

Matematica Numerica

Joaquim Gomes de Souza

Tahan (1964). Antologia da matemática: histórias, fantasias, biografias, numéricas, problemas, curiosidades, recreações numéricas, problemas célebres, erros

Joaquim Gomes de Souza "Souzinha" (15 February 1829, in Itapecuru Mirim – 1 June 1864, in London) was a Brazilian mathematician who worked on numerical analysis and differential equations. He was a pioneer on the study of mathematics in Brazil, and was described by José Leite Lopes as "the first great mathematician from Brazil".

In 1844, Gomes de Souza enrolled at the Faculdade de Medicina do Rio de Janeiro (now a part of the Federal University of Rio de Janeiro) to study medicine. He had a deep love for the natural sciences, which led him to also be interested in mathematics, and so he started to learn mathematics as a self-taught in parallel with his studies of medicine.

In 1848, he obtained his doctorate in mathematics from the Escola Real Militar, with the thesis *Dissertação Sobre o Modo de Indagar novos Astros sem o Auxílio das Observações Directas* (Dissertation about the means of investigating new celestial objects without the aid of direct observations).

He later went to the Sorbonne, in France, where he continued his mathematical studies. He was a personal friend of Cauchy, of whose classes he attended (in one of them, Souza spotted a mathematical mistake by Cauchy, he then...

Maria Adelaide Sneider

memoirs. Fichera, Gaetano (1974), "Metodi e risultati concernenti l'analisi numerica e quantitativa"; [Methods and results concerning numerical and quantitative

Maria Adelaide Sneider (6 December 1937 – 1 May 1989) (also known as Maria Adelaide Sneider Ludovici, her second surname being "Ludovici") was an Italian mathematician working on numerical and mathematical analysis. She is known for her work on the theory of electrostatic capacities of non-smooth closed hypersurfaces: Apart from the development of precise estimates for the numerical approximation of the electrostatic capacity of the unit cube, this work also led her to give a rigorous proof of Green's identities for large classes of hypersurfaces with singularities, and later to develop an accurate mathematical analysis of the points effect. She is also known for her contributions to the Dirichlet problem for pluriharmonic functions on the unit sphere of

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Franco Brezzi

the Director of the Istituto di Analisi Numerica of the CNR from 1992 to 2002 and of the Istituto di Matematica Applicata e Tecnologie Informatiche of

Franco Brezzi (born 29 April 1945 in Vimercate) is an Italian mathematician.

== Education ==

Brezzi graduated in 1967 at the Università di Pavia under the supervision of Enrico Magenes. He was full professor of Mathematical Analysis at the Politecnico di Torino from 1976 to 1977 and then from 1977 to 2006 at the Università di Pavia. He was a professor of Numerical Analysis at the Istituto Universitario di Studi Superiori (IUSS) in Pavia from 2006 until his retirement in 2015. Presently he is Emeritus Professor at IUSS and Associate Researcher at IUSS (Istituto Universitario di Studi Superiori) of Italian CNR (Consiglio

Nazionale delle Ricerche)

Lorenzo Pareschi

the article Numerical Methods for Kinetic Equations, published in Acta Numerica in 2014. Pareschi has served on the editorial boards of several journals

Lorenzo Pareschi is an Italian mathematician working in numerical analysis, applied mathematics, kinetic theory, and multiscale computational methods. He is Chair of Applied and Computational Mathematics at Heriot-Watt University and professor of numerical analysis at the University of Ferrara.

== Career and research ==

Pareschi received his PhD in mathematics in 1996 from the University of Bologna. He has held visiting and research appointments at institutions including the University of Wisconsin–Madison, Georgia Institute of Technology, Université d'Orléans, Université Paul Sabatier, and the Courant Institute of Mathematical Sciences at New York University.

His research concerns numerical methods for kinetic equations, implicit-explicit methods for partial differential equations, uncertainty quantification, structure-preserving methods, and mathematical models of collective behaviour.

He is particularly known for work on the numerical analysis of the Boltzmann equation and related kinetic models, including fast spectral methods for the computation of the Boltzmann collision operator, and

for contributions to implicit-explicit Runge-Kutta methods for multiscale hyperbolic systems...

Gaetano Fichera

dell'Unione Matematica Italiana, Serie 3 (in Italian), 14 (4): 568–570. Fichera, Gaetano (1974a), "Metodi e risultati concernenti l'analisi numerica e quantitativa"

Gaetano Fichera (8 February 1922 – 1 June 1996) was an Italian mathematician, working in mathematical analysis, linear elasticity, partial differential equations and several complex variables. He was born in Acireale, and died in Rome.

== Biography ==

He was born in Acireale, a town near Catania in Sicily, the elder of the four sons of Giuseppe Fichera and Marianna Abate. His father Giuseppe was a professor of mathematics and influenced the young Gaetano starting his lifelong passion. In his young years he was a talented football player. On 1 February 1943 he was in the Italian Army and during the events of September 1943 he was taken prisoner by the Nazist troops, kept imprisoned in Teramo and then sent to Verona: he succeeded in escaping from there and reached the Italian region of Emilia-Romagna, spending with partisans the last year of war. After the war he was first in Rome and then in Trieste, where he met Matelda Colautti, who became his wife in 1952.

List of mathematics journals

Hungarica Acta Mathematica Sinica Acta Mathematicae Applicatae Sinica Acta Numerica Acta Scientiarum Mathematicarum Advances in Applied Clifford Algebras Advances

This is a list of scientific journals covering mathematics with existing Wikipedia articles on them.

== Alphabetic list of titles ==

Istituto per le Applicazioni del Calcolo Mauro Picone

of the Italian National Research Council. Istituto Nazionale di Alta Matematica Francesco Severi See (Ghizzetti 1986, p. 111). See (Fichera 1995, pp. 10–11)

The Istituto per le Applicazioni del Calcolo Mauro Picone (English: Institute for applied mathematics "Mauro Picone"), abbreviated IAC, is an applied mathematics institute, part of the Consiglio Nazionale delle Ricerche. It was founded in 1927 as a private research institute by Mauro Picone, and as such it is considered the first applied and computational mathematics institute of such kind ever founded.

== Historical notes ==

The IAC was founded 1927 by Mauro Picone, while working at the University of Naples Federico II and at the Istituto Universitario Navale as professor of infinitesimal calculus. Luigi Amoroso also contributed to the founding of the institute, by providing to his former Normale schoolfellow Picone the funding for the creation of the Institute by means of the Banco di Napoli.

It was only in 1932, when Picone moved from the University of Naples to the Sapienza University of Rome, that the Institute became part of the Italian National Research Council.

Christian Lubich

numerical integration illustrated by the Störmer-Verlet method; *Acta Numerica*. 12: 399–450. doi:10.1017/S0962492902000144. Cohen, David; Jahnke, Tobias;

Christian Lubich (born 29 July 1959) is an Austrian mathematician, specializing in numerical analysis.

== Education and career ==

After secondary education at the Bundesrealgymnasium in Innsbruck, Lubich studied mathematics at the University of Innsbruck from 1977 to graduation with Magister degree in 1981. He was from 1979 to 1981 a student assistant in Innsbruck and from 1981 to 1983 a research associate in the Sonderforschungsbereich 123 Stochastische mathematische Modelle at the University of Heidelberg. He received his doctorate in 1983 from the University of Innsbruck with dissertation *Zur Stabilität linearer Mehrschrittverfahren für Volterra-Gleichungen* (On stability of linear multistep methods for Volterra equations) under Ernst Hairer and habilitated there in 1987. Lubich was from 1983 to 1987 a university assistant in Innsbruck, in 1986/87 an assistant at the University of Geneva, in 1987/88 a visiting professor at the IRMAR at the University of Rennes, and in 1988 a visiting professor at the University of Geneva. He was from 1991 to 1992 an assistant professor at ETH Zurich and from 1992 to 1994 a professor of applied mathematics at University of Würzburg. He is since 1994...

Linear multistep method

Press. Quarteroni, Alfio; Sacco, Riccardo; Saleri, Fausto (2000), Matematica Numerica, Springer Verlag, ISBN 978-88-470-0077-3. Süli, Endre; Mayers, David

Linear multistep methods are used for the numerical solution of ordinary differential equations. Conceptually, a numerical method starts from an initial point and then takes a short step forward in time to find the next solution point. The process continues with subsequent steps to map out the solution. Single-step methods (such as Euler's method) refer to only one previous point and its derivative to determine the current value. Methods such as Runge–Kutta take some intermediate steps (for example, a half-step) to obtain a higher order method, but then discard all previous information before taking a second step. Multistep methods attempt to gain efficiency by keeping and using the information from previous steps rather than discarding it. Consequently, multistep methods refer to several

previous points and derivative values. In the case of linear multistep methods, a linear combination of the previous points and derivative values is used.

== Definitions ==

Numerical methods for ordinary differential equations approximate solutions to initial value problems of the form

Mean-field particle methods

(July 2025). "Ensemble Kalman methods: A mean-field perspective". *Acta Numerica*. 34: 123–291. doi:10.1017/S0962492924000060. Feynman-Kac models and interacting

Mean-field particle methods are a broad class of interacting type Monte Carlo algorithms for simulating from a sequence of probability distributions satisfying a nonlinear evolution equation. These flows of probability measures can always be interpreted as the distributions of the random states of a Markov process whose transition probabilities depends on the distributions of the current random states. A natural way to simulate these sophisticated nonlinear Markov processes is to sample a large number of copies of the process, replacing in the evolution equation the unknown distributions of the random states by the sampled empirical measures.

In contrast with traditional Monte Carlo and Markov chain Monte Carlo methods these mean-field particle techniques rely on sequential interacting samples. The terminology mean-field reflects the fact that each of the samples (a.k.a. particles, individuals, walkers, agents, creatures, or phenotypes) interacts with the empirical measures of the process. When the size of the system tends to infinity, these random empirical measures converge to the deterministic distribution of the random states of the nonlinear Markov chain, so that the statistical...

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