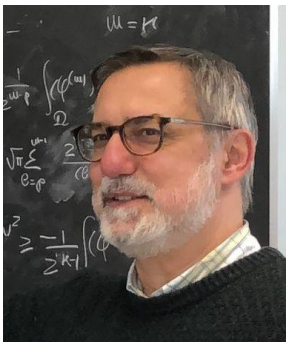
PERSONAL INFORMATION

Daniele Funaro

LAST UPDATE 2022



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Sex Male | Date of birth 07/08/1958 | Nationality Italian

POSITION

Full Professor of Numerical Analysis, University of Modena and Reggio Emilia (from 1995)

PREVIOUS POSITIONS

Researcher (Analysis), University of Pavia (1983 -1992)

Associate Professor of Analysis, University of Pavia (1992 -1995)

EDUCATION AND TRAINING

Student, Scuola Normale Superiore, Pisa (1977-1979)

Degree in Mathematics, University of Pavia (1981)

Fellowship, Istituto di Alta Matematica, Rome (1981-1982)

ADDITIONAL INFORMATION

Director of the Computer Centre, University of Modena (1997-2000)

Chairman of the Department of Mathematics, University of Modena (2000-2007)

RESEARCH

Numerical techniques for the approximation of partial differential equations, with particular emphasis on high-order methods.

Applications to the following model problems: Vlasov-Poisson equations, Navier-Stokes equations, simulation of electromagnetic waves and solitons.

Relevant keywords: spectral methods, domain decomposition methods, preconditioning, treatment of boundary layers, models in electromagnetism, waves in toroid cavities.

PUBLICATIONS

BOOKS (MONOGRAPHS)

Polynomial Approximation of Differential Equations, Lecture Notes in Physics, Volume 8, Springer-Verlag, Heidelberg 1992, p. X+303. ISBN: 978-3-662-13878-6

Spectral Elements for Transport-Dominated Equations, Lecture Notes In Computational Science and Engineering, Volume 1, Springer-Verlag, New York 1997, p. X+212. ISBN: 978-3-540-62649-7

Electromagnetism and the Structure of Matter, World-Scientific, Singapore, 2008, p. XII+190. ISBN: 978-981-281-451-7

From Photons to Atoms -The Electromagnetic Nature of Matter, World-Scientific, Singapore, 2019, p. XII+282. ISBN: 978-981-120-423-4

RECENT PAPERS

G. Manzini, **D. Funaro**, G. L. Delzanno, Convergence of Spectral Discretizations of the Vlasov-Poisson System**,** SIAM J. Numerical Analysis, v. 55, n. 5 (2017), pp. 2312-2335.

D. Funaro, High Frequency Electrical Oscillations in Cavities, Mathematical Modelling and Analysis, v. 23, n. 3 (2018), pp. 345-358.

L. Fatone, **D.Funaro**, G. Manzini, Arbitrary-order Time-accurate Semi-Lagrangian Spectral Approximations of the Vlasov-Poisson System, Journal of Computational Physics, v. 384 (2019), pp. 349-375.

L. Fatone, **D. Funaro**, G. Manzini, A Semi-Lagrangian Spectral Method for the Vlasov-Poisson System based on Fourier, Legendre and Hermite Polynomials, Commun. Appl. Math. Comput., v. 1, n. 3 (2019), pp. 333-360.

D. Funaro, Electromagnetic Waves in Annular Regions, Applied Sciences, v. 10, n. 5 (2020), p. 1780.

L. Fatone, **D. Funaro**, G. Manzini, A, On the Use of Hermite functions for the Vlasov-Poisson System, proc. ICOSAHOM (London 2018), LNCSE, v. 134 (2020), pp. 143-153.

A. Chiolerio, L. Diazzi, **D. Funaro**, Highly Directive Biconic Antennas Embedded in a Dielectric, Appl. Sci., v. 10, n. 24 (2020), p. 8828.

D. Funaro, G. Manzini, Stability and Conservation Properties of Hermite-based Approximations of the Vlasov-Poisson System, J. Scientific Computing, v. 88 (2021), 29.

L. Fatone, **D. Funaro**, G. Manzini, A Decision-Making Machine Learning Approach in Hermite Spectral Approximations of Partial Differential Equations, Journal Scientific Computing, v. 92, n.3 (2022).

L. Fatone, **D. Funaro**, High-Order Discretization of Backward Anisotropic Diffusion and Application to Image Processing, Annali dell'Università di Ferrara (2022).

D. Funaro, Ball Lightning as Plasma Vortexes: A Reinforcement of the Conjecture, Applied Sciences, v. 12, n.7 (2022), p. 3451.

D. Funaro, The Space-Time Outside a Pulsating Charged Sphere, Appl. Sci., v. 12, n.14 (2022), p. 7290.

L. Fatone, **D. Funaro**, Electromagnetic Fields Simulating a Rotating Sphere and its Exterior with Implications to the Modeling of the Heliosphere, Math. Meth. Appl. Sci., 1-12 (2022).

D. Funaro, How and why non smooth solutions of the 3D Navier–Stokes equations could possibly develop, Numerische Mathematik, (2022).