability of systems of fractional-order differential equations with Caputo derivatives*, Mathematics, 2021, 9(8), 914
 - R.Garrappa, E.Kaslik, *Stability of fractional-order systems with Prabhakar derivatives*, Nonlinear Dynamics, 2020, 102 567-578
 - R.Garrappa, E.Kaslik, *On initial conditions for fractional delay differential equations*, Communications in Nonlinear Science and Numerical Simulation, 2020, 90, 105359
 - R.Garrappa, E.Kaslik, M.Popolizio, *Evaluation of fractional integrals and derivatives of elementary functions: overview and tutorial*, Mathematics, 2019, 7(5), 407
8. Ha promosso la visita presso il Dipartimento di Matematica dell'Università degli Studi di Bari della dott.ssa Katarzyna Górska (Institute of Nuclear Physics, Polish Academy of Sciences, Krakow, Poland) dal 18/02/2018 al 18/03/2018 e dal 24/09/2018 al 23/10/2018 nell'ambito del Miniatura project 1 (grant 2017/01/X/ST3/00130) funded by National Science Center (NCN), Poland. Published papers:
- K.Gorska, A.Horzela, R.Garrappa, *Some results on the complete monotonicity of Mittag-Leffler functions of Le Roy type*, Fractional Calculus and Applied Analysis, 2019, 22(5), 1284-1306
9. Prof. Sergey Rogosin (Belarusian State University, Minsk, Bielorrussia) on the topic of the analysis of some special functions. Paper published:
- R.Garrappa, F.Mainardi, S.Rogosin, *On a generalized three-parameter Wright function of Le Roy type*, Fractional Calculus and Applied Analysis, 2017, 20(5), 1196-1215
10. Prof. Marius F. Danca (Avram Iancu University, Cluj-Napoca, Romania) on the topic of chaos control of fractional-order dynamical systems. Papers published:
- M.F.Danca, R.Garrappa, *Suppressing chaos in discontinuous systems of fractional order by active control*, Applied Mathematics and Computation, 2015, 257, 89-102
 - M.F.Danca, R.Garrappa R., W.K.S.Tang, G.Chen, *Sustaining stable dynamics of a fractional-order chaotic financial system by parameter switching*, Computers and Mathematics with Applications, 66 (5) (2013), 702-716
11. Prof. Shahrokh Esmaeili (University of Kurdistan, Sanandaj, Iran) on the topic of the spectral methods for fractional differential equations. Paper published:
- S.Esmaeili, R.Garrappa, *A pseudo-spectral scheme for the approximate solution of a time-fractional diffusion equation*, Intern. Journal of Computer Mathematics, 2015, 92(5) 980-994

12. Prof. Mevlüde Yakıt Ongun (Süleyman Demirel Üniversitesi, Isparta, Turchia) on the topic nonstandard finite differences methods for fractional differential equations. Paper published:
 - Ongun M.Y., Garrappa R., Arslan D. *Nonstandard finite difference schemes for fractional order Brusselator system*, Advances in Difference Equations 2013(102) (2013)
13. Prof. Milan Rapaić (University of Novi Sad, Novi Sad, Serbia) on the topic of pseudo-recursive methods for fractional differential equations. Paper published:
 - Pisano A. Garrappa R., Nessi D., Rapaić M., *Pseudo-Recursive Trapezoidal Rule for the Numerical Solution of Linear Fractional Differential Equations*, IFAC Proceedings, 2013.

Research visits

- February 4-11, 2020: Department of Mathematics and Computer Science, West University of Timisoara (Romania) Joint work with Prof. Eva Kaslik funded by Cost Action CA 15225 “Fractional-order systems”
- December 9-13, 2018: Department of Mathematics and Statistics, King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia, invited by Prof. Khaled M. Furati;
- June 25-27, 2018: Department of Mathematical Sciences, Middle Tennessee State University (MTSU), Murfreesboro (TN), U.S.A.: scientific colloquia with prof. Abdul Khaliq, prof. Toheeb Biala (Middle Tennessee State University) ;
- May 29-31, 2017: Dipartimento di Fisica e Astronomia dell’Università Alma Mater di Bologna: scientific collaboration with prof. Francesco Mainardi (Univ. Bologna) e prof. Sergey Rogosin (Belarusian State University, Minsk, Bielorussia) on fractional calculus and special functions.
- February 4-6, 2016: Dipartimento di Fisica e Astronomia dell’Università Alma Mater di Bologna: scientific collaboration with prof. Francesco Mainardi (Univ. Bologna) on fractional calculus.
- January 15-17, 2015: Dipartimento di Fisica e Astronomia dell’Università Alma Mater di Bologna: scientific collaboration with prof. Francesco Mainardi (Univ. Bologna) concerning the project “Numerical methods for models describing the propagation of electromagnetic waves in biological tissues”.

Project and grant reviewer

He served as reviewer for scientific projects for

- 2017: Review of the grant proposal No. 2016/23/B/ST3/01714 for the National Science Center, Poland
- 2019: Evaluation of the Research Proposal SF191-MATH-563 at King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia
- 2019: Review of the grant proposal No. 2016/23/B/ST3/01714 for the National Science Center, Poland
- 2020: Evaluation of the Research Proposal SF201-MATH-660 at King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia

- 2022: Evaluation of the Project proposal project No. 23-05174S for the Czech Science Foundation (GAČR), Czech Republic

Attività organizzativa

- Coordinatore del Comitato di Valutazione della Ricerca (CVR) e Delegato alla Ricerca del Dipartimento di Matematica per gli AA.AA. 2015/2016, 2016/2017, 2017/2018, 2018/2019, 2019/2020, 2020/2021, 2021/2022, 2022/2023
- Componente del Collegio del Dottorato in “*Informatica e Matematica*” dell’Università degli Studi di Bari per i cicli XXIX, XXXIII, XXXIV, XXXV, XXXVI e XXXVII;
- Componente, per il triennio 2007/2009, del Comitato dell’Area Scientifica Disciplinare 01 (Matematica/Informatica) per la ripartizione di Assegni di Ricerca, Borse di Studio post-dottorato e Borse per attività di perfezionamento all’estero (D.R. 12833 del 29/11/2006 e D.R. n. 6 del 03/01/2007).

Partecipazione in commissioni di concorso e altre valutazioni

- Componente commissioni valutatrici per la selezione dei seguenti posti
 - Ricercatore a tempo determinato (RTDb), settore A1/05 - MAT/08, presso il Politecnico di Bari, procedura RUTDB.DEI.23.09 (nomina con D.R. n. 626/2023)
 - Ricercatore a tempo determinato (RTDa), settore A1/05 - MAT/08, presso l’Università degli Studi dell’Aquila (nomina con D.R. n. 1187/2021)
 - Ricercatore a tempo determinato (RTDa), settore A1/05 - MAT/08, presso l’Università degli Studi di Salerno, procedura PON-INN/17
 - Ricercatore a tempo determinato (RTDb), settore A1/05 - MAT/08, presso l’Università degli Studi di Bari, procedura R3187/2020 (nomina con D.R. n. 270/2021)
 - Ricercatore a tempo determinato (RTDa), settore A1/05 - MAT/08, presso l’Università degli Studi di Bari, procedura R1771/2020 (nomina con D.R. n. 2625/2020)
 - Professore Associato, settore A1/05 - MAT/08, presso l’Università Telematica Internazionale Uninettuno (nomina con D.R. 12/2017);
- Componente commissioni giudicatrici esame finale dottorato di Ricerca:
 - Dottorato di Ricerca in “Matematica, Fisica e Applicazioni” dell’Università degli studi di Salerno per il XXX ciclo (D.R. 28/2/2018, Rep. 1520, Università degli Studi di Salerno)
 - Dottorato di Ricerca in Matematica dell’Università degli Studi di Bari per il XXVII e XXVIII ciclo (D.R. 337 del 16/2/2016)
 - Dottorato in Scienze Matematiche e Fisiche dell’Università di Roma Tre per il XXVII ciclo (D.R. 61 del 22/1/2015, supplente)
- Componente commissione esaminatrice assegni di ricerca presso l’Università degli Studi di Bari (D.R. n. 601 del 22/01/2007).
- Componente commissione esaminatrice Università degli Studi di Bari Concorso per l’attribuzione di borsa di studio per attività di perfezionamento all’estero (D.R. 7889 del 03/06/2008).
- Componente supplente Commissione esaminatrice Università degli Studi di Bari per attribuzione borsa di studio per attività di perfezionamento all’estero (D.R. 10008 del 21/09/2009).

Partecipazione a scuole, corsi e altro

Nell'ambito dell'attività di formazione sui diversi temi di ricerca, Roberto Garrappa ha preso parte a scuole e corsi come di seguito specificato:

- Summer School on *Data-driven Methods for the Computational Sciences*, Dobbiaco, Italy, June 18-23, 2023;
- Summer School on *Fractional and Other Nonlocal Models'*, Bilbao (Spain), May 28-31, 2018
- Summer School on *Exponential Integrators and Numerical Methods for Multiscale PDEs*, Dobbiaco, Italy, June 24-29, 2012;
- Summer School on *Approximation Theory, Spectral Methods and Chebfun*, Dobbiaco, Italy, June 13-17, 2011;
- Summer School on *ODEs with Discontinuous Right-Hand Side: Theory and Applications*, Dobbiaco, Italy, June 22-26, 2009;
- Summer School on *Molecular Dynamics and Time Integration of PDEs*, Dobbiaco, Italy, June 23-27, 2008;
- Summer School on *Delay Differential Equations and Applications*, Dobbiaco, Italy, June 26-30, 2006;
- Summer School on *Numerical Methods for Evolution Equations*, Dobbiaco, Italy, June 28 - July 2, 2004;
- XXI Summer School on *Computational Mathematics: Numerical Linear Algebra and Its Applications*, Monopoli (BA) Italy, September 15-30, 2003;

Numerical software

Matlab codes published on the "File exchange" service of Matlab website:

<https://www.mathworks.com/matlabcentral/profile/authors/2361481-roberto-garrappa>

- Code **fde12.m**: solution of initial value problems for systems of fractional differential equations by means of a predictor-corrector (PECE) method of product-integration type
- Code **flmm2.m**: solution of initial value problems for systems of fractional differential equations by means of implicit second-order fractional linear multistep methods (FLMMs)
- Code **mt_fde_pi1_im.m**: solution of multi-term fractional differential equations by an implicit product-integration rule
- Code **FDE_VO_Exponential.m** Solution of variable-order fractional differential equations (according to exponential variable order laws)
- Code **ml.m**: evaluation of the Mittag-Leffler (ML) function with 1, 2, or 3 parameters
- Codice **ml_matrix.m**: evaluation of the Mittag-Leffler (ML) with 1 o 2 parameters with matrix arguments

Other Matlab codes for fractional differential equations of multi-term type and systems of multi-order type are published on the web page: <https://www.dm.uniba.it/it/members/garrappa/software>

Teaching activity

Teacher of the following courses at the University of Bari:

- *Numerical Computation*, degree in Computer Science, from 2006 to 2024
- *Numerical Computation*, degree in Mathematics, from 2001 to 2021
- *Numerical Analysis*, degree in Mathematics, from 2004 to 2023
- *Methods for Optimization*, degree in Mathematics, from 2014 to 2018
- *Mathematical Laboratory*, degree in Mathematics, from 2004 to 2007

Nell'elencare le attività didattiche si utilizzano le seguenti abbreviazioni:

- LM : Laurea Magistrale
- LS : Laurea Specialistica
- LT : Laurea Triennale
- LQ : Laurea Quadriennale
- ITPS : Informatica e Tecnologie per la Produzione del Software (Corso di Laurea)

Corsi con responsabilità didattica

Titolarità (come compito didattico istituzionale o per affidamento o supplenza) dei seguenti corsi di insegnamento ricadenti nel S.S.D. MAT/08 presso l'Università degli Studi di Bari.

- A.A. 2023/24** - *Analisi Numerica*, MAT/08, LM Matematica (CFU 7 - ore 63);
- *Calcolo Numerico*, MAT/08, LT ITPS (CFU 6 - ore 62);
- A.A. 2021/22** - *Analisi Numerica*, MAT/08, LM Matematica (CFU 7 - ore 60);
- A.A. 2022/23** - *Analisi Numerica*, MAT/08, LM Matematica (CFU 7 - ore 63);
- *Calcolo Numerico*, MAT/08, LT ITPS (CFU 6 - ore 62);
- A.A. 2021/22** - *Analisi Numerica*, MAT/08, LM Matematica (CFU 7 - ore 60);
- *Calcolo Numerico*, MAT/08, LT ITPS (CFU 6 - ore 62);
- A.A. 2020/21** - *Analisi Numerica*, MAT/08, LM Matematica (CFU 4 - ore 28);
- *Calcolo Numerico*, MAT/08, LT ITPS (CFU 6 - ore 62);
- A.A. 2019/20** - *Analisi Numerica*, MAT/08, LM Matematica (CFU 4,5 - ore 40)
- *Calcolo Numerico*, MAT/08, LT ITPS (CFU 6 - ore 62);
- A.A. 2018/19** - *Calcolo Numerico*, MAT/08, LT ITPS (CFU 6 - ore 62);
- A.A. 2017/18** - *Calcolo Numerico*, MAT/08, LT ITPS (CFU 6 - ore 62);
- A.A. 2016/17** - *Calcolo Numerico*, MAT/08, LT ITPS (CFU 6 - ore 62);
- A.A. 2015/16** - *Calcolo Numerico*, MAT/08, LT ITPS (CFU 6 - ore 62);
- A.A. 2014/15** - *Calcolo Numerico*, MAT/08, LT Informatica (CFU 6 - ore 62);
- A.A. 2013/14** - *Calcolo Numerico*, MAT/08, LT Informatica (CFU 6 - ore 62);
- A.A. 2012/13** - *Calcolo Numerico*, MAT/08, LT Informatica (CFU 6 - ore 62);
- A.A. 2011/12** - *Calcolo Numerico*, MAT/08, LT Informatica (CFU 6 - ore 62);
- A.A. 2010/11** - *Calcolo Numerico*, MAT/08, LT Informatica (CFU 6 - ore 62);
- A.A. 2009/10** - *Calcolo Numerico*, MAT/08, LT Informatica (CFU 6 - ore 62);
- A.A. 2008/09** - *Calcolo Numerico*, MAT/08, LT Informatica (CFU 6 - ore 62);
- A.A. 2007/08** - *Calcolo Numerico*, MAT/08, LT Informatica (CFU 6 - ore 62);
- A.A. 2006/07** - *Laboratorio Matematico Informatico n. 1*, MAT/08, LT Matematica (CFU 7);
- *Calcolo Numerico*, MAT/08, LT Informatica (CFU 6);
- A.A. 2005/06** - *Laboratorio Matematico Informatico n. 1*, MAT/08, LT Matematica (CFU 6);
- A.A. 2004/05** - *Laboratorio Matematico Informatico n. 1*, MAT/08, LT Matematica (CFU 6);
- *Laboratorio di Programmazione e Calcolo*, MAT/08, (CFU 4)
Master in Metodi quantitativi ed informatica a supporto delle decisioni economiche
- A.A. 2003/04** - *Software a supporto delle decisioni economiche*, MAT/08, (4 CFU)
Master in Metodi quantitativi ed informatica a supporto delle decisioni economiche
- A.A. 2002/03** - *Software a supporto delle decisioni economiche*, MAT/08, (ore 20)
Master in Metodi quantitativi ed informatica a supporto delle decisioni economiche

PhD courses

- A.A. 2018/19** *Numerical methods for fractional calculus and matrix functions*
 May-July 2019 - CFU 3 - 30 hours
 PhD School Polytechnic University of Bari (Italy) (XXXIV cycle)
- A.A. 2017/18** *Differential Equations of Fractional Order*
 March-May 2018 (CFU 3 - 30 hours)
 PhD Programme in Computer Science and Mathematics (XXXIII cycle)
 Università degli Studi di Bari (Italy)

Corsi senza responsabilità didattica

Ha tenuto le seguenti lezioni e/o esercitazioni senza responsabilità didattica dei rispettivi corsi

- A.A. 2020/21** - *Calcolo Numerico 2*, MAT/08, LT Matematica (CFU 2 - ore 30)
 - *Calcolo Numerico 1 e Labor.*, MAT/08, LT Matematica (CFU 2 - ore 30)
- A.A. 2019/20** - *Calcolo Numerico 2*, MAT/08, LT Matematica (CFU 2 - ore 30)
- A.A. 2018/19** - *Calcolo Numerico 2*, MAT/08, LT Matematica (CFU 2 - ore 30)
 - *Tecniche di Ottimizzazione*, MAT/08, LM Matematica, (CFU 3 - ore 28)
- A.A. 2017/18** - *Calcolo Numerico 2*, MAT/08, LT Matematica (CFU 2 - ore 30)
 - *Tecniche di Ottimizzazione*, MAT/08, LM Matematica, (CFU 4 - ore 30)
- A.A. 2016/17** - *Calcolo Numerico 2*, MAT/08, LT Matematica (CFU 2 - ore 30)
 - *Metodi Numerici di Ottimizzazione*, MAT/08, LM Matematica (CFU 3 - ore 30)
- A.A. 2015/16** - *Calcolo Numerico 2*, MAT/08, LT Matematica (CFU 2 - ore 30)
 - *Metodi Numerici di Ottimizzazione*, MAT/08, LM Matematica (CFU 3 - ore 30)
- A.A. 2014/15** - *Analisi Numerica*, MAT/08, LM Matematica, ore 28
- A.A. 2013/14** - *Analisi Numerica*, MAT/08, LM Matematica, ore 28
- A.A. 2012/13** - *Calcolo Numerico 2*, MAT/08, LT Matematica, ore 28
- A.A. 2011/12** - *Calcolo Numerico 2*, MAT/08, LT Matematica, ore 28
- A.A. 2010/11** - *Calcolo Numerico 2*, MAT/08, LT in Matematica, ore 28
- A.A. 2009/10** - *Analisi Numerica*, MAT/08, LS Matematica, ore 28
- A.A. 2008/09** - *Analisi Numerica*, MAT/08, LS Matematica, ore 28
- A.A. 2007/08** - *Analisi Numerica*, MAT/08, LS Matematica, ore 28
- A.A. 2006/07** - *Analisi Numerica*, MAT/08, LS Matematica, ore 28
- A.A. 2005/06** - *Analisi Numerica*, MAT/08, LS Matematica, ore 28
- A.A. 2004/05** - *Calcolo Numerico n. 2*, MAT/08, LT Matematica, ore 32
 - *Modelli e Metodi per le Decisioni*, MAT/08, LT Informatica, ore 32
- A.A. 2003/04** - *Calcolo Numerico n. 2*, MAT/08 LT Matematica, ore 32
 - *Calcolo Numerico e Programm. II - I mod.*, LQ Matematica, MAT/08, ore 32
 - *Calcolo Numerico e Programm. II - II mod.*, LQ Matematica, MAT/08, ore 32
 - *Laboratorio Informatico Matematico*, LT Matematica, ore 14
- A.A. 2002/03** - *Calcolo Numerico n. 2*, MAT/08 LT Matematica, ore 32
 - *Calcolo Numerico e Programm. II - I mod.*, LQ Matematica, MAT/08, ore 32
 - *Calcolo Numerico e Programm. II - II mod.*, LQ Matematica, MAT/08, ore 32
 - *Laboratorio Informatico Matematico*, LT Matematica, ore 14
 - *Calcolo Numerico*, MAT/08 LT Informatica, ore 32
- A.A. 2001/02** - *Calcolo Numerico e Programm. II - I mod.*, LQ Matematica, MAT/08, ore 32
 - *Calcolo Numerico e Programm. II - II mod.*, LQ Matematica, MAT/08, ore 32
 - *Laboratorio Informatico Matematico*, LT Matematica, ore 14

- *Calcolo Numerico*, MAT/08 LT Informatica, ore 32

Coordination of teaching activities

- Coordinatore accademico dell'accordo Erasmus con la Süleyman Demirel University di Isparta (Turchia)
- Dal 2016 si è fatto ogni anno promotore, in collaborazione con associazioni studentesche, di un progetto laboratoriale di avvicinamento al LaTeX per agevolare la preparazione delle tesi di laurea. Dal 2022 tale progetto si è trasformato in un precorso di "Scrittura scientifica"
- Partecipazioni alle giornate di orientamento per conto del Dipartimento di Matematica negli anni 2016, 2017 e 2018

Tesi di laurea

Nell'ambito delle attività didattiche del Corso di Laurea in Matematica (Vecchio ordinamento quadriennale, Laurea Triennale, Laurea Specialistica e Laurea Magistrale), Roberto Garrappa ha svolto le funzioni di relatore per le seguenti tesi di laurea su argomenti attinenti l'Analisi Numerica.

1. *Interpolazione mediante Spline cubiche*, Laurea Quadriennale in Matematica, Anno Accademico 2001-2002;
2. *Metodi Waveform Relaxation per la soluzione di sistemi di equazioni differenziali ordinarie*, Laurea Quadriennale in Matematica, Anno Accademico 2001-2002;
3. *Metodi multisplitting per la risoluzione di sistemi di equazioni lineari*, Laurea Quadriennale in Matematica, Anno Accademico 2001-2002;
4. *Metodi iterativi two-stage per sistemi lineari*, Laurea Quadriennale in Matematica, Anno Accademico 2001-2002;
5. *Metodi Waveform Relaxation: accelerazione su sottospazi di Krylov*, Laurea Quadriennale in Matematica, Anno Accademico 2001-2002
6. *Metodi Runge Kutta iterati: studio dell'ordine mediante B-serie*, Laurea Quadriennale in Matematica, Anno Accademico 2001-2002
7. *Metodi Newtoniani per sistemi non lineari*, Laurea Quadriennale in Matematica, Anno Accademico 2002-2003
8. *Metodi numerici per Equazioni Differenziali Con Ritardo*, Laurea Quadriennale in Matematica, Anno Accademico 2002-2003
9. *Estensioni continue per metodi Runge-Kutta*, Laurea Quadriennale in Matematica, Anno Accademico 2002-2003
10. *Equazioni differenziali alle derivate parziali: il toolbox PDE di Matlab*, Laurea Quadriennale in Matematica, Anno Accademico 2002-2003
11. *Metodi numerici per equazioni differenziali frazionarie*, Laurea Quadriennale in Matematica, Anno Accademico 2002-2003
12. *Ottimizzazione non lineare mediante l'algoritmo di Nelder e Mead*, Laurea Quadriennale in Matematica, Anno Accademico 2003-2004

13. *Metodi numerici per equazioni integrali di Volterra*, Laurea Quadriennale in Matematica, Anno Accademico 2004-2005
14. *Codici numerici per equazioni differenziali con ritardo*, Laurea Quadriennale in Matematica, Anno Accademico 2004-2005
15. *Algoritmo di Cooley-Tukey per il calcolo della FFT*, Laurea Triennale in Matematica, Anno Accademico 2004-2005
16. *Sviluppo di codici correttori di errori per memorie Falsh NAND*, Laurea Quadriennale in Matematica, Anno Accademico 2004-2005
17. *Metodi su sottospazi di Krylov per la risoluzione di sistemi lineari*, Laurea Quadriennale in Matematica, Anno Accademico 2005-2006
18. *Uso di equazioni differenziali con ritardo in modelli di dinamica dell'HIV con farmacocinetica*, Laurea Quadriennale in Matematica, Anno Accademico 2006-2007;
19. *Metodo agli elementi finiti: applicazione al landscape evolution modelling*, Laurea Quadriennale in Matematica, Anno Accademico 2006-2007;
20. *Metodi di Adams per equazioni differenziali frazionarie*, Laurea Magistrale in Matematica, Anno Accademico 2006-2007;
21. *Algoritmi veloci per il calcolo di integrali di convoluzione*, Laurea Magistrale in Matematica, Anno Accademico 2006-2007;
22. *Metodi Multistep per Equazioni Differenziali Frazionarie*, Laurea Magistrale in Matematica, Anno Accademico 2006-2007;
23. *Inversione numerica della trasformata di Laplace*, Laurea Magistrale in Matematica, Anno Accademico 2007-2008;
24. *Studio della stabilità per equazioni alle differenze*, Laurea Triennale in Matematica, Anno Accademico 2007-2008;
25. *Algoritmo di Björck-Pereyra per la risoluzione di sistemi di equazioni lineari di Vandermonde*, Laurea Quadriennale in Matematica, Anno Accademico 2008-2009;
26. *L'aritmetica dei Calcolatori*, Laurea Triennale in Matematica, Anno Accademico 2008-2009;
27. *I ritardi della politica fiscale in un modello IS-LM dinamico*, Laurea Triennale in Matematica, Anno Accademico 2009-2010;
28. *Interpolazione polinomiale: aspetti di stabilità*, Laurea Triennale in Matematica, Anno Accademico 2011-2012;
29. *Interpolazione polinomiale: aspetti teorici e computazionali*, Laurea Triennale in Matematica, Anno Accademico 2012-2013;
30. *Metodi Runge-Kutta e teoria degli alberi con radice*, Laurea Triennale in Matematica, Anno Accademico 2013-2014;
31. *Sulla teoria e le applicazioni delle funzioni spline*, Laurea Triennale in Matematica, Anno Accademico 2013-2014;
32. *Metodi multistep di Adams per la risoluzione di equazioni differenziali*, Laurea Triennale in Matematica, Anno Accademico 2013-2014;
33. *Il metodo FDTD per la simulazione delle equazioni di Maxwell*, Laurea Triennale in Matematica, Anno Accademico 2013-2014;
34. *Model Order Reduction mediante metodi su sottospazi di Krylov*, Laurea Magistrale in Matematica, Anno Accademico 2013-2014;

35. *Metodi numerici per equazioni di volterra ed applicazione a problemi differenziali di ordine frazionario*, Laurea Quadriennale in Matematica, Anno Accademico 2014-2015;
36. *Metodi lineari multistep per equazioni differenziali frazionarie*, Laurea Magistrale in Matematica, Anno Accademico 2015-2016;
37. *Inversione numerica della trasformata di Laplace e le applicazioni alla risoluzione di equazioni differenziali frazionarie*, Laurea Magistrale in Matematica, Anno Accademico 2015-2016;
38. *Metodi numerici per la compressione di immagini e l'algoritmo JPEG*, Laurea Triennale in Matematica, Anno Accademico 2018-2019;
39. *La trasformata discreta dei coseni*, Laurea Triennale in Matematica, Anno Accademico 2018-2019;
40. *Inversione numerica della trasformata di Laplace*, Laurea Triennale in Matematica, Anno Accademico 2019-2020;
41. *Calcolo di derivate di ordine frazionario*, Laurea Triennale in Matematica, Anno Accademico 2019-2020;
42. *Integratori esponenziali e calcolo di esponenziali di matrici*, Laurea Magistrale in Matematica, Anno Accademico 2019-2020;
43. *Metodi numerici per la risoluzione di equazioni differenziali di ordine non intero*, Laurea Triennale in Matematica, Anno Accademico 2020-2021;
44. *Metodi multistep per equazioni differenziali di ordine non intero*, Laurea Magistrale in Matematica, Anno Accademico 2022-2023;

Bari, 8 agosto 2024