Curriculum vitae

Personal information

First name:	**Roberto**
Family name:	**Garrappa**
Office address:	**Università degli Studi di Bari "Aldo Moro"** **Dipartimento di Matematica** **Via E. Orabona, 4** **70125 Bari - Italy** **Phone: +39.080.5442685**
e-mail:	**roberto.garrappa@uniba.it**

Education

Diploma :	**Secondary School Diploma - Scientific studies** State Scientific Liceum - Monopoli, Italy
Degree :	**Degree in Computer Science** University of Bari - Italy

Work experience

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

Scientific 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).

Editorial activity

- Member of the editorial board of the following journals:
  - *Numerical Algorithms* (Springer)
  - *Applied Numerical Mathematics* (Elsevier)
  - *Fractional Calculus and Applied Analysis* (Springer)
  - *Mathematics and Computers in Simulations* (Elsevier)
  - *Mediterranean Journal of Mathematics* (Birkhauser)
- Past experiences as member of editorial board of scientific journals:
  - *International Journal of Computer Mathematics* (Taylor & Francis)
  - *Fractional Differential Calculus* (Ele-Math editore)
  - *Computational and Applied Mathematics* (Springer)
  - *Progress in Fractional Differentiation and Applications* (Natural Science Publishing)
- 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 Mathe-

matics, 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

- Organizer of the Minisymposia: "*MS13 - Computational Methods for Dynamical Systems and PDEs of Fractional Order*" in "European Conference on Numerical Mathematics and Advanced Applications (ENUMATH 2025)", Heidelberg (Germany), September 1-5, 2025 (Joint organizer with Martin Stynes, Beijing Computational Science Research Center, China).
- Member of the scientific and organizing committee of the Workshop "*"Numerical Analysis: Models, Applications, and Theory*" - Bari (Italy), June 5-6 2025.
- 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

- Member of the National Group for Scientific Computation (GNCS) at the Italian Institute for High Mathematics (INdAM)
- Member of SIAM, IMACS, UMI
- Member of the Steering Committee of the conference series *International Conference on Fractional Differentiation and Applications (ICFDA)*;

Scientific publications

Papers in peer reviewed journals

1. S.Cvetićanin, N.Koledin, R.Garrappa, R.Caponetto, *Deriving analytical voltage response in fractional order battery modeling*, Nonlinear Dynamics, 2026, 114:237
2. M.Berardi, R.Garrappa, M.Icardi, R.Nuca *From microstructure to memory: Basset-type fractional transport models in porous media*, Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2025, 481(2327): 20250320
3. D.Biolek, R.Garrappa, F.Mainardi, M.Popolizio, *Derivatives of Mittag-Leffler functions: theory, computation and applications*, Nonlinear Dynamics, 2025, 113, 34389-34403
4. R.Garrappa, K.Górska, E.Kaslik, K.Marynets, *Generalized fractional operators do not preserve periodicity* Fractional Calculus and Applied Analysis, 2025, 28, 1681-1705
5. R.Garrappa, S.Gerhold, M.Popolizio, T.Simon, *On some inequalities for the two-parameter Mittag-Leffler function in the complex plane*, Journal of Mathematical Analysis and Applications, 2025, 555(1), Art. no. 129588
6. A.Giusti, I.Colombaro, R.Garra, R. Garrappa, A.Mentrelli *On variable-order fractional linear viscoelasticity*, Fractional Calculus and Applied Analysis, 2024, 27, 1564-1578
7. 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
8. R.Garrappa, A.Giusti, *A computational approach to exponential-type variable-order fractional differential equations*, Journal of Scientific Computing, 2023, 96, Art. no. 63
9. D.Mortari, R.Garrappa, L.Nicoló, *Theory of Functional Connections Extended to Fractional Operators*, Mathematics, 2023, 11(7), 1721

10. 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
11. R.Garrappa, M.Popolizio, *A computationally efficient strategy for time-fractional diffusion-reaction equations*, Computers & Mathematics with Applications, 2022, 116, 181-193
12. D.Biolek, R.Garrappa, V.Biolková, *Impulse response of commensurate fractional-order systems: multiple complex poles*, Fractional Calculus and Applied Analysis, 25(5) 2022
13. 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
14. R.Garrappa, A.Giusti, F.Mainardi, *Variable-order fractional calculus: a change of perspective*, Communications in Nonlinear Science and Numerical Simulation, 2021, 102, 105904
15. 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
16. 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
17. O.Brandibur, R.Garrappa, E.Kaslik, *Stability of systems of fractional-order differential equations with Caputo derivatives*, Mathematics, 2021, 9(8), 914
18. 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
19. 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
20. A.Giusti, R.Garrappa, G.Vachon, *On the Kuzmin model in fractional Newtonian gravity*, Eur. Phys. J. Plus, 2020, 135(10), 798
21. R.Garrappa, E.Kaslik, *Stability of fractional-order systems with Prabhakar derivatives*, Nonlinear Dynamics, 2020, 102 567-578
22. 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
23. R.Garrappa, E.Kaslik, *On initial conditions for fractional delay differential equations*, Communications in Nonlinear Science and Numerical Simulation, 2020, 90, 105359
24. K.Diethelm, R.Garrappa, M.Stynes, *Good (and not so good) practices in computational methods for fractional calculus*, Mathematics, 2020, 8(3), 324
25. 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
26. K.Gorska, A.Horzela, R.Garrappa, *Some results on the complete monotonicity of Mittag-Leffler functions of Le Roy type*, Fractional Calculus and Applied Analyisis, 2019, 22(5), 1284-1306
27. R.Garrappa, E.Kaslik, M.Popolizio, *Evaluation of fractional integrals and derivatives of elementary functions: overview and tutorial*, Mathematics, 2019, 7(5), 407

28. R.Garrappa, *Neglecting nonlocality leads to unreliable numerical methods for fractional differential equations*, Communications in Nonlinear Science and Numerical Simulation, 2019, 70, 302-306
29. Garrappa R., M.Popolizio, *Computing the matrix Mittag-Leffler function with applications to fractional calculus*, Journal of Scientific Computing, 2018, 77(1), 129-153
30. 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
31. 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
32. R.Garrappa, *Numerical Solution of Fractional Differential Equations: A Survey and a Software Tutorial*, Mathematics, 2018, 6(2), 16
33. R.Garrappa, F.Mainardi, S.Rogosin, *On a generalized three-parameter Wright function of Le Roy type*, Fractional Calculus and Applied Analyisis, 2017, 20(5), 1196-1215
34. 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
35. 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
36. R.Garrappa, F.Mainardi, *On Volterra functions and Ramanujan integrals*, Analysis, 2016, 36(2), 89-105
37. R.Garrappa, *On Grünwald-Letnikov operators for fractional relaxation in Havriliak-Negami models*, Communications in Nonlinear Sciences and Numerical Simulation, 2016, 38, 178-191
38. R.Garrappa, *Numerical evaluation of two and three parameter Mittag-Leffler functions*, SIAM Journal of Numerical Analysis, 2015, 53(3), 1350-1369
39. R.Garrappa, I.Moret, M.Popolizio, *Solving the time-fractional Schrödinger equation by Krylov projections methods*, Journal of Computational Physics, 2015, 293, 115-134
40. 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
41. R.Garrappa, *Trapezoidal methods for fractional differential equations: theoretical and computational aspects*, Mathematics and Computers in Simulation, 2015, 110, 96-112
42. M.F.Danca, R.Garrappa, *Suppressing chaos in discontinuous systems of fractional order by active control*, Applied Mathematics and Computation, 2015, 257, 89-102
43. 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
44. R.Garrappa, M.Popolizio, *Exponential Quadrature Rules for Linear Fractional Differential Equations*, Mediterranean Journal of Mathematics 12(1) (2015), 219–244;
45. R.Garrappa, *On some generalizations of the implicit Euler method for discontinuous fractional differential equations*, Mathematics and Computers in Simulation, 95 (2014), 213-228,
46. R.Garrappa, *Exponential integrators for time–fractional PDEs*, European Physical Journal Special Topics 222(8) (2013), 1913-1925

47. 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
48. R.Garrappa, *A family of Adams exponential integrators for fractional linear systems*, Computers and Mathematics with Applications, 66 (5) (2013), 717-727
49. R.Garrappa, M.Popolizio, *Evaluation of generalized Mittag–Leffler functions on the real line*, Advances in Computational Mathematics 39 (1) (2013), 205–225
50. M.Y.Ongun, R.Garrappa, D.Arslan, *Nonstandard finite difference schemes for fractional order Brusselator system*, Advances in Difference Equations 2013(102) (2013)
51. R.Garrappa, *Stability–preserving high-order methods for multiterm fractional differential equations*, International Journal of Bifurcation and Chaos 22 (4) (2012), 1–13
52. R.Garrappa, M.Popolizio, *Generalized exponential time differencing methods for fractional order problems*, Computers and Mathematics with Applications 62(3) (2011), 876–890
53. 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
54. 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;
55. R.Garrappa, *On linear stability of predictor–corrector algorithms for fractional differential equations*, International Journal of Computer Mathematics 87 (2010) no. 10, 2281–2290;
56. R.Garrappa, *Order conditions for Volterra Runge–Kutta methods*, Applied Numerical Mathematics 60 (2010), no. 4, 561–573;
57. R.Garrappa, *On some explicit Adams multistep methods for fractional differential equations*, J. Comput. Appl. Math. 229 (2009), no. 2, 392–399;
58. L.Galeone, R.Garrappa, *Explicit methods for fractional differential equations and their stability properties*, J. Comput. Appl. Math. 228 (2009), no. 2, 548–560;
59. L.Galeone, R.Garrappa, *Fractional Adams–Moulton methods*, Mathematics and Computers in Simulation 79 (2008), no. 4, 1358-1367;
60. R.Garrappa, *The use of geometric meshes in product integration Simpson's rules*, J. Comput. Appl. Math. 210 (2007), no. 1-2, 200-209;
61. R.Garrappa, *Some formulas for sums of binomial coefficients and gamma functions*, International Mathematical Forum 2 (2007), no. 15, 725–733;
62. L.Galeone, R.Garrappa, *On multistep methods for differential equations of fractional order*, Mediterranean Journal of Mathematics 3 (2006), no. 3–4, 565–580;
63. R.Garrappa, *An analysis of convergence for two-stage waveform relaxation methods*, J. Comput. Appl. Math. 169 (2004), no. 2, 377–392;
64. 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:

65. 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`

66. 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:

67. 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
68. 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
69. 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
70. 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 proceedengs

71. D.Biolek, Z.Kolka, R.Garrappa, V.Biolková, *Transient Analysis of Fractional Relaxation via Symbolic Analysis Program*, 2025 17th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT 2025), Florence, Italy, 2025, 113-117, doi: 10.1109/ICUMT67815.2025.11268795
72. F.V.Difonzo, R.Garrappa, *An Easy-To-Use Tool to Solve Differential Equations with the Fractional Laplacian*, IFAC PapersOnLine, 2024, 58(12), 312-317
73. D.Biolek, V.Biolková, Z.Kolka, R.Garrappa, *High-Bandwidth High-N-Point SPICE Model of Fractional Integrator/Differentiator*, 16th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT 2024), Meloneras, Gran Canaria, Spain, 2024, 42-47
74. 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.
75. 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
76. 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
77. 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.

78. R.Garrappa, G.Maione, M.Popolizio, *Time-domain simulation for factional 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.
79. 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.
80. 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.
81. 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.
82. 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. 7th Workshop on Stability and Discretization Issues in Differential Equations (SDIDE 2025), Fisciano (SA), Italy June 16-19, 2025. Talk: Numerical Challenges and Advances in Variable-Order
2. Workshop "Proper Value Decomposition 75" (PVD75), Selva di Fasano (Br), Italy, July 7-12, 2025. Talk: Numerical Treatment of Variable-Order Fractional Differential Equations via Laplace Transform
3. Workshop on "New Trends in Computational Learning & SciML 2025", Libera Università Mediterranea "Giuseppe Degennaro", Casamassima (BA), Italy, July 2-4, 2025. Talk: Numerical Challenges and Advances in Variable-Order Fractional Differential Equations
4. The 5th International Symposium on "Operational and Stochastic Methods in Fractional Dynamics (MFD24)", Rome (Italy), September 24-25, 2024. Talk: Variable-order fractional calculus in the Laplace transform domain (Invited speaker)
5. 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)
6. 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)
7. 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`
8. 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`
9. 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`
10. 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`
11. 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/`
12. 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`

13. 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/`
14. 4th Conference on Numerical Methods for Fractional-Derivative Problems, Bejing (China), October 22-24, 2020 (online). Talk: *The matrix Mittag-Leffer function: applications in fractional calculus and computational aspects* (Invited speaker). `https://www.csrc.ac.cn/en/event/workshop/2020-01-10/103.html`
15. 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`
16. 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`
17. 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)
18. 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/`
19. Summer School on "Fractional and Other Nonlocal Models", Bilbao (Spain), May 28-31, 2018. Talk: *Generalized exponential integrators for fractional differential equations* (invited speaker)
20. 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`
21. 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)
22. 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)
23. Workshop on Numerical Simulation of Evolutionary Processes, Bari (Italy), January 14-17, 2014. Talk: *Exponential integrators for fractional differential equations* (plenary speaker)
24. 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:

25. The European Conference on Numerical Mathematics and Advanced Applications (ENUMATH), Heidelberg (Germany), September 1-5, 2025. Talk: Numerical Solution of Variable-Order Fractional Differential Equations via Laplace-Domain Operators

26. 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/`
27. 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/`
28. XXI Congresso Unione Matemtica 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/`
29. 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/`
30. Scientific Computation and Differential Equations (SCICADE 2013), Valladolid (Spain), September 16-20, 2013. Talk: *Numerical solution of fractional differential equations with discontinuous right-hand side* (in Minisymposium on "Discontinuous dynamical systems: theory and numerical methods")

Contributed communications:

31. 12th IFAC Conference on "Fractional Differentiation and its Applications", Bordeaux (France), July 9-12, 2024. Talk: An Easy-To-Use Tool to Solve Differential Equations with the Fractional Laplacian
32. 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`
33. 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/`
34. 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/pdetd22/`
35. Workshop: Software for Approximation (SA2022), University of Turin (Italy), February 3-4, 2022. Talk: N*umerical computation of the Mittag-Leffler function.* `https://sites.google.com/view/sa2022torino`
36. 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/`
37. Cost Action "CA15225 Fractional Systems" Final Annual Workshop, Online March 24, 2021. Talk: *New fractional derivatives: all that glitters is not gold*
38. EI Workshop of the Cost Action "CA15225 Fractional Systems", January 10-11, 2019, Dublin (Ireland). Talk: *Development of efficient codes for fractional-order problems*

39. 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*
40. 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*
41. International conference on "Transform Methods and Special Functions", August 27-30, 2017, Sofia (Bulgaria). Talk: *The Prabhakar function: theory and applications*
42. Giornata sul "Fractional Calculus and its Applications", Roma (Italy), January 27, 2017. Talk: *On the Prabhakar derivative: applications, theory and numerics*
43. 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*
44. 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*
45. International Conference on "Non-Linear Analysis, Non-Linear Systems and Chaos" (NOLASC 2015), Roma (Italy) November 7-9, 2015. Talk: *On Finite Difference Approximations of Havriliak-Negami Operators*
46. Conference on "New Directions in Numerical Computations", Oxford (United Kingdom), August 25-28, 2015. Talk: *On the computation of the Mittag-Leffler function*
47. 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.*
48. 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.*
49. 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.*
50. 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.*
51. 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.*
52. 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.*
53. Convegno Annuale GNCS 2012, Montecatini Terme, Italy, November 15-16, 2012. Talk: *Integratori esponenziali per equazioni differenziali di ordine frazionario.*
54. 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.*

55. 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.*
56. 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.*
57. 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.*
58. XIX Congresso U.M.I., Bologna - Italy, September 12-17, 2011. Talk: *Integratori di tipo esponenziale per problemi frazionari.*
59. Conference In Numerical Analysis (NUMAN 2010), Chania - Greece, September 15-18, 2010. Poster: *On the use of Product Integration in Fractional Differential Equations.*
60. 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.*
61. 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.*
62. 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.*
63. 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.*
64. 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.*
65. XVIII Congresso U.M.I., Bari - Italy, September 24-29, 2007. Talk: *Metodi di Adams per equazioni differenziali frazionarie.*
66. 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.*
67. 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.*
68. 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.*
69. 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.*
70. 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.*
71. 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.*

72. 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

- Cycle of three seminars for PhD students on "An Introduction to Fractional Calculus: Introduction and numerical methods", Dipartimento di Matematica, Università degli Studi di Salerno (Italy), February 23-25 2025.
- Fractional Calculus Seminars, SISSA Trieste (Italy) Online Seminars, November 15 2024. Talk: On a new class of variable-order fractional operators: theory, applications and numerical methods `https://mathlab.sissa.it/fractional-calculus-seminars`
- 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 2024: *Risoluzione numerica di problemi differenziali non-locali e/o frazionari*
- 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 2007ASRKCJ *Metodi numerici per sistemi evolutivi di equazioni differenziali funzionali ordinarie ed alle derivate parziali*, (Principal investigator prof. Alfredo Bellen).
- GNCS–INdAM Project 2025: *Metodi numerici e strumenti matematici innovativi per problemi differenziali non locali e frazionari* (Principal investigator prof. Angelamaria Cardone)
- 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'imprenditorialita 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

- Listed by Clarivate in the year 2025 as *Highly Cited Researcher* `https://clarivate.com/highly-cited-researchers/`
- 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
- 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`
- Award "*Best oral presentation*" in 2012 FDA Symposium on Fractional Differentiation and Applications, Nanjing (China), May 14-17 2012.

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

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 1 or 2 parameter Mittag-Leffler function with matrix arguments
- Code **ml_deriv.m**: evaluation of derivatives of the Mittag-Leffler

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 2025
- *Numerical Computation*, degree in Mathematics, from 2001 to 2021
- *Numerical Analysis*, degree in Mathematics, form 2004 to 2025
- *Numerical methods for partial differential equations*, degree in Mathematics, form 2025
- *Methods for Optimization*, degree in Mathematics, from 2014 to 2018
- *Mathematical Laboratory*, degree in Mathematics, from 2004 to 2007, and in 2025

Bari, May 2, 2026

prof. Roberto Garrappa