

PERSONAL INFORMATION Felice Iavernaro



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Sex M | Date of birth 17/01/1967 | Nationality Italian

h-index: 27, total citations: 2518 (source: Google Scholar)

h-index: 23, total citations: 1543 (source: Scopus)

Enterprise	University	EPR
<input type="checkbox"/> Management Level	<input type="checkbox"/> Full professor	<input type="checkbox"/> Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
<input type="checkbox"/> Mid-Management Level	<input checked="" type="checkbox"/> Associate Professor	<input checked="" type="checkbox"/> Level III Researcher and Technologist
<input type="checkbox"/> Employee / worker level	<input type="checkbox"/> Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	<input type="checkbox"/> Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

2002-on **Associate Professor in Numerical Analysis (permanent)**

University of Bari "A. Moro", ITALY

Research topics: Numerical methods for the solution of ordinary and partial differential equations; numerical methods for Hamiltonian and conservative problems; robust methods in data-fitting.

2006-2012 **Researcher in Numerical Analysis**

University of Bari "A. Moro", ITALY

Research topics: Numerical methods for the solution of ordinary differential equations, with both initial (ODE-IVP) and boundary conditions (ODE-BVP).

1992-1994 **Grant-holder**

CNR (Consiglio Nazionale delle Ricerche), ITALY.

EDUCATION AND TRAINING

1991 **Degree in Mathematics**

University of Bari "A. Moro", ITALY
110/110 magna cum laude

1991 **Scuola Matematica Interuniversitaria (SMI)**

August 1991, Perugia, ITALY

1994 **Scuola Matematica Interuniversitaria (SMI)**

August 1994, Cortona (Arezzo), ITALY

PROJECTS (last five years)

2015 - 2018 Local coordinator at the Department of Mathematics of the University of Bari of the European Space Agency project "Synergy between electromagnetic and gravitational fluid dynamics" (ESA Contract 4000115042)

2019-2022 Local coordinator of the research unit at the Department of Mathematics of the University of Bari of the industrial research project “RPASinAir - *Integrazione dei Sistemi Aeromobili a Pilotaggio Remoto nello spazio aereo non segregato per servizi civili innovative*”, MIUR PNR 2015-2020. Lead Partner: DTA - Distretto Tecnologico Aerospaziale Scarl.

2019-2022 Local coordinator of the research unit at the Department of Mathematics of the University of Bari of the industrial research project “*CLOSE to the Earth*”, MIUR PNR 2015-2020. Lead Partner: DTA - Distretto Tecnologico Aerospaziale Scarl.

2020-2022 Local coordinator of the research unit at the Department of Mathematics, University of Bari Aldo Moro, industrial research project MAIA “*Monitoraggio attivo dell'infrastruttura*” PON Research and Innovation 2015-2020 (code: ARS01 00353). Area of specialization: “Sustainable mobility”. Lead Partner: MER MEC SPA.

EDITORIAL ACTIVITY

2018 - Present Assistant Managing Editor and Associate Editor of Mediterranean Journal of Mathematics (Springer - Birkhauser). <http://www.springer.com/birkhauser/mathematics/journal/9>

2017 - Present Associate Editor of Applied Mathematics and Computation (Elsevier, ISSN: 0096-3003). <http://www.journals.elsevier.com/applied-mathematics-and-computation/>

PHD SUPERVISION

2018 - Present PhD in Computer Science and Mathematics XXXIV cycle, student Mufutau Rufai, PhD thesis “New Hybrid Block Collocation Methods for Solving Initial and Boundary Value Differential Problems”.

2009 - 2012 PhD in Computer Science and Mathematics XXIV cycle, student Tiziana Susca, PhD thesis “Hamiltonian boundary value methods: theory and applications”.

2005 - 2007 PhD in Computer Science and Mathematics XX cycle, student Brigida Pace, PhD thesis “Symmetric schemes for the solution of Hamiltonian problems”.

TEACHING

2017 – Present MSc course on “Numerical Calculus 2” (degree in Mathematics)

2016 – Present MSc course on “Laboratory of Mathematics and Informatics”

2003 – Present MSc course on “Numerical Calculus” (degree in Computer Science)

INSTITUTIONAL RESPONSIBILITIES

2013 - Present Board of the Doctorate Program on Computer Science and Mathematics, University of Bari, Italy

2009 - 2013 Board of the Doctorate Program on Mathematics, University of Bari, Italy

Member of PhD Admission Committee in the public selection procedures for admission to the Doctorate Program cycles XX (Mathematics) and XXXVII (Computer Science and Mathematics)

INVITED TALKS

2015 “*On the use of the line integral in the numerical treatment of conservative problems*”, 13th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2015), September 23–29, 2015, Rhodes (Greece).

2013 “*Line Integral Methods for Conservative Problems*”, 11th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM 2013), September 21–27, 2013, Rhodes (Greece).

2011 “*Collocation-like methods with conservation properties for the numerical integration of Hamiltonian systems*”, Geometric Numerical Integration, March 20–26, 2011, Oberwolfach (Germany).

- 2004 “Conservative discrete vector fields induced by symmetric methods applied to Hamiltonian systems”, International Workshop on the Technological Aspects of Mathematics II: Computational Methods and Mathematical Software, April 1–3, 2004, Montecatini Terme (Pistoia).
- 2002 “Preconditioners for Toeplitz-like matrices arising from Boundary Value Methods”, International Conference on Structured Matrices, May 29 – June 1, 2002, Hong Kong.

FELLOWSHIPS AND AWARDS

- 2013 “Honorary Fellowship” of European Society of Computational Methods in Sciences Engineering and Technology.
- 2017 FFABR 2017, individual funding for basic research activities.

ADDITIONAL INFORMATION

- 2017 National Scientific Qualification, Section 01-A5 Numerical Analysis Qualification for Full Professor position in Italian universities.

PUBLICATIONS

Publications
best and most relevant
in the last 10 years

1. Giordano, D., Iavernaro, F., Maximal-entropy driven determination of weights in least-square approximation, *Mathematical Methods in the Applied Sciences*, 44 (8) (2021), pp. 6448-6461. DOI: 10.1002/mma.7197
2. Iavernaro, F., Mazzia, F., A fourth order symplectic and conjugate-symplectic extension of the midpoint and trapezoidal methods, *Mathematics*, 9 (10) (2021), art. no. 1103. DOI: 10.3390/math9101103
3. Brugnano, L., Iavernaro, F., Zanzottera, P., A multiregional extension of the SIR model, with application to the COVID-19 spread in Italy, *Mathematical Methods in the Applied Sciences*, 44 (6) (2021), pp. 4414-4427. DOI: 10.1002/mma.7039
4. Iavernaro, F., Mazzia, F., Mukhamezhanov, M.S., Sergeyev, Y.D., Computation of higher order Lie derivatives on the Infinity Computer, *Journal of Computational and Applied Mathematics*, 383 (2021), art. no. 113135. DOI: 10.1016/j.cam.2020.113135
5. De Marinis, A., Iavernaro, F., Mazzia, F., A minimum-time obstacle-avoidance path planning algorithm for unmanned aerial vehicles, *Numerical Algorithms* (2021). DOI: 10.1007/s11075-021-01167-w
6. Brugnano, L., Iavernaro, F., Zhang, R., Arbitrarily high-order energy-preserving methods for simulating the gyrocenter dynamics of charged particles, *Journal of Computational and Applied Mathematics*, 380 (2020), art. no. 112994. DOI: 10.1016/j.cam.2020.112994
7. Amodio, P., Brugnano, L., Iavernaro, F., Mazzia, F., On the use of the Infinity Computer architecture to set up a dynamic precision floating-point arithmetic, *Soft Computing*, 24 (23) (2020), pp. 17589-17600. DOI: 10.1007/s00500-020-05220-z
8. Amodio, P., Giordano, D., Iavernaro, F., Labianca, A., Lazzo, M., Mazzia, F., Pisani, L., Mathematical aspects relative to the fluid statics of a self-gravitating perfect-gas isothermal sphere, *Communications in Computational Physics*, 28 (3) (2020), pp. 1085-1104. DOI: 10.4208/CICP.OA-2019-0203
9. Iavernaro, F., Mazzia, F., Mukhamezhanov, M.S., Sergeyev, Y.D., Conjugate-symplecticity properties of Euler–Maclaurin methods and their implementation on the Infinity Computer, *Applied Numerical Mathematics*, 155 (2020), pp. 58-72. DOI: 10.1016/j.apnum.2019.06.011
10. Amodio, P., Brugnano, L., Iavernaro, F., Analysis of spectral Hamiltonian boundary value methods (SHBVMs) for the numerical solution of ODE problems, *Numerical Algorithms*, 83 (4) (2020), pp. 1489-1508. DOI: 10.1007/s11075-019-00733-7
11. Amodio, P., Brugnano, L., Iavernaro, F., Mazzia, F., A Dynamic Precision Floating-Point Arithmetic Based on the Infinity Computer Framework, *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 11974 LNCS (2020), pp. 289-297. DOI: 10.1007/978-3-030-40616-5_22
12. Amodio, P., Brugnano, L., Iavernaro, F., A note on the continuous-stage Runge–Kutta(–Nyström) formulation of Hamiltonian Boundary Value Methods (HBVMs), *Applied Mathematics and Computation*, 363 (2019), art. no. 124634. DOI: 10.1016/j.amc.2019.124634
13. Giordano, D., Amodio, P., Iavernaro, F., Labianca, A., Lazzo, M., Mazzia, F., Pisani, L., Fluid statics of a self-gravitating perfect-gas isothermal sphere, *European Journal of Mechanics, B/Fluids*, 78 (2019), pp. 62-87. DOI: 10.1016/j.euromechflu.2019.05.013
14. Brugnano, L., Iavernaro, F., Montijano, J.I., Rández, L., Spectrally accurate space-time solution of Hamiltonian PDEs, *Numerical Algorithms*, 81 (4) (2019), pp. 1183-1202. DOI: 10.1007/s11075-018-0586-z
15. Brugnano, L., Frasca-Caccia, G., Iavernaro, F., Line integral solution of Hamiltonian PDEs, *Mathematics*, 7 (3) (2019), art. no. 275. DOI: 10.3390/math7030275

16. Brugnano, L., Iavernaro, F., Line integral solution of differential problems, *Axioms*, 7 (2) (2018), art. no. 36. DOI: 10.3390/axioms7020036
17. Brugnano, L., Gurioli, G., Iavernaro, F., Analysis of Energy and QUadratic Invariant Preserving (EQUIP) methods, *Journal of Computational and Applied Mathematics*, 335 (2018), pp. 51-73. DOI: 10.1016/j.cam.2017.11.043
18. Brugnano, L., Gurioli, G., Iavernaro, F., Weinmüller, E.B., Line integral solution of Hamiltonian systems with holonomic constraints, *Applied Numerical Mathematics*, 127 (2018), pp. 56-77. DOI: 10.1016/j.apnum.2017.12.014
19. Barletti, L., Brugnano, L., Frasca Caccia, G., Iavernaro, F., Energy-conserving methods for the nonlinear Schrödinger equation, *Applied Mathematics and Computation*, 318 (2018), pp. 3-18. DOI: 10.1016/j.amc.2017.04.018
20. Iavernaro, F., Mazzia, F., On conjugate-symplecticity properties of a multi-derivative extension of the midpoint and trapezoidal methods, *Rendiconti del Seminario Matematico*, 76 (2) (2018), pp. 123-134.
21. Amodio, P., Iavernaro, F., Mazzia, F., Mukhametzhano, M.S., Sergeev, Y.D., A generalized Taylor method of order three for the solution of initial value problems in standard and infinity floating-point arithmetic, *Mathematics and Computers in Simulation*, 141 (2017), pp. 24-39. DOI: 10.1016/j.matcom.2016.03.007
22. Sergeev, Y.D., Mukhametzhano, M.S., Mazzia, F., Iavernaro, F., Amodio, P., Numerical methods for solving initial value problems on the infinity computer, *International Journal of Unconventional Computing*, 2016, 12(1), pp. 3-23
23. Brugnano, L., Frasca Caccia, G., Iavernaro, F., Energy conservation issues in the numerical solution of the semilinear wave equation, *Applied Mathematics and Computation*, 2015, 270, pp. 842-870.
24. Amodio, P., Brugnano, L., Iavernaro, F., Energy-conserving methods for Hamiltonian boundary value problems and applications in astrodynamics, *Advances in Computational Mathematics*, 2015, 41(4), pp. 881-905.
25. Brugnano, L., Iavernaro, F., Trigiante, D., Analysis of Hamiltonian Boundary Value Methods (HBVMs): A class of energy-preserving Runge-Kutta methods for the numerical solution of polynomial Hamiltonian systems, *Communications in Nonlinear Science and Numerical Simulation*, 2015, 20(3), pp. 650-667.
26. Brugnano, L., Iavernaro, F., Magherini, C., Efficient implementation of Radau collocation methods, *Applied Numerical Mathematics*, 2015, 87, pp. 100-113.
27. Brugnano, L., Frasca Caccia, G., Iavernaro, F., Efficient implementation of Gauss collocation and Hamiltonian boundary value methods, *Numerical Algorithms*, 2014, 65(3), pp. 633-650.
28. Brugnano, L., Iavernaro, F., Trigiante, D., Energy-and quadratic invariants-preserving integrators based upon gauss collocation formulae, *SIAM Journal on Numerical Analysis*, 2012, 50(6), pp. 2897-2916.
29. Brugnano, L., Iavernaro, F., Line integral methods which preserve all invariants of conservative problems, *Journal of Computational and Applied Mathematics*, 2012, 236(16), pp. 3905-3919.
30. Brugnano, L., Iavernaro, F., Trigiante, D., A two-step, fourth-order method with energy preserving properties, *Computer Physics Communications*, 2012, 183(9), pp. 1860-1868.
31. Brugnano, L., Iavernaro, F., Trigiante, D., A simple framework for the derivation and analysis of effective one-step methods for ODEs, *Applied Mathematics and Computation*, 2012, 218(17), pp. 8475-8485.
32. Iavernaro, F., Trigiante, D., Continued fractions as dynamical systems, *Applied Mathematics and Computation*, 2012, 218(16), pp. 8203-8216.
33. Brugnano, L., Iavernaro, F., Trigiante, D., The lack of continuity and the role of infinite and infinitesimal in numerical methods for ODEs: The case of symplecticity, *Applied Mathematics and Computation*, 2012, 218(16), pp. 8056-8063.

BARI, 02/05/2022

FELICE IAVERNARO

