

STEFANO BERRONE

Curriculum Vitae

Business address: Dipartimento di Scienze Matematiche
Politecnico di Torino

EDUCATION

2001 Ph.D. in Fluid Dynamics, Politecnico di Torino.

1997 Habilitation to the Engineering profession.

1997 Master Degree in Aeronautical Engineering *cum laude*, specialization in Aero-Gas Dynamics, Politecnico di Torino.

ACADEMIC POSITIONS HELD

2018-present Full Professor in Numerical Analysis, Department of Mathematical Sciences, Politecnico di Torino.

2011-2017 Associate Professor in Numerical Analysis, Department of Mathematics/Mathematical Sciences, Politecnico di Torino.

2001-2010 Assistant Professor in Numerical Analysis, Department of Mathematics, Politecnico di Torino.

2000-2001 Research Fellow, Department of Mathematics, Politecnico di Torino.

ORGANIZING EXPERIENCES

2002-2004 Member of the Administrative Board, Department of Mathematics, Politecnico di Torino.

2011-2013 Member of the Administrative Board, Department of Mathematics, Politecnico di Torino.

2013- Member of the Administrative Board, Department of Mathematical Sciences, Politecnico di Torino.

2013- Member of the Development and Planning Board, Department of Mathematical Sciences, Politecnico di Torino.

2018- Member of the Scientific committee for the Excellence Project, Department of Mathematical Sciences, Politecnico di Torino.

2018- Member of the Board “Strategie per le Tecnologie dell’Informazione”, Politecnico di Torino.

2018- Member of the Board “Commissione istruttoria per il coordinamento dell’attività didattica e formativa”, Politecnico di Torino.

2018- Chair of “Collegio di Ingegneria Matematica” managing the education activities of a BCs and a MCs degree, Politecnico di Torino.

2019- Member of the managing board of the education program (MSc) “Data Science and Engineering” for “Collegio di Ingegneria Informatica”, Politecnico di Torino.

SCIENTIFIC ACTIVITIES

Research interests

1. Integration of numerical methods for PDEs and machine learning methods in Physical Informed Machine Learning.
2. Numerical methods for geosciences, advanced numerical methods for flow simulations in fractured media.
3. Virtual Element Method: theoretical investigation and development of the method in applications.
4. Adaptive Finite Element Methods for steady problems.
5. Wavelet Galerkin Methods for elliptic problems on general domains.
6. Adaptive Wavelet Galerkin Methods for elliptic problems.
7. *A posteriori* error estimators based on anisotropic Sobolev norms.
8. Globalization strategies for Newton-Krylov methods.
9. Adaptive methods for parabolic problems.
10. Adaptive methods for distributed control problems.
11. Application of adaptive methods to fluid-dynamic problems.

HPC grants

- Responsible of the project IsC58_HP10CDFLWH “HPCfrac”, 2018, CINECA.
- Responsible of the project IsC20_HP10CFKT1E “ParDFN”, 2014, CINECA.
- Responsible of the project IsC01_HP10CX3ARH “PAFEMNS”, 2010, CINECA.
- Responsible of the project std11 “Advanced numerical techniques for coupled thermo-fluid-dynamical problems”, 2011, CASPUR.
- Responsible of the project std09 “Space-Time adaptivity for incompressible turbulent Navier-Stokes problems”, 2009, CASPUR.

Teaching grants funded by Politecnico di Torino

- Responsible of the project “Formazione agli strumenti di simulazione avanzati per l’ingegneria”, (2011)
- Responsible of the project “SciComDojo”, “Scientific Computing Dojo: esperienze di calcolo scientifico parallelo”, (2015)

Managed Projects and Contracts

- Scientific responsible for several research fellows.

- Responsible of Local Unit of PRIN-MIUR Project "Virtual Element Methods: Analysis and Applications", 2018.
- P.I. of the INdAM-GNCS project 2017 "Tecniche numeriche avanzate basate su discretizzazioni con elementi poligonali/poliedrici per contesti applicativi caratterizzati da una elevata complessità geometrica".
- P.I. of the INdAM-GNCS project 2016 "Tecniche numeriche innovative per la simulazione di flussi in mezzi geologici poro-fratturati".
- Responsible of the Unit at the Department of Mathematical Sciences, Politecnico di Torino of the project Idea (56_RIJ13IDEA), Technology Platform in Automotive POR FESR 2007/2013 co-founded by Regione Piemonte.
- Responsible of the contract "Modelling and simulating sustainable mobility strategies. A study of three real test cases: Turin, Lyon, Milan", funded by Regione Piemonte (CIPE program 2006), 2007-2010.
- Local coordinator of the project "ODE-PDE", funded by Gruppo Nazionale per il Calcolo Scientifico (INdAM), 2003-2004 and 2004-2005.

Visiting Positions

- Long Visiting Positions
 - Oxford University, Computing Laboratory, 2006.
 - Stanford University, Division of Mechanics and Computation, 2002.
- Short Visiting Positions
 - Stanford University, Department of Energy Resources, 2019
 - Würzburg University, Institut für Mathematik, 2013.
 - Stuttgart University, Institut für Angewandte Analysis und Numerische Simulation, 2008.
 - Oxford University, Computing Laboratory, 2008.
 - University of Ulm, Institut für Numerische Mathematik, 2006.
 - Ecole Polytechnique Fédérale de Lausanne (EPFL), Institut d'Analyse et Calcul Scientifique, 2005.

Referee Activity

Referee for the following international Journals:

Journal of Hydrology, Computational Geosciences, Computers and Geosciences, Computers and Mathematics with Applications, Applied Mathematics Letters, Journal of Petroleum Science and Engineering, Advances in Water Resources, Journal of Applied Mathematics and Computing, Numerical Methods for Partial Differential Equations, Oil & Gas Science and Technology-*Revue d'IFP Energies nouvelles*, ESAIM: Mathematical Modelling and Numerical Analysis, Advances in Computational Mathematics, Calcolo, Mathematics of Computation, SIAM Journal on Numerical Analysis, SIAM Journal of Scientific Computing, IMA Journal of Numerical Analysis, Journal of Computational and Applied Mathematics, Simulation Modelling Practice and Theory, Mathematical Models and Methods in Applied Sciences, Computer Methods in Applied Mechanics and Engineering, Applied Numerical Mathematics, Journal of Applied Mathematics and Computing, Numerical Algorithms, Physics Letters A.

Organizing committee

- Co-chair of the second level master program “Master in Matematica Industriale”, 2011-2013.
- C.I.M.E. course “Multiscale Problems and Methods in Numerical Simulations”, Martina Franca, 9-15 Settembre 2001.
- G.N.C.S. national congress “Metodologie Numeriche per il Calcolo Scientifico”, Torino, 14-16 Febbraio 2001.

TEACHING EXPERIENCES

- 6 approved PhD Theses;
- 4 running PhD Theses;
- 2 second level Master Theses;
- more than 20 Master Theses;
- more than 20 Bachelor Theses.

Teacher in the following courses (Bachelor, Master, PhD, all classes at PoliTo):

Numerical Methods, Numerical Methods and Optimization, Numerical Methods and Statistic, Algorithms and Data Structures, Numerical Methods for PDEs, Numerical Methods and Scientific Computing, Coding and Scientific Computing, Computational Linear Algebra for Large Scale Problems, Linear Algebra and Geometry, and Mathematical Analysis (Responsible of more than 40 courses, Collaborator in more than 60 courses).

Responsible for 1 Ph.D. course and Collaborator for 3 Ph.D. courses

Since 2013 teacher of the courses Numerical Methods for Engineering at the Turin Tashkent University (TTPU), Uzbekistan. In 2016 teacher of the course Numerical Modeling at the TTPU. Since 2019 teacher of the course Geometry II at the TTPU. Teacher of part of the courses in Mathematical Analysis I and II and Computer Systems at the TTPU.

Membership to Ph.D. teaching boards

- Member of the teaching board of the Ph.D. program Matematica Applicata (Applied mathematics), Politecnico di Torino (12/11/2013 - 2016)
- Member of the teaching board of the Ph.D. program Matematica Pura e Applicata (Pure and applied mathematics), Università degli Studi di Torino (02/04/2016 - present)

Torino, October 1, 2021

Stefano Berrone