

SIMONA PEROTTO

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MOX - Modeling and Scientific Computing
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Education

- 1995: Master Degree in Mathematics, University of Torino, summa cum laude; advisor : Prof. C. Dagnino.
- 1999: Ph.D. in Computational Mathematics and Operations Research, University of Milano; advisor: Prof. A. Quarteroni.

Held positions

- 01/11/1998-31/10/2000: Post-Doc in Scientific Computing and Mathematical Modeling, Department of Mathematics, EPFL, Lausanne, Switzerland.
- 01/11/2000-31/08/2001: Post-Doc on “Interdisciplinary Parallel Adaptive CFD Solvers”, Department of Mathematics, Politecnico di Milano, Italy.
- 01/09/2001-15/12/2010: Assistant Professor in Numerical Analysis, Department of Mathematics, Politecnico di Milano, Italy.
- 16/12/2010-present: Associate Professor in Numerical Analysis, Department of Mathematics, Politecnico di Milano, Italy.
- from 2017: member of the Management Committee of the Interdepartmental Laboratory MetaMAT-Lab (Metamaterial Laboratory), Politecnico di Milano, Italy.
- From August 2017: National Scientific Habilitation to Full Professorship (Abilitazione Scientifica Nazionale per Professore di Prima Fascia) in Numerical Analysis.

Grants and awards

- 2007: prize Young Researchers, Department of Mathematics, Politecnico di Milano.
- FIRB2008: *Advanced Statistical and Numerical Methods for the Analysis of High Dimensional Functional Data in Life Sciences and Engineering*; P.I.: Dr. L. Sangalli. Role: Co-P.I (December 1, 2010 – 1 August, 2014).
- NSF Project, DMS 1419060: *Hierarchical Model Reduction Techniques for Incompressible Fluid-Dynamics and Fluid-Structure Interaction Problems*; P.I.: Prof. A. Veneziani. Role: Co-P.I (July 1, 2014 – 30 June, 2018).
- 2014: “HiMOD and HiPOD Methods for Solving Direct and Inverse Problems in Internal Fluid Dynamics”, M. Aletti, A. Barone, S. Guzzetti, M. Lupo Pasini, S. Perotto, A. Veneziani. Poster Awarded at the International CAE Conference 2014, 27-28 October 2014, Pacengo del Garda, Italy.
- 2015: the paper “Coupled model and grid adaptivity in hierarchical reduction of elliptic problems”, S. Perotto, A. Veneziani, *J. Sci. Comput.*, **60** (2014), no. 3, 505-536 has been listed among the most notable papers 2014 for the class of Mathematics of Computing (out of 6 papers) by the Association of Machine Computing.
- 2015: “High Performing Free-Form Design and Material Optimization for Additive Layer

Manufacturing”, A.N. Albini, S. Micheletti, S. Perotto, L. Soli, D.A. Tobia. Poster Awarded at the International CAE Conference 2015, 19-20 October 2015, Pacengo del Garda, Italy.

Participation to other projects¹

- *PRIN 2003: Numerical Models for Advanced Applications in Fluid Mechanics and Electro Dynamics*. P.I.: Prof. A. Quarteroni. Role: senior collaborator (24 months).
- *PRIN 2004: Numerical and Modeling Adaptivity for Partial Differential Equations*. P.I.: Prof. F. Brezzi. Role: senior collaborator (24 months).
- *IndAM (National Institute of Advanced Mathematics) 2004 Project: Numerical Methods for Unsteady Multiscale Problems*. Role: coordinator of the workgroup of Politecnico di Milano (12 months).
- *PRIN 2006: Numerical Approximation of Multiscale and Multi-Physics Problems with Adaptive Techniques*. P.I.: Prof. F. Brezzi. Role: senior collaborator (24 months).
- *Modeling of the Dynamic Evolution of a Sedimentary Basin and of the Primary Migration of Hydrocarbons in the Mother Rock*, in collaboration with ENI S.p.A. P.I.: Prof. A. Quarteroni. Role: senior collaborator (August 28, 2007 – 31 December, 2009).
- *Numerical Modeling of Geological Processes*, in collaboration with ENI S.p.A. P.I.: Prof. A. Quarteroni, L. Formaggia. Role: senior collaborator (December 19, 2008 – 18 December, 2011).
- *Development of Innovative Techniques for the Depth Imaging with RTM*, in collaboration with ENI S.p.A. P.I.: Prof. A. Quarteroni, L. Formaggia. Role: senior collaborator (June 1, 2008 – 31 May, 2011).
- *PRIN 2008: Adaptive and Non-Conformal Techniques for the Numerical Approximation of Multi-Physics Problems*. P.I.: Prof. F. Brezzi. Role: senior collaborator (March 22, 2010 – September 22, 2012).
- *PRIN 2011: Innovative Methods for Water Resources Management under Hydro-Climatic Uncertainty Scenarios*. P.I.: Prof. A. Bellin. Role: senior collaborator February 1, 2013 – February 1, 2016).
- *Vinci 2014: Metodi Numerici Misti di Ordine Arbitrario per la Simulazione di Flussi in Mezzi Porosi Fratturati*. P.I.: Prof. L. Formaggia. Role: senior collaborator (36 months).
- *Grant FARB (Fondo di Ateneo per la Ricerca di Base), Politecnico di Milano: Ottimizzazione Topologica Guidata da Adattamento di Griglia*. Role: P.I (November 2015 – October 2018).
- *POLIMI International Fellowship: Ill-Posed Inverse Problems and Applications*. P.I.: Prof. E. Beretta. Role: co-P.I (November 2015 – October 2017).
- *GNCS 2016: Tecniche di Riduzione della Complessità Computazionale per le Scienze Applicate*. P.I.: Prof. G. Rozza. Role: senior collaborator (March 2016 – February 2017).
- *Studio, Design, Ottimizzazione Topologica ALM di Applicazione Spaziale con Metodi Matematici Innovativi Basati su Adattamento Anisotropo di Mesh*, in collaboration with ThalesAlenia Space. P.I.: Prof. S. Perotto (August 30, 2016 – 31 December, 2016).
- *GNCS 2017: Metodi Numerici Avanzati Combinati con Tecniche di Riduzione Computazionale per PDEs Parametrizzate ed Applicazioni*. P.I.: Prof. G. Rozza. Role: senior collaborator (March 2017 – February 2018).
- *GNCS 2018: Tecniche di Riduzione di Modello per le Applicazioni Mediche*. P.I.: Prof. S. Perotto (March 2018 – February 2019).
- *GNCS 2019: Advanced Intrusive and Non-Intrusive Model Order Reduction Techniques and Applications*. P.I.: Prof. G. Rozza. Role: senior collaborator (March 2019 – February 2020).
- *Tutela e Valorizzazione della Proprietà Intellettuale nell'Ambito del Piano Industria 4.0. Algoritmi Matematici, Software e Sistemi di Progettazione Assistita al Calcolatore*, in collaboration with Politecnico di Milano-Technology Transfer Office. P.I.: Prof. S. Perotto (April 1, 2019 - March 31, 2020).

¹ COFIN, PRIN and GNCS are projects awarded by the Italian Ministry of University and Research.

Patents

- *Adaptive Topology Optimization for Additive Layer Manufacturing*.
International PCT patent application n. WO2018096462 (priority date: November 22, 2016).
Inventors: Simona Perotto, Stefano Micheletti, Luca Soli;
Assignee: Politecnico di Milano, Thales Alenia Space Italia S.p.a.

Teaching (most recent/relevant courses)

- *Metodi Numerici e Analitici per l'Ingegneria* (Professor), Energy Engineering, Politecnico di Milano (2019).
- *Numerical Analysis* (Professor), Civil Engineering, Politecnico di Milano (2018).
- *MATH 315, Numerical Analysis* (Professor), Mathematics, **Emory University, USA** (spring 2018).
- *Numerical Analysis for Partial Differential Equations* (Professor), Mathematical Engineering, Politecnico di Milano (2014-2017).
- *Numerical Analysis* (Professor), Computer, Telecommunications, Automation, Electronic, Sound and Acoustics Engineering, Politecnico di Milano (since 2013).
- *Numerical Analysis* (Professor), Aerospace Engineering, Politecnico di Milano (2001-2013).
- *Numerical Analysis for Partial Differential Equations* (Assistant), Mathematical Engineering, Politecnico di Milano (2004-2012).
- Continuing Education Courses on “*Finite Element Method and its Applications*” (2003, 2004, 2006, 2007), and on “*Grid Generation and Adaptivity*” (2005, 2008), MOX, Department of Mathematics, Politecnico di Milano.
- ATHENS Course on “*Introduction to Finite Elements and Applications*”, MOX, Department of Mathematics, Politecnico di Milano, November 18-22, 2013 (in collaboration with TU Delft).
- Course on “*Recent Challenges in Numerical Analysis*”, Ph.D. School in Mathematical Models and Methods in Engineering, Department of Mathematics, Politecnico di Milano (a.y. 2013-2014).
- Course on “*Advanced Numerical Methods in Scientific Computing*”, Ph.D. School in Mathematical Models and Methods in Engineering, Department of Mathematics, Politecnico di Milano (a.y. 2015-2016).

PhD Students

1. Giovanni Porta.

Anisotropic mesh adaptation for shallow water modeling.

Role: Advisor.

Ph.D. in Hydraulic Engineering, Department of Civil and Environmental Engineering, Politecnico di Milano (final discussion: February 19, 2010).

2. Franco Dassi.

Advanced techniques for the generation and the adaptation of complex surface meshes.

Role: Advisor.

Ph.D. in Mathematical Models and Methods in Engineering, Department of Mathematics, Politecnico di Milano (final discussion: September 17, 2014).

3. Bahman Esfandiar.

The impact of space-time adaptation techniques on solute transport modeling in porous media.

Role: Advisor.

Ph.D. in Environmental and Infrastructure Engineering, Department of Civil and Environmental Engineering, Politecnico di Milano (final discussion: October 17, 2014).

4. Simone Brugiapaglia.

COmpRessed SolvING: sparse approximation of PDEs based on compressed sensing.

Role: Advisor.

Ph.D. in Mathematical Models and Methods in Engineering, Department of Mathematics, Politecnico di Milano (final discussion: January 18, 2016).

5. Marianna Signorini.

Innovative models and methods for geoscience.

Role: Advisor.

Ph.D. in Mathematical Models and Methods in Engineering, Department of Mathematics, Politecnico di Milano (final discussion: July 19, 2016).

6. Nicola Ferro.

Topology optimization: advanced techniques for new challenges.

Role: Advisor.

Ph.D. in Mathematical Models and Methods in Engineering, Department of Mathematics, Politecnico di Milano (final discussion: February 12, 2019).

7. Yves Antonio Brandes Costa Barbosa.

Subject: *hierachical model reduction with applications in haemodynamics.*

Role: Advisor.

Ph.D. in Mathematical Models and Methods in Engineering, Department of Mathematics, Politecnico di Milano (ongoing).

8. Laura Boniotti.

Subject: *advanced materials and smart structures.*

Role: Co-advisor.

Ph.D. in Mechanical Engineering, Department of Mechanics, Politecnico di Milano (ongoing).

9. Matteo Gavazzoni.

Subject: *advanced materials and smart structures.*

Role: Co-advisor.

Ph.D. in Mechanical Engineering, Department of Mechanics, Politecnico di Milano (ongoing).

MS students

1. Valerio Cereda.

Mesh adaptation driven by a posteriori error estimators for the study of the strain state under static and dynamic conditions.

Mechanical Engineering Degree, Politecnico di Milano (a.y. 2005-2006).

2. Lorenzo Mauri.

Coupling of 1D and 2D hydrodynamic models for the free surface flow simulation.

Environmental Engineering Degree, Politecnico di Milano (a.y. 2006-2007).

3. Pantaleo Acquaviva.

Time adaptation driven by an a posteriori error estimator for the numerical simulation of engineering systems.

Aeronautical Engineering Degree, Politecnico di Milano (a.y. 2007-2008).

4. Simone Pezzuto.

Space-time adaptation for nonlinear reaction-diffusion systems applied to electrocardiology.

Mathematical Engineering Degree, Politecnico di Milano (a.y. 2008-2009).

5. Alessandro Zilio.

Anisotropic models: numerical analysis and approximation.

Mathematical Engineering Degree, Politecnico di Milano (a.y. 2009-2010).

6. Nicoletta Papucci.

Anisotropic mesh adaptation applied to image segmentation.

Mathematical Engineering Degree, Politecnico di Milano (a.y. 2010-2011).

7. Alberto Crivellaro.

Adaptive reconstruction of sparse data via radial basis functions.

Mathematical Engineering Degree, Politecnico di Milano (a.y. 2010-2011).

8. Tommaso Taddei.
Basi ridotte: mappe transfinite per domini parametrici e leggi di conservazione
(winner of the Carlo Cercignani prize 2012).
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2011-2012).
9. Bardelli Alessandro.
A machine learning approach for mesh adaptivity in a goal-oriented framework.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2011-2012).
10. Stefano Zonca.
Isotropic volume and surface mesh adaptation driven by a Zienkiewicz-Zhu error estimator with an application to haemodynamics.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2012-2013).
11. Francesco Cremonesi.
Mesh adaptation for the design of lighter than air vehicles.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2012-2013).
12. Massimiliano Lupo Pasini.
HI-POD: Hierarchical model reduction driven by a Proper Orthogonal Decomposition for advection-diffusion-reaction problems.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2012-2013).
13. Matteo Carlo Maria Aletti.
Educated bases for Hierarchical Model reduction in 2D and 3D.
(winner of the Carlo Cercignani prize 2013).
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2012-2013).
14. Davide Longoni.
Anisotropic mesh adaptation driven by a recovery-based goal-oriented error estimator applied to the linearized shallow water equations.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2012-2013).
15. Michele Haile.
Restauro di immagini tomografiche mediche tramite l'uso di metodi di image inpainting.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2012-2013).
16. Sofia Guzzetti.
Hierarchical model reduction for incompressible flows in cylindrical domains.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2013-2014).
17. Alessandro Barone.
Parallel and multilevel techniques for hierarchical model reduction.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2013-2014).
18. Andr  Nicol Albini.
Topological optimization driven by mesh adaptation for additive manufacturing applications.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2014-2015).
19. Nicola Ferro.
Propagation of fractures in brittle materials induced by a thermal shock.
(winner of the Carlo Cercignani prize 2015).
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2014-2015).
20. Paolo Rusconi.
Hierarchical model reduction for internal fluid dynamics in curved domains with an isogeometric analysis.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2014-2015).
21. Daniele Alessandro Tobia.
Manifattura additiva e ottimizzazione topologica: nuove prospettive per gli equipaggiamenti di satellite.
Aeronautical Engineering Degree, Politecnico di Milano (a.y. 2014-2015).
22. Luca Borchini.
PGD and HiPOD solutions of geometrically parameterized Stokes flow in haemodynamics.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2014-2015).

23. Alessandro D'Amario.
A reduced-order Inverse Distance Weighting technique for the efficient mesh-motion of deformable interfaces and moving shapes in computational problems.
Aeronautical Engineering Degree, Politecnico di Milano (a.y. 2014-2015).
24. Maria Cristina Cova.
Hierarchical Model reduction for parameter-dependent problems: application to the Navier-Stokes equations.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2014-2015).
25. Luca Marco Valsecchi.
Reduced order methods for PDEs: a comparison between Proper Orthogonal Decomposition and Proper Generalized Decomposition.
Aeronautical Engineering Degree, Politecnico di Milano (a.y. 2014-2015).
26. Yves Antonio Brandes Costa Barbosa.
Hierarchical model reduction with isogeometric approximation applied to data assimilation.
Automation and Control Engineering Degree, Politecnico di Milano (a.y. 2015-2016).
27. Chiara Doriana Schenardi.
Problemi di diffusione e trasporto: schemi di discretizzazione continui e discontinui con adattamento di griglia.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2015-2016).
28. Matteo Zancanaro.
Hierarchical model reduction techniques for flows in a parametric setting.
Aeronautical Engineering Degree, Politecnico di Milano (a.y. 2015-2016).
29. Stefania Fresca.
Goal-oriented mesh adaptivity for topology optimization.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2015-2016).
30. Cristina Vaghi.
POD reduced order modelling for cortical spreading depression.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2015-2016).
31. Diana Volponi.
Riduzione gerarchica di modello per problemi di interazione fluido struttura in emodinamica.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2015-2016).
32. Beatrice Giacomini.
Inverse problems and model reduction: a Bayesian approach.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2015-2016).
33. Michele Giuliano Carlino.
Model reduction by Proper Generalized Decomposition in electrocardiology.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2016-2017).
34. Tommaso Ferri.
Topology and shape optimization for structural design.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2016-2017).
35. Alessia Mirto.
Ottimizzazione topologica multi-obiettivo per applicazioni aerospaziali.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2016-2017).
36. Francesco Migliorini.
Reconstruction of 3D surfaces with sharp features from scattered data via radial basis functions.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2016-2017).
37. Carola Ferrando
Isogeometric hierarchical model reduction for parameter-dependent problems.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2016-2017).
38. Giulia Meglioli.
Comparison of model order reduction approaches in parametrized optimal control problems.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2016-2017).
39. Marco Splendiani.

Metodi innovativi per la progettazione di sistema applicata ai sistemi spaziali radar SAR.
Aeronautical Engineering Degree, Politecnico di Milano (a.y. 2016-2017).

40. Nicolò Ripamonti.
Energy-preserving model reduction of fluid flows.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2016-2017).

41. Barbara Francesca Del Gaudio.
Analysis, prediction and clustering of residential water demand by Proper Orthogonal Decomposition.
Automation and Control Engineering Degree, Politecnico di Milano (a.y. 2016-2017).

42. Cesare Giannetti.
A reduced basis method for electrophysiology: propagating steep front by L1-norm minimization.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2016-2017).

43. Anna Cosmo.
Mesh adaptation techniques driven by hierarchical Bayesian models.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2017-2018).

44. Davide Cortellessa.
A level set method with mesh adaptation for topology optimization.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2017-2018).

45. Riccardo Segliani.
Optimal reconstruction of patient-specific geometries.
Automation and Control Engineering Degree, Politecnico di Milano (a.y. 2017-2018).

46. Anna Maria Ranno.
Recovery-based error estimators for age-structured model with spatial diffusion in cell population dynamics.
Mathematical Engineering Degree, Politecnico di Milano (a.y. 2017-2018).

47. Elisa Ghiringhelli.
Subject: *PGD applied to selective laser melting processing.*
Mathematical Engineering Degree, Politecnico di Milano (ongoing).

48. Stefano Piccardo.
Subject: *hierarchical model reduction and multiscale homogenization for fluid flow modeling in porous media.*
Mathematical Engineering Degree, Politecnico di Milano (ongoing).

49. Giovanni Conni.
Subject: *hierarchical model reduction and multiscale homogenization for fluid flow and mass transfer modeling.*
Mathematical Engineering Degree, Politecnico di Milano (ongoing).

50. Mario Allora.
Subject: *anisotropic mesh adaptation for a DG discretization.*
Mathematical Engineering Degree, Politecnico di Milano (ongoing).

51. Alberto Bocchinfuso.
Subject: *data assimilation techniques.*
Automation and Control Engineering Degree, Politecnico di Milano (ongoing).

52. Francesco Clerici.
Subject: *image segmentation with mesh adaptation.*
Mathematical Engineering Degree, Politecnico di Milano (ongoing).

53. Leonardo Locatelli.
Subject: *image segmentation from indirect measurements.*
Mathematical Engineering Degree, Politecnico di Milano (ongoing).

54. Leonardo Boledi.
Subject: *hierarchical model reduction for flow profiles in cooling channels.*
Mathematical Engineering Degree, Politecnico di Milano (ongoing).

55. Wael Mohammed Alsaïd Tawfik Wanis.
Subject: *development of a GUI/APP for topology optimization.*
Automation and Control Engineering Degree, Politecnico di Milano (ongoing).

Erasmus Projects

1. Juan Ignacio Garcia Nicolas.

Segmentation of images based on anisotropic mesh adaptation.

ERASMUS+ Student Placement European Programme between Politecnico di Milano and Universidad Politecnica de Valencia (October 24 – December 23, 2016).

2. Xavier Guzmán Carsí.

Topic: *structural topology optimization.*

ERASMUS Student, Máster Universitario en Ingeniería Mecánica, Universidad Politecnica de Valencia (September 10, 2018 – February 28, 2019).

Industrial and Academic Stages

1. André Nicol Albini, Master Degree student in Mathematical Engineering, Politecnico di Milano:

Modeling, analysis and optimization of structures in additive layer manufacturing for applications in aerospace engineering.

Thales Alenia Space Italia, Gorgonzola, Milano (October 15, 2014 – October 13, 2015).

2. Daniele Alessandro Tobia, Master Degree student in Aeronautical Engineering, Politecnico di Milano:

Possible evolutions of satellite equipments via design and technologies in additive layer manufacturing.

Thales Alenia Space Italia, Gorgonzola, Milano (October 15, 2014 – October 13, 2015).

3. Alessia Mirto, Master Degree student in Mathematical Engineering, Politecnico di Milano:

Multi-objective optimization of structures in additive layer manufacturing for aerospace industrial equipments.

Thales Alenia Space Italia, Gorgonzola, Milano (October 19, 2015 – October 18, 2016).

4. Alex Viguerie, Ph.D. student in Applied Mathematics, Emory University:

Hierarchical model reduction applied to haemodynamic problems.

Politecnico di Milano (September 9, 2015 – February 20, 2016).

5. Cristina Vaghi, Master Degree student in Mathematical Engineering, Politecnico di Milano:

Implementation of POD techniques in cortical spreading depression simulation.

BCAM, Bilbao (October 3 – December 31, 2016).

6. Marco Splendiani, Master Degree student in Aeronautical Engineering, Politecnico di Milano:

Innovative architectures, emerging technologies and new applications for microsatellites.

Thales Alenia Space Italia, Gorgonzola, Milano (December 15, 2016 – December 14, 2017).

7. Matteo Metra, Master Degree student in Mathematical Engineering, Politecnico di Milano:

Optimisation de forme en simulation hydrodynamique du pneumatique.

MICHELIN, Clermont-Ferrand (March 6 - September 8, 2017).

8. Francesco Cola, Master in “Scientific Computing”, Università La Sapienza, Roma.

Adaptive and Bayesian algorithms for image segmentation.

Politecnico di Milano (October 19, 2017 – April 16, 2018).

9. Claudia Alvarez, Master Degree student in Civil Engineering, UPC, Barcelona.

Topic: *PGD model reduction for the modeling of pollutant diffusion in an urban area.*

Politecnico di Milano (March 4 – May 31, 2019).

Conferences and workshops organization

- *Second ESF International Conference.* Il Ciocco, October 12-14, 2000.

- *Workshop on Anisotropic Grids: Generation, Adaption and Error Estimation.* MOX, Dipartimento di Matematica, Politecnico di Milano, June 21, 2002.

- *MATHKNOW08, Mathematics, Applied Sciences and Real Life.* Politecnico di Milano, May 22-24, 2008.

- *SIMAI 2010.* Università di Cagliari, June 21-25, 2010.

- *MOX10 : Immaginare il Futuro con uno Sguardo al Passato.* MOX, Department of Mathematics, Politecnico di Milano, May 28, 2012.

- *The Fourth Tetrahedron Workshop on Grid Generation for Numerical Computations.* Verbania, July 1-3, 2013.

- *Recent Developments in Numerical Methods for Model Reduction.* IHP Conference, Paris, November 7-10 2016.

- *FEF 2017, the 19th International Conference on Finite Elements in Flow Problems*. Rome, April 5-7, 2017.
- *ADMOS 2017, the 8th International Conference on Adaptive Modeling and Simulation*. Verbania, June 26-28 2017.
- *COUPLED PROBLEMS 2021, the 9th International Conference on Coupled Problems in Science and Engineering*. Chia Laguna, 2021.

Minisimposia organization

1. *Tecniche Adattative nella Simulazione Numerica e nel Trattamento di Dati*. SIMAI 2002, Chia Laguna, May 29 (organization joined with C. Canuto and S. Micheletti).
2. *Anisotropic Mesh Adaptation and Error Estimation*. ECCOMAS 2004, Jyväskylä, July 26 (organization joined with L. Formaggia).
3. *A Posteriori Error Control in Finite Element Procedures*. ADMOS 2005, Barcelona, September 9 (organization joined with L. Formaggia).
4. *Multi-Model Approximation*. MAFELAP 2006, Brunel University, London, June 16 (organization joined with A. Ern).
5. *Matematica e Impresa - L'Esperienza al MOX*. SIMAI 2008, Roma, September 15 (organization joined with A. Quarteroni and M. Verani).
6. *Anisotropic Adaptive Meshes: Error Analysis and Applications*. ENUMATH 2009, Uppsala, June 29 (organization joined with T. Coupez).
7. *Anisotropic Adaptive Meshing: from Error Analysis to Applications*. ECCM 2010, Paris, May 19 (organization joined with T. Coupez and Y. Mesri).
8. *Numerical Methods for Fluid Mechanics*. CMWR 2010, Barcelona, June 24.
9. *Domain Decomposition Methods, Iterative Solvers and Adaptive Methods*. SIMAI 2010, Cagliari, June 22-23 (organization joined with B.A. de Dios, S. Scacchi and M. Verani).
10. *Unstructured Mesh Generation and Adaptivity*. FEF 2011, Munich, March 23-24 (organization joined with O. Hassan).
11. *Recent Developments in Mesh Adaptation*. ENUMATH 2011, Leicester, September 7-8 (organization joined with P.E. Farrell and S. Micheletti).
12. *Numerical Methods in the Context of Model Reduction*. ENUMATH 2011, Leicester, September 6 (organization joined with M. Ohlberger and K. Smetana).
13. *Adaptive Meshing and Error Estimation (in honor of J. Tinsley Oden's 75th birthday)*. WCCM 2012, Sao Paulo, July 9-10 (organization joined with T. Coupez, S. Prudhomme and K.G. van der Zee).
14. *Error Estimation and Adaptive Mesh Generation*. ECCOMAS 2012, Vienna, September 13-14 (organization joined with S. Prudhomme, K.G. van der Zee and E.H. van Brummelen).
15. *Anisotropic Meshes: Generation, Adaptation and Error Analysis*. ADMOS 2013, Lisbon, June 4 (organization joined with T. Coupez).
16. *Adaptive Finite Elements*. ENUMATH 2013, Lausanne, August 27-28 (organization joined with S. Micheletti and M. Picasso).
17. *Surrogate Modeling Approaches for PDEs*. ENUMATH 2013, Lausanne, August 26 (organization joined with K. Smetana and A. Veneziani).
18. *Multiphysics Simulations with Industrial Applications*. ECMI 2014, Taormina, June 9-10 (organization joined with S. Micheletti).
19. *Model Order Reduction and Highly Demanding Applications*. First Joint International Meeting RSME-SCM-SEMA-SIMAI-UMI, Bilbao, June 30-July 1, 2014 (organization joined with F. Auricchio, P. Díez and A. Huerta).
20. *Mathematical and Numerical Solution of PDEs on Manifolds*. 2015 SIAM Conference on Computational and Mathematical Issues in the Geosciences, Stanford, CA, July 2 (organization joined with S. Lanzoni and M. Putti).
21. *Mesh & Adaptivity*. ADMOS 2015, Nantes, June 8-9 (organization joined with T. Coupez).
22. *Model and Solution Reduction Methods for Direct and Inverse Problems in Computational Mechanics*. USNCCM13, San Diego, CA, July 28-29, 2015 (organization joined with P.J. Blanco and A.

Veneziani).

23. *Advanced Numerical Methods for Partial Differential Equations and Applications*. SIMAI 2016, Milano, September 15 (organization joined with M. Falcone and G. Rozza).
24. *Model Reduction: Methods, Algorithms, Applications*. SIMAI 2016, Milano, September 16 (organization joined with M. Falcone and G. Rozza).
25. *Model and Solution Reduction Methods in Computational Mechanics: Challenges and Perspectives*. CSE17, Atlanta, GA, March 3 (organization joined with A. Veneziani).
26. *Geometry Modeling, Mesh Generation and Adaptation*. FEF 2017, Rome, April 5-7 (organization joined with S. Shontz, H. Speleers and J. Zhang).
27. *Recent Advances in Numerical Methods for Micro and Macro Models in Fluid-Dynamics (flag event CECAM)*. FEF 2017, Rome, April 7 (organization joined with M. Falcone, G. Ciccotti and G. Rozza).
28. *Advanced Models and Methods in CFD*. COUPLED PROBLEMS 2017, Rhodes, June 13-14 (organization joined with A. Quaini, G. Rozza).
29. *Advances in Reduced Basis Techniques for Flow Problems in Analysis, Control and Optimization*. ECCM-ECFD 2018, Glasgow, June 13 (organization joined with M. Fossati, A. Quaini, G. Rozza).
30. *Advanced Models and Methods in CFD*. ICOSAHOM 2018, London, July 9 (organization joined with A. Quaini, G. Rozza).
31. *Reduced Order Methods for Parametric CFD Problems*. WCCM2018, New York City, July 26-27 (organization joined with A. Quaini, G. Rozza).
32. *Reduced Order Modeling for Parametric CFD Problems*. SIAM-CSE 2019, Spokane, WA, February 27 (organization joined with A. Quaini, G. Rozza).
33. *Enhancing Flow Simulations: Stabilization, Adaptivity, Model Reduction*. FEF 2019, Chicago, IL, March 31-April 3 (organization joined with D. Marini, G. Rozza).
34. *Advances in Optimization Problems Based on Error Estimators and Mesh Adaptation*. ADMOS 2019, El Campello (Alicante), May 27-29 (organization joined with M. Giacomini).
35. *Model Reduction in Computational Mechanics*. COUPLED PROBLEMS 2019, Sitges (Barcelona), June 3-5 (organization joined with A. Reali, A. Veneziani).
36. *Mathematical Methods for Optimal Design of Structures*. Sim-AM 2019, Pavia, September 11-13 (organization joined with M. Giacomini).

Service

- member of SIMAI and INdAM-GNCS (since 2001);
- member of Gruppo Divulgazione SIMAI-DMA (2008-2016);
- member of the network EU-MORNET (since 2014);
- member of AIM-PoliMi (since July 2016);
- member of the ECCOMAS Ph.D. Award committee, Barcelona, May 9, 2014;
- member of the Scientific Committee of ADMOS 2019 Conference, El Campello (Alicante), May 27-29, 2019;
- member of the Scientific Committee of COUPLED PROBLEMS 2019 Conference, Sitges (Barcelona), June 3-5, 2019;
- member of the teaching committee of the Department of Mathematics, Politecnico di Milano (February 2009 - December 2016);
- member of the evaluation committee for the Ph.D. in Mathematical Models and Methods in Engineering, Department of Mathematics, Politecnico di Milano: July 2012 (XXVIII cycle); July 2015 (XXXI cycle);
- member of the Scientific Board of the Ph.D. in Mathematical Models and Methods in Engineering, Department of Mathematics, Politecnico di Milano (since 2012);
- member of the editorial board of ETNA (Electronic Transactions on Numerical Analysis) journal;
- member of the evaluation panel for the Ph.D. dissertation of G. El Jannoun, Doctorat ParisTech, CEMEF-Ecole des Mines de Paris, Sophia Antipolis, September 22, 2014;
- member of the evaluation panel for the Ph.D. dissertation of J. Zhao, Ph.D. in Sciences Fondamentales et Appliquées, Ecole Centrale de Nantes, March 3, 2016;
- member of the evaluation panel for the Ph.D. dissertation of A. Tagliabue, Ph.D. in Mathematical Models and

- Methods in Engineering, Politecnico di Milano, March 16, 2016;
- member of the evaluation panel for the Ph.D. dissertation of D. Cagnoni, Ph.D. in Mathematical Models and Methods in Engineering, Politecnico di Milano, March 16, 2016;
 - member of the evaluation panel for the Ph.D. dissertation of E. Boey, Faculty of Graduate and Postdoctoral Studies, University of Ottawa, November 17, 2016;
 - member of the evaluation panel for the Ph.D. dissertation of R. García-Blanco, Programa de Doctorat de Matemàtica Aplicada, UPC, Barcelona, February 9, 2017;
 - member of the evaluation panel for the Ph.D. dissertation of G. Alaimo, V. Mercuri, R.M. Romarowski, X. Zou, Ph.D. in Civil Engineering and Architecture, University of Pavia, March 12, 2018;
 - member of the evaluation panel for the Ph.D. dissertation of P.C. Africa, Ph.D. in Mathematical Models and Methods in Engineering, Politecnico di Milano, February 8, 2019;
 - member of the evaluation panel for the Ph.D. dissertation of D. Riccobelli, Ph.D. in Mathematical Models and Methods in Engineering, Politecnico di Milano, February 8, 2019;
 - scientific referee for the VENI project in 2009;
 - member of the Program Committee of the International Conference NUMGRID-2018/VORONOI-150, Moscow, December 3-5, 2018;
 - scientific referee for several scientific journals:
 - Advances in Numerical Analysis
 - Advances in Water Resources
 - Annali di Matematica Pura ed Applicata
 - Applied Mathematical Modelling
 - Applied Mathematics and Computation
 - Applied Numerical Mathematics
 - Calcolo
 - Computer Methods in Applied Mechanics and Engineering
 - Computers and Mathematics with Applications
 - International Journal for Numerical Methods in Engineering
 - International Journal for Numerical Methods in Fluids
 - Journal of Mathematical Sciences
 - Journal of Numerical Mathematics
 - Journal of Computational Physics
 - Mathematics of Computation
 - M2AN Mathematical Modelling and Numerical Analysis
 - M3AS Mathematical Models and Methods in Applied Sciences
 - Multiscale Modeling and Simulation
 - Numerical Methods for Partial Differential Equations
 - Numerische Mathematik
 - SIAM Journal on Numerical Analysis
 - SIAM Journal on Scientific Computing
 - Vietnam Journal of Mathematics
 - Water Resource Research;
 - scientific referee for Master and Ph.D. theses:
 - *Metodi di Schwarz multilivello per equazioni alle derivate parziali*. G. Migliorati. Master Thesis in Mathematical Engineering, Politecnico di Milano (a.y. 2008-2009);
 - *Local stochastic volatility models*. D. Cozzi. Master Thesis in Mathematical Engineering, Politecnico di Milano (a.y. 2011-2012);
 - *A dimensional reduction approach based on the application of reduced basis methods in the context of hierarchical model reduction*. K. Smetana. Ph.D. Thesis in Sciences, Institut für Numerische und Angewandte Mathematik, Münster (May 2013);

- *A mesh interpolation and upscaling algorithm for three dimensional basin modeling*. L.G. Pasquale. Master Thesis in Mathematical Engineering, Politecnico di Milano (a.y. 2012-2013);
- *Shallow water model of flow in a general topography*. L. Balsemin. Master Thesis in Mathematics, Università degli Studi di Padova (a.y. 2014-2015);
- *Time accurate anisotropic mesh adaptation for unsteady flows*. G. El Jannoun. Doctorat ParisTech, Ècole Nationale Supérieure des Mines de Paris, Sophia Antipolis (August 2014);
- *Direct multiphase mesh generation from 3D images using anisotropic mesh adaptation and a redistancing equation*. J. Zhao. Ph.D. Thesis in Sciences Fondamentales et Appliquées, Ecole Centrale de Nantes (February 2016);
- *Anisotropic residual based mesh adaptation for reaction-diffusion systems: applications to cardiac electrophysiology*. E. Boey. Ph.D. Thesis, Faculty of Graduate and Postdoctoral Studies, University of Ottawa (October 2016);
- *Efficient solvers for power flow equations: parametric solutions with accuracy control assessment*. R. Garcia-Blanco. Departament d'Enginyeria Civil i Ambiental, Programa de Doctorat de Matemàtica Aplicada, UPC, Barcelona (December 2016);
- *Simulation tools for biomechanical applications with PGD-based reduced order models*. X. Zou. Ph.D. Thesis in Civil Engineering and Architecture, University of Pavia (March 2018);
- *A posteriori analysis of topological model reduction error, with application to mass transport in microcirculation*. S. Brambilla. Master Thesis in Mathematical Engineering, Politecnico di Milano (a.y. 2017-2018).

Main research interests and scientific collaborations

- numerical methods for partial differential equations
- anisotropic mesh adaptation:
 - F. Dassi (Università degli Studi di Milano-Bicocca);
 - N. Ferro, S. Micheletti (MOX, Politecnico di Milano);
 - M. Fornasier, S. Belz (TUM, München);
 - M. Giacomini (Laboratori de Càlcul Numèric, UPC-BarcelonaTech);
 - J. Nagy (Emory University, Atlanta, GA);
 - H. Si (WIAS, Berlin);
 - J. J. Rodenas Garcia (Universidad Politecnica de Valencia).
- model reduction and model adaptation:
 - F. Ballarin, G. Rozza (SISSA, Trieste);
 - L. Chamoin (LMT, Cachan);
 - P. Díez (Laboratori de Càlcul Numèric, UPC-BarcelonaTech);
 - S. Elgeti (RWTH Aachen University);
 - M. Icardi (University of Nottingham);
 - A. Reali (University of Pavia);
 - A. Veneziani (Emory University, Atlanta, GA).
- modeling of free-surface flows and of solute transport in porous media:
 - G.M. Porta (D.I.C.A., Politecnico di Milano).
- statistical-numerical analysis of high dimensional functional data:
 - L. Sangalli (MOX, Politecnico di Milano).
- compressed sensing:
 - S. Brugiapaglia (Simon Fraser University, Burnaby, Canada);
 - S. Micheletti (MOX, Politecnico di Milano);
 - F. Nobile (EPFL, Lausanne).
- bayesian computing:

- D. Calvetti, E. Somersalo (Case Western Reserve University, Cleveland).

Visiting periods

- Muenster University, Germany : November 3-5, 2009.
- Emory University, Atlanta, GA, USA : February 14-23, 2012.
- CEMEF/Ecole des Mines de Paris, Sophia Antipolis, France : September 20-22, 2014.
- EPFL, Lausanne, Switzerland : November 6-7, 2014.
- WIAS, Berlin, Germany : March 2-5, 2015.
- Emory University, Atlanta, GA, USA : November 20-30, 2015.
- BCAM, Bilbao, Spain : February 22-25, 2016.
- Ecole Centrale de Nantes, France : March 2-3, 2016.
- Emory University, Atlanta, GA, USA : April 29 - May 6, 2016.
- Emory University, Atlanta, GA, USA : November 24 - December 9, 2016.
- UPC, Barcelona, Spain : February 8-9, 2017.
- Emory University, Atlanta, GA, USA : February 20 - March 3, 2017.
- SISSA, Trieste, Italy : July 19-21, 2017.
- Emory University, Atlanta, GA, USA : August 31 - September 12, 2017.
- **Emory University, Atlanta, GA, USA : January 15 - May 10, 2018.**
- UPC, Barcelona, Spain : September 9-13, 2018.
- Nottingham University, UK : January 29-31, 2019.

Publications

Peer-Reviewed Journals

1. C. Dagnino, S. Perotto and E. Santi. Convergence of rules based on nodal splines for the numerical evaluation of certain 2D Cauchy principal value integrals. *J. Comput. Appl. Math.*, **89** (1998), no.2, 225-235.
2. M. Grasselli, S. Perotto and F. Saleri. Space-time finite elements for Boussinesq equations. *East-West J. Numer. Math.*, **7** (1999), no.4, 283-306.
3. S. Perotto and F. Saleri. Adaptive finite element methods for Boussinesq equations. *Numer. Methods Partial Differential Equations*, **16** (2000), no.2, 214-236.
4. L. Formaggia and S. Perotto. New anisotropic a priori error estimates. *Numer. Math.*, **89** (2001), 641-667.
5. L. Formaggia, S. Perotto and P. Zunino. An anisotropic a-posteriori error estimate for a convection-diffusion problem. *Comput. Visual. Sci.*, **4** (2001), no.2, 99-104.
6. L. Formaggia and S. Perotto. Anisotropic error estimates for elliptic problems. *Numer. Math.*, **94** (2003), 67-92.
7. S. Micheletti, S. Perotto and M. Picasso. Stabilized finite elements on anisotropic meshes: a priori error estimates for the advection-diffusion and the Stokes problems. *SIAM J. Numer. Anal.*, **41** (2003), no.3, 1131-1162.
8. L. Formaggia, S. Micheletti and S. Perotto. Anisotropic mesh adaptation in Computational Fluid Dynamics: application to the advection-diffusion-reaction and the Stokes problems. *Appl. Numer. Math.*, **51** (2004), no.4, 511-533.
9. S. Perotto. Anisotropic mesh adaption: application to Computational Fluid Dynamics. *Bollettino dell'Unione Matematica Italiana, Sezione B-Articoli di Ricerca Matematica*, **8-B** (2005), 145-165, Zanichelli Editore S.p.A.
10. E. Miglio, S. Perotto and F. Saleri. Model coupling techniques for free-surface flow problems. Part I. *Nonlinear Anal.*, **63** (2005), no.5-7, 1885-1896.
11. E. Miglio, S. Perotto and F. Saleri. Model coupling techniques for free-surface flow problems. Part II. *Nonlinear Anal.*, **63** (2005), no.5-7, 1897-1908.
12. S. Micheletti and S. Perotto. Reliability and efficiency of an anisotropic Zienkiewicz-Zhu error estimator. *Comput. Methods Appl. Mech. Engrg.*, **195** (2006), no.9-12, 799-835.
13. C.L. Bottasso, G. Maisano, S. Micheletti and S. Perotto. On some new recovery based a posteriori error estimators. *Comput. Methods Appl. Mech. Engrg.*, **195** (2006), no.37-40, 4794-4815.

14. S. Perotto. Adaptive modeling for free-surface flows. *M2AN Math. Model. Numer. Anal.*, **40** (2006), no.3, 469-499.
15. S. Micheletti, S. Perotto and M. Verani. Uzawa-based adaptive methods for linear output functionals. *IMA J. Numer. Anal.*, **28** (2008), no.3, 619-646.
16. L. Dedè, S. Micheletti and S. Perotto. Anisotropic error control for environmental applications. *Appl. Numer. Math.*, **58** (2008), no.9, 1320-1339.
17. S. Micheletti and S. Perotto. Output functional control for nonlinear equations driven by anisotropic mesh adaption. The Navier-Stokes equations. *SIAM J. Sci. Comput.*, **30** (2008), no.6, 2817-2854.
18. S. Micheletti and S. Perotto. Anisotropic mesh adaption for time-dependent problems. *Internat. J. Numer. Methods Fluids*, **58** (2008), 1009-1015.
19. S. Micheletti and S. Perotto. Space-time adaptation for purely diffusive problems in an anisotropic framework. *Int. J. Numer. Anal. Model.*, **7** (2010), no.1, 125-155.
20. S. Perotto, A. Ern and A. Veneziani. Hierarchical local model reduction for elliptic problems: a domain decomposition approach. *Multiscale Model. Simul.*, **8** (2010), no.4, 1102-1127.
21. P.E. Farrell, S. Micheletti and S. Perotto. A recovery-based error estimator for anisotropic mesh adaptation in CFD. *Bol. Soc. Esp. Mat. Apl.*, **50** (2010), 115-138.
22. P.E. Farrell, S. Micheletti and S. Perotto. An anisotropic Zienkiewicz-Zhu type error estimator for 3D applications. *Internat. J. Numer. Methods Engrg.*, **85** (2011), 671-692.
23. M. Lefebvre and S. Perotto. A semi-Markov process with an inverse Gaussian distribution as sojourn time. *Appl. Math. Model.*, **35** (2011), 4603-4610.
24. S. Micheletti and S. Perotto. The effect of anisotropic mesh adaptation on PDE-constrained optimal control problems. *SIAM J. Control. Optim.*, **49** (2011), no.4, 1793-1828.
25. G.M. Porta, S. Perotto and F. Ballio. Anisotropic mesh adaptation driven by a recovery based error estimator for shallow water flow modeling. *Internat. J. Numer. Methods Fluids*, **70** (2012), no.3, 269-299.
26. G.M. Porta, S. Perotto and F. Ballio. A space-time adaptation scheme for unsteady shallow water problems. *Math. Comput. Simulation*, **82** (2012), 2929-2950.
27. S. Micheletti, S. Perotto and F. David. Model adaptation enriched with an anisotropic mesh spacing for nonlinear equations: application to environmental and CFD problems. *Numer. Math. Theor. Meth. Appl.*, **6** (2013), no. 3, 447-478.
28. S. Perotto and A. Veneziani. Coupled model and grid adaptivity in hierarchical reduction of elliptic problems. *J. Sci. Comput.*, **60** (2014), no. 3, 505-536.
29. F. Dassi, S. Perotto, L. Formaggia and P. Ruffo. Efficient geometric reconstruction of complex geological structures. *Math. Comput. Simulation*, **106** (2014), 163-184.
30. T. Taddei, S. Perotto and A. Quarteroni. Reduced basis techniques for nonlinear conservation laws. *M2AN Math. Model. Numer. Anal.*, **49** (2015), no. 3, 787-814.
31. F. Dassi, B. Ettinger, S. Perotto and L.M. Sangalli. A mesh simplification strategy for a spatial regression analysis over the cortical surface of the brain. *Appl. Numer. Math.*, **90** (2015), 111-131.
32. B. Esfandiari, G.M. Porta, S. Perotto and A. Guadagnini. Impact of space-time mesh adaptation on solute transport modeling in porous media. *Water Resour. Res.*, **51** (2015), no. 2, 1315-1332.
33. M. Artina, M. Fornasier, S. Micheletti and S. Perotto. Anisotropic mesh adaptation for crack detection in brittle materials. *SIAM J. Sci. Comput.*, **37** (2015), no. 4, B633-B659.
34. S. Brugiapaglia, S. Micheletti and S. Perotto. Compressed solving: a numerical approximation technique for elliptic PDEs based on compressed sensing. *Comput. Math. Appl.*, **70** (2015), 1306-1335.
35. F. Dassi, S. Perotto and L. Formaggia. A priori anisotropic mesh adaptation on implicitly defined surfaces. *SIAM J. Sci. Comput.*, **37** (2015), no. 6, A2758-A2782.
36. S. Perotto and A. Zilio. Space-time adaptive hierarchical model reduction for parabolic equations. *Adv. Model. and Simul. in Eng. Sci.*, **2:25** (2015).
37. B. Ettinger, S. Perotto and L.M. Sangalli. Spatial regression models over two-dimensional manifolds. *Biometrika*, **103** (2016), no. 1, 71-88.
38. S. Perotto, A. Reali, P. Rusconi and A. Veneziani. HIGAMod: a Hierarchical IsoGeometric Approach for MODEL reduction in curved pipes. *Comput. & Fluids*, **142** (2017), 21-29.

39. M. Signorini, S. Micheletti and S. Perotto. CMFWI: Coupled Multiscenario Full Waveform. *Inverse Probl. Sci. Eng.*, **25** (2017), no. 7, 939-964.
40. F. Dassi, S. Perotto, H. Si and T. Streckenbach. A priori anisotropic mesh adaptation driven by a higher dimensional embedding. *Comput.-Aided Des*, **85** (2017), 111-122.
41. A. Crivellaro, S. Perotto and S. Zonca. Reconstruction of 3D scattered data via radial basis functions by efficient and robust techniques. *Appl. Numer. Math.*, **113** (2017), 93-108.
42. S. Brugiapaglia, F. Nobile, S. Micheletti and S. Perotto. A theoretical study of compressed solving for advection-diffusion-reaction problems. *Math. Comp.*, **87** (2018), no. 309, 1-38.
43. C.B. Rizzo, F.P.J. de Barros, S. Perotto, L. Oldani and A. Guadagnini. Adaptive POD model reduction for solute transport in heterogeneous porous media. *Comput. Geosci.*, **22** (2018), no. 1, 297-308.
44. S. Micheletti, S. Perotto and M. Signorini. Anisotropic mesh adaptation for the generalized Ambrosio-Tortorelli functional with application to brittle fracture. *Comput. Math. Appl.*, **75** (2018), 2134-2152.
45. E. Beretta, S. Micheletti, S. Perotto and M. Santacesaria. Reconstruction of a piecewise constant conductivity on a polygonal partition via shape optimization in EIT. *J. Comput. Phys.*, **353** (2018), 264-280.
46. S. Guzzetti, S. Perotto and A. Veneziani. Hierarchical model reduction for incompressible fluids in pipes. *Internat. J. Numer. Methods Engrg.*, **114** (2018), no. 5, 469-500.
47. M. Aletti, S. Perotto and A. Veneziani. HiMod reduction of advection-diffusion-reaction problems with general boundary conditions. *J. Sci. Comput.*, **76** (2018), no. 1, 89-119.
48. N. Ferro, S. Micheletti and S. Perotto. Anisotropic mesh adaptation for crack propagation induced by a thermal shock in 2D. *Comput. Methods Appl. Mech. Engrg.*, **331** (2018), 138-158.
49. V. Bacchelli, S. Micheletti, S. Perotto and D. Pierotti. Parameter identification for the linear wave equation with Robin boundary condition. *J. Inverse Ill-Posed Probl.*, **27** (2019), no. 1, 25-41.
50. F. Ballarin, A. D'Amario, S. Perotto and G. Rozza. A POD-selective inverse distance weighting method for fast parametrized shape morphing. *Internat. J. Numer. Methods Engrg.*, **117** (2019), no. 8, 860-884.
51. N. Ferro, S. Micheletti and S. Perotto. POD-assisted strategies for structural topology optimization. In press in *Comput. Math. Appl.*, DOI: <https://doi.org/10.1016/j.camwa.2019.01.010>.
52. S. Micheletti, S. Perotto and L. Soli. Topology optimization driven by anisotropic mesh adaptation: towards a free-form design. *Comput. & Structures*, **214** (2019), 60-72.
53. A.S. Chiappa, S. Micheletti, R. Peli and S. Perotto. Mesh adaptation-aided image segmentation. Accepted for the publication in *Commun. Nonlinear Sci. Numer. Simulat.* (2019).

Peer-Reviewed Proceedings

1. C. Dagnino, S. Perotto and E. Santi. Product formulas based on spline approximation for the numerical evaluation of certain 2D CPV integrals. In *Approximation and Optimization*, Vol. **I**, Transilvania, Cluj-Napoca (1997), 241-250.
2. S. Micheletti and S. Perotto. An anisotropic recovery-based a posteriori error estimator. In *Numerical Mathematics and Advanced Applications*, Springer-Verlag Italia, F. Brezzi, A. Buffa, S. Corsaro, A. Murli Eds. (2003), 731-741.
3. E. Miglio, S. Perotto and F. Saleri. A multiphysics strategy for free surface flows. In *Domain Decomposition Methods in Science and Engineering*. Series: Lect. Notes Comput. Sci. Eng., Vol. **40**, Springer-Verlag Berlin Heidelberg, R. Kornhuber, R. Hoppe, J. Périaux, O. Pironneau, O. Widlund, J. Xu Eds. (2005), 395-402.
4. S. Micheletti and S. Perotto. Anisotropic mesh adaptivity in CFD. In *Adaptive Mesh Refinement-Theory and Applications*. Series: Lect. Notes Comput. Sci. Eng., Vol. **41**, Springer Berlin Heidelberg, T. Plewa, T. Linde, V.G. Weirs Eds. (2005), 171-182.
5. S. Micheletti, S. Perotto and F. Schiavo. Modelling heat exchangers by the finite element method with grid adaption in Modelica. In Proceedings of the 4th International Modelica Conference, Amburgo, March 7-8, 2005; G.Schmitz Ed. (2005), 219-228.
6. S. Micheletti and S. Perotto. Anisotropic mesh adaptivity via a dual-based a posteriori error estimation for semiconductors. In *Scientific Computing in Electrical Engineering*. Series: Mathematics in Industry, Vol. **9**, Springer-Verlag Berlin Heidelberg, A.M. Anile, G. Alì, G. Mascali Eds. (2006), 369-375.
7. S. Micheletti and S. Perotto. Space-time adaption for advection-diffusion-reaction problems on anisotropic

- meshes. In *Numerical Mathematics and Advanced Applications*, Springer-Verlag Berlin Heidelberg, K. Kunisch, G. Of, O. Steinbach Eds. (2008), 49-56.
8. A. Ern, S. Perotto and A. Veneziani. Hierarchical model reduction for advection-diffusion-reaction problems. In *Numerical Mathematics and Advanced Applications*, Springer-Verlag Berlin Heidelberg, K. Kunisch, G. Of, O. Steinbach Eds. (2008), 703-710.
9. S. Micheletti and S. Perotto. Anisotropic adaptation via a Zienkiewicz-Zhu error estimator for 2D elliptic problems. In *Numerical Mathematics and Advanced Applications*, Springer-Verlag Berlin Heidelberg, G. Kreiss, P. Lotstedt, A. Malqvist, M. Neytcheva Eds. (2010), 645-653.
10. S. Micheletti and S. Perotto. Anisotropic recovery-based a posteriori error estimators for advection-diffusion-reaction problems. In *Numerical Mathematics and Advanced Applications*, Springer-Verlag, Berlin Heidelberg, A. Cangiani, R.L. Davidchack, E. Georgoulis, A.N. Gorbun, J. Levesley, M.V. Tretyakov Eds. (2013), 43-51.
11. S. Perotto and A. Zilio. Hierarchical model reduction: three different approaches. In *Numerical Mathematics and Advanced Applications*, Springer-Verlag Berlin Heidelberg, A. Cangiani, R.L. Davidchack, E. Georgoulis, A.N. Gorbun, J. Levesley, M.V. Tretyakov Eds. (2013), 851-859.
12. L. Mauri, S. Perotto and A. Veneziani. Adaptive geometrical multiscale modeling for hydrodynamic problems. In *Numerical Mathematics and Advanced Applications*, Springer-Verlag Berlin Heidelberg, A. Cangiani, R.L. Davidchack, E. Georgoulis, A.N. Gorbun, J. Levesley, M.V. Tretyakov Eds. (2013), 723-730.
13. S. Perotto. Hierarchical model (Hi-Mod) reduction in non-rectilinear domains. In *Domain Decomposition Methods in Science and Engineering*. Series: Lect. Notes Comput. Sci. Eng., Vol. **98**, Springer Cham, J. Erhel, M. Gander, L. Halpern, G. Pichot, T. Sassi, O. Widlund Eds. (2014), 477-485.
14. M. Artina, M. Fornasier, S. Micheletti and S. Perotto. Anisotropic adaptive meshes for brittle fractures: parameter sensitivity. In *Numerical Mathematics and Advanced Applications*. Series: Lect. Notes Comput. Sci. Eng., Vol. **103**, Springer, A. Abdulle, S. Deparis, D. Kressner, F. Nobile, M. Picasso Eds. (2015), 293-302.
15. M. Aletti, A. Bortolossi, S. Perotto and A. Veneziani. One-dimensional surrogate models for advection-diffusion problems. In *Numerical Mathematics and Advanced Applications*. Series: Lect. Notes Comput. Sci. Eng., Vol. **103**, Springer, A. Abdulle, S. Deparis, D. Kressner, F. Nobile, M. Picasso Eds. (2015), 447-456.
16. M. Fedele, E. Faggiano, L. Barbarotta, F. Cremonesi, L. Formaggia and S. Perotto. Semi-automatic three-dimensional vessel segmentation using a connected component localization of the region-scalable fitting energy. *IEEE* (2015), 72-77, 9th International Symposium on Image and Signal Processing and Analysis (ISPA).
17. F. Dassi, H. Si, S. Perotto and T. Streckenbach. Anisotropic finite element mesh adaptation via higher dimensional embedding. *Procedia Engineering*, **124**, (2015), 265-277.
18. N. Ferro, S. Micheletti and S. Perotto. Density-based inverse homogenization with anisotropically adapted elements. To appear in *Lect. Notes Comput. Sci. Eng. Series*, Springer, A. Corsini, S. Perotto, G. Rozza, H. van Brummelen Eds. (2019)

Contributed Books

1. B. Ettinger, T. Passerini, S. Perotto and L.M. Sangalli. Regression models for data distributed over non-planar domains. In *Complex Models and Computational Methods in Statistics*. Series: Contributions to Statistics, Springer, Milano, M. Grigoletto, F. Lisi, S. Petrone Eds. (2013), 123-135.
2. S. Perotto. A survey of hierarchical model (Hi-Mod) reduction methods for elliptic problems. In *Numerical Simulations of Coupled Problems in Engineering*. Series: Computational Methods in Applied Sciences, Vol. **33**, Springer, S.R. Idelsohn Ed. (2014), 217-241.
3. M. Artina, M. Fornasier, S. Micheletti and S. Perotto. The benefits of anisotropic mesh adaptation for brittle fractures under plane-strain conditions. In *New Challenges in Grid Generation and Adaptivity for Scientific Computing*. Series: SEMA SIMAI Springer, Vol. **5**, Springer Cham, S. Perotto, L. Formaggia Eds. (2015), 43-67.
4. B. Esfandiari, G.M. Porta, S. Perotto and A. Guadagnini. Anisotropic mesh and time step adaptivity for solute transport modeling in porous media. In *New Challenges in Grid Generation and Adaptivity for Scientific Computing*. Series: SEMA SIMAI Springer, Vol. **5**, Springer Cham, S. Perotto, L. Formaggia Eds. (2015), 231-260.
5. D. Baroli, C.M. Cova, S. Perotto, L. Sala and A. Veneziani. Hi-POD solution of parametrized fluid dynamics problems: preliminary results. In *Model Reduction of Parametrized Systems*. Series: MS&A Springer, P. Benner,

M. Ohlberger, A.T. Patera, G. Rozza, K. Urban Eds. (2017), Chapter 15, 235-254.

Curatela

1. S. Perotto and L. Formaggia. *New Challenges in Grid Generation and Adaptivity for Scientific Computing*, Series: SEMA SIMAI Springer, Vol. 5, Springer Cham (2015).

Peer-Reviewed Journals (submitted)

1. N. Ferro, S. Micheletti and S. Perotto. A sequential coupling of shape and topology optimization for structural design. MOX Report no. **58/2018**, Dipartimento di Matematica, Politecnico di Milano.
2. S. Perotto, M.G. Carlino and F. Ballarin. Model reduction by separation of variables: a comparison between Hierarchical Model reduction and Proper Generalized Decomposition. MOX Report no. **62/2018**, Dipartimento di Matematica, Politecnico di Milano.
3. S. Brugiapaglia, S. Micheletti, F. Nobile and S. Perotto. Wavelet-Fourier CORSING techniques for multi-dimensional advection-diffusion-reaction equations. MOX Report no. **63/2018**, Dipartimento di Matematica, Politecnico di Milano.

Conference Papers

1. S. Perotto. A posteriori error estimates for Boussinesq equations. In *Numerical Methods for Fluid Dynamics VI*. M.J. Baines Ed., Oxford (1998), 451-457. Proceedings of ICFD, Conference on Numerical Methods for Fluid Dynamics.
2. S. Perotto. Modelling nonlinear dispersive waves. In *Proceedings of WASCOM 99, 10th Conference on Waves and Stability in Continuous Media*. V. Ciancio, A. Donato, F. Oliveri, S. Rionero Eds., World Scientific, Singapore (2001), 371-381.
3. S. Micheletti and S. Perotto. A theoretical design of the stability coefficients on anisotropic elements. In *Proceedings of SIMAI 2002, VI Congresso Nazionale della Società Italiana di Matematica Applicata e Industriale (CD-ROM Edition)*.
4. L. Formaggia, S. Micheletti and S. Perotto. Anisotropic mesh adaption with application to CFD problems. In *Proceedings of WCCM V, Fifth World Congress on Computational Mechanics, 2002*. H.A. Mang, F.G. Rammerstorfer, J. Eberhardsteiner Eds (CD-ROM Edition).
5. L. Formaggia, S. Micheletti and S. Perotto. Anisotropic mesh adaption for advection-diffusion-reaction problems. In *Proceedings of IMACS/ISGG Workshop MASCOT02, 2nd Meeting on Applied Scientific Computing and Tools, 2002*.
6. E. Miglio, S. Perotto and F. Saleri. Multiphysics coupling strategy for free surface flows. In *Proceedings of ADMOS 2003, the 1st International Conference on Adaptive Modelling and Simulation*. N.E. Wiberg, P. Díez Eds. (CD-ROM Edition).
7. E. Miglio, S. Perotto and F. Saleri. A coupling strategy for free surface flows. In *Proceedings of ECCOMAS 2004, 4th European Congress on Computational Methods in Applied Sciences and Engineering*. P. Neittaanmäki, T. Rossi, S. Korotov, E. Onate, J. Périaux, D. Knörzer Eds. (CD-ROM Edition).
8. B. Ettinger, S. Perotto and L.M. Sangalli. Spatial smoothing over non-planar domains. In *Proceedings of the 46th Scientific Meeting of the Italian Statistical Society, 2012*. ISBN 978-88-6129-882-8, Cleup Eds.
9. B. Ettinger, S. Perotto and L.M. Sangalli. Studying hemodynamic forces via spatial regression models over non-planar domains. In *Proceedings of the 47th Scientific Meeting of the Italian Statistical Society, 2013. Electronic Book: Advances in Latent Variables-Methods, Models and Applications*, Eds. E. Brentari, M. Carpita, Vita e Pensiero, Milano. ISBN 978-88-343-2556-8.
10. B. Ettinger, S. Perotto and L.M. Sangalli. A functional data analysis approach to modeling spatially distributed data across several non-planar domains. In *Proceedings of S.Co.2013, Complex Data Modeling and Computationally Intensive Statistical Methods for Estimation and Prediction, 2013*. ISBN 9788864930190.
11. E. Faggiano, T. Lorenzi and S. Perotto. TV-H1 variational inpainting applied to metal artifact reduction in CT images. In *Proceedings of VIPIMAGE 2013 - Computational Vision and Medical Image Processing IV*, Taylor & Francis Group, London. Joao Manuel R. S. Tavares and R. M. Natal Jorge Eds. (2014), Chapter 47, 277-282.

Lecture Notes

1. L. Formaggia and S. Perotto. Error estimation for finite element methods. In *31st Computational Fluid Dynamics Lecture Series*, Von Karman Institute **LS 2000-05**.
2. L. Formaggia and S. Perotto. Anisotropic error estimation for finite element methods. In *31st Computational Fluid Dynamics Lecture Series*, Von Karman Institute **LS 2000-05**.

Plenary lectures

1. *Model reduction for anisotropic models governed by parabolic partial differential equations*. ADMOS 2011, Paris, June 6, 2011.
2. *Recent advances in Hierarchical Model (HiMod) reduction*. ADMOS 2015, Nantes, June 10, 2015.
3. *Hierarchical Model (HI-MOD) reduction: towards haemodynamics applications*. MoRePaS 2015, Trieste, October 14, 2015.
4. *Anisotropic mesh adaptation, from the lab to the end-user*. IMR26, Barcelona, September 20, 2017.
5. *Isogeometric hierarchical model reduction in haemodynamic modeling*. ICOSAHOM 2018, London, July 12, 2018.

Keynote lectures

1. *Anisotropic mesh adaption driven by a metric based optimization procedure*. Tetrahedron Workshop II, INRIA, Paris, October 19, 2007.
2. *An a posteriori error estimator for a hierarchical model dimension reduction*. WCCM8-ECCOMAS 2008, Venezia, July 2, 2008.
3. *Anisotropic adaptation based on a gradient recovery error estimator*. ECCM 2010, Paris, May 19, 2010.
4. *A recovery-based error estimator for mesh adaptation in an anisotropic framework*. Tetrahedron Workshop III, Swansea, September 14, 2010.
5. *Adaptive hierarchical model reduction coupled with mesh adaptation*. COUPLED PROBLEMS 2013, Ibiza, June 17, 2013.
6. *Anisotropic mesh adaptation: in & out*. Tetrahedron IV, Verbania, July 3, 2013.
7. *Hierarchical Model (HiMod) reduction for incompressible fluid dynamics in rigid and deformable pipes*. IACM ECCOMAS 2014, Barcelona, July 22, 2014.
8. *Hi-Mod reduction for incompressible flows*. FEF 2017, Rome, April 7, 2017.
9. *HiMod and HiPOD in haemodynamic modeling*. COUPLED PROBLEMS 2017, Rhodes, June 12, 2017.

Invited talks

1. *Anisotropic mesh adaption: applications to computational fluid-dynamics*. XVII Congresso UMI, Milano, September 11, 2003.
2. *Adaptive modeling for unsteady nonlinear hydrodynamics: a theoretical framework*. WCNA 2004, Orlando, July 2, 2004.
3. *An a posteriori modeling error analysis for free surface flows*. FoCM05, Santander, July 2, 2005.
4. *A goal-oriented recovery-based anisotropic error estimator for advection diffusion reaction problems*. MAFELAP 2006, Brunel University, London, June 4, 2006.
5. *Layer capturing via anisotropic mesh adaption*. BAIL 2006, Gottingen, July 25, 2006.
6. *Robustness of an a posteriori error estimator on anisotropic grids*. Giornata speciale Seminario di Matematica Applicata, Università di Milano, September 18, 2007.
7. *Anisotropic mesh adaptation in CFD: a metric-based approach in 2D*. MINES ParisTech - CEMEF, Sophia Antipolis, November 25, 2008.
8. *Adattamento anisotropo di griglia guidata da una procedura di ottimizzazione locale*. Seminario di Modellistica Differenziale Numerica, La Sapienza, Roma, February 17, 2009.
9. *Mesh adaptation driven by a posteriori error estimators in an anisotropic framework*. MAFELAP 2009, Brunel University, London, June 9, 2009.
10. *Mesh adaptation driven by a metric-based optimization procedure*. ENUMATH 2009, Uppsala, June 29,

2009.

11. *Hierarchical local model reduction for 2D elliptic problems*. Westfälische Wilhelms Universität, Münster, November 4, 2009.
12. *Adaptive hierarchical local model reduction*. MOX-CCE Workshop, Milano, January 21, 2011.
13. *Anisotropic mesh adaptation as auxiliary tool for PDE-constrained optimal control problems*. FEF 2011, Munich, March 23, 2011.
14. *Goal-oriented hierarchical local model reduction with mesh adaptation*. USNCCM 11, Minneapolis, July 25, 2011.
15. *Hierarchical model reduction for parabolic problems*. ENUMATH 2011, Leicester, September 6, 2011.
16. *The impact of anisotropic mesh adaptation on CFD: a metric based approach*. ADAP_CFD12, WIAS, Berlin, April 25, 2012.
17. *Hierarchical model reduction: a domain decomposition approach*. DD XXI, Inria Rennes Bretagne Atlantique, June 25, 2012.
18. *A Zienkiewicz-Zhu-like error estimator driving anisotropic mesh adaptation in 2D and 3D*. ECCOMAS 2012, Vienna, September 14, 2012.
19. *Model reduction for parabolic equations in a hierarchical framework*. MoRePaS II, Gunzburg, October 3, 2012.
20. *Hierarchical Model (HiMod) reduction for advection-diffusion-reaction problems*. ADMOS 2013, Lisbon, June 5, 2013.
21. *Anisotropic mesh adaptation: an effective strategy in CFD*. USNCCM12, Raleigh, July 23, 2013.
22. *Recent developments of Hierarchical Model (HiMod) reduction for boundary value problems*. ENUMATH 2013, Lausanne, August 26, 2013.
23. *Anisotropic meshes for PDEs: a posteriori error analysis and mesh adaptivity*. ICAM 2013, Heraklion, September 17, 2013.
24. *Hi-Mod reduction driven by a POD strategy*. ECMI 2014, Taormina, June 11, 2014.
25. *One-dimensional surrogate models generated via a Hi-Mod reduction approach*. First Joint International Meeting RSME-SCM-SEMA-SIMAI-UMI, Bilbao, July 1, 2014.
26. *Generazione di modelli surrogati monodimensionali mediante riduzione gerarchica: teoria e pratica*. Seminario di Modellistica Differenziale Numerica, La Sapienza, Roma, February 24, 2015.
27. *Adaptive Hierarchical Model (HiMod) reduction for initial boundary value problems*. WIAS, Berlino, March 3, 2015.
28. *HiPOD: two POD strategies for a Hierarchical Model reduction*. USNCCM13, San Diego, CA, July 29, 2015.
29. *Hierarchical Model (HiMOD) reduction methods: basics and applications*. BCAM Bilbao, February 23, 2016.
30. *Improving PDE approximation via anisotropic mesh adaptation*. Emory University, Atlanta, May 6, 2016.
31. *HiPOD: a POD-based hierarchical model reduction for inverse problems*. ECCOMAS 2016, Crete, June 8, 2016.
32. *Hierarchical model reduction methods for incompressible fluids: basics, advances, applications*. SIMAI 2016, Milano, September 15, 2016.
33. *Hierarchical model reduction: theory and practice*. SIAM-CSE17, Atlanta, March 3, 2017.
34. *Riduzione di modello di tipo gerarchico per la fluidodinamica*. Department of Electronics, Information and Bioengineering, Politecnico di Milano, July 11, 2017.
35. *HiMod reduction for parameter dependent problems*. ADMOS 2017, Verbania, June 27, 2017.
36. *HiMod solvers in haemodynamics*. European Workshop on ROMs for Industrial Applications, Turin, October 17, 2017.
37. *Solutori HiMod per l'emodinamica computazionale*. Università Campus Bio-Medico di Roma, November 27, 2017.
38. *When the mesh is important. The role of anisotropic mesh adaptation in numerical modeling, from crack propagation to topology optimization*. Emory University, February 12, 2018.
39. *Anisotropic mesh adaptation in finite elements: from theory to practice*. Georgia Scientific Computing

Symposium 2018, Atlanta, February 24, 2018.

40. *Hybrid Methods for ROM II: HiMod and POD*. ROM4CVS, Emory University, April 26, 2018.

41. *Mesh adaptation-aided image segmentation*. SIAM-IS 18, Bologna, June 7, 2018.

42. *Hierarchical model reduction for parameter-dependent problems*. ECCM-ECFD 2018, Glasgow, June 14, 2018.

43. *Ambrosio-Tortorelli approximations for crack propagation and image segmentation modeling with anisotropic mesh adaptation*. Laboratori de Càlcul Numèric, Barcelona, September 12, 2018.

44. *Mesh simplification for a spatial regression analysis over complex surfaces*. NuMa 2018, Torino, September 21, 2018.

45. *HiMod discretization for haemodynamic modeling*. University of Nottingham, January 30, 2019.

46. *Energy functional minimization combined with an anisotropic mesh adaptation*. Seminario di Modellistica Differenziale Numerica, La Sapienza, Roma, February 5, 2019.

47. *Hierarchical solvers for parametric problems*. SIAM-CSE19, Spokane, March 1, 2019.

Talks at National and International Conferences

1. *On the convergence of product formulas based on nodal spline interpolation for the numerical evaluation of certain 2D CPV integrals*. Conference on Numerical Mathematics Celebrating the 60th Birthday of M.J.D. Powell, Cambridge, July 27, 1996.

2. *A posteriori error estimates for Boussinesq equations*. ICFD, Conference on Numerical Methods for Fluid Dynamics, Oxford, April 2, 1998.

3. *Elementi finiti adattivi per l'equazioni di Boussinesq*. SIMAI '98, Giardini Naxos, June 5, 1998.

4. *Modelling nonlinear dispersive waves*. WASCOM 99, Vulcano, June 10, 1999.

5. *An adaptive method for Boussinesq equations*. ICIAM '99, Edimburgh, July 6, 1999.

6. *Le equazioni di Boussinesq per l'approssimazione di flussi a superficie libera*. XVI Congresso dell'Unione Matematica Italiana, Napoli, September 15, 1999.

7. *Anisotropic error estimates applied to convection-diffusion problems*. Second ESF International Conference, Il Ciocco, October 13, 2000.

8. *An anisotropic Zienkiewicz-Zhu error estimator*. ENUMATH 2001, Ischia, July 24, 2001.

9. *A theoretical design of the stability coefficients on anisotropic elements*. SIMAI 2002, Chia Laguna, May 29, 2002.

10. *Anisotropic mesh adaption in CFD: part I and II*. OPA 2002, Heidelberg, October 7, 2002.

11. *Multiphysics coupling strategy for free surface flows*. ADMOS 2003, Göteborg, October 1, 2003.

12. *Strategie per il coupling di modelli idrodinamici: un approccio a posteriori*. GNCS Annual Meeting, Montecatini, February 10, 2004.

13. *Model coupling for free surface flows*. The Second European Finite Element Fair, Berlin, June 5, 2004.

14. *Adaptive modeling in hydrodynamics*. ECMI 2004, Eindhoven, June 25, 2004.

15. *An a posteriori modeling error estimator for shallow water flows*. ECCOMAS 2004, Jyväskylä, July 25, 2004.

16. *Application of anisotropic error estimates to problems in fluid dynamics*. ECCOMAS 2004, Jyväskylä, July 26, 2004.

17. *Approcci multifisica e multimodello per l'idrodinamica*. Final Meeting of the Project Intergruppo INDAM 2004 "Numerical Methods for Unsteady Multiscale Problems", Milano, February 21, 2005.

18. *Hierarchical model dimension reduction*. MAFELAP 2006, Brunel University, Londra, June 16, 2006.

19. *Anisotropic mesh adaption for evolutionary problems*. ICFD, Conference on Numerical Methods for Fluid Dynamics, Reading, March 27, 2007.

20. *Adaptive hierarchical model reduction for elliptic problems*. ENUMATH 2007, Graz, September 10, 2007.

21. *Anisotropic mesh adaption for environmental applications*. Second FIMA International Conference - Energy and Environment, Ayas-Champoluc, January 23, 2008.

22. *A hierarchical model dimension reduction driven by an a posteriori error estimator*. MOSOCOP08, Heidelberg, July 24, 2008.

23. *Anisotropic space-time adaptation for parabolic problems*. SIMAI 2008, Roma, September 17, 2008.

24. *Riduzione gerarchica di modello per problemi ellittici bidimensionali*. GNCS Annual Meeting, Montecatini, February 3, 2009.
25. *Adaptive hierarchical model dimension reduction*. ADMOS 2009, Bruxelles, May 26, 2009.
26. *Anisotropic mesh adaptation and mesh control: a recovery-based error estimator*. CMWR 2010, Barcelona, June 24, 2010.
27. *Some adaptive techniques for the numerical approximation of PDEs*. SNAPLE (Statistical and Numerical methods for the Analysis of Problems in Life Sciences and Engineering) Kickoff Meeting, MOX, Milano, October 13, 2011.
28. *A mesh simplification strategy for a spatial regression analysis over the cortical surface of the brain*. SNAPLE (Statistical and Numerical methods for the Analysis of Problems in Life sciences and Engineering) Final Meeting, MOX, Milano, May 16, 2014.
29. *Riduzione gerarchica di modello: sviluppi recenti ed applicazioni*. XX Congresso UMI, Siena, September 7, 2015.