Antoine Laurain

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CV updated on February 10th, 2025

1 General information

Expertise :	PDE-constrained optimization, shape and topology optimization, inverse problems, shape and parameter identification, free boundary problems, asymptotic analysis, optimal control calculus of variations, applied mathematics.
Nationality :	Belgian / French
Civil status :	married, two children.
Post address :	Fakultät für Mathematik der Universität Duisburg-Essen Thea-Leymann-Str. 9 45127 Essen, Germany
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Webpages :	http://www.antoinelaurain.com https://www.researchgate.net/profile/Antoine-Laurain https://scholar.google.com/citations?user=TzMtBHwAAAAJ&hl=en&oi=sra
Citations :	Web of Science ResearcherID K-6124-2016 ORCID iD : https://orcid.org/0000-0002-8733-5190 MR Author ID : 764389 Scopus Author ID : 24778601800

2 Professional experience

02/2023- ...	Associate Professor (W2), Faculty of Mathematics, University of Duisburg-Essen, Germany.
07/2017-02/2023	Associate Professor, Department of Applied Mathematics, Institute of Mathematics and Statistics, University of São Paulo, Brazil.
04/2015-07/2017	Assistant Professor, Department of Applied Mathematics, Institute of Mathematics ans Statistics, University of São Paulo, Brazil.
03/2012-04/2015	Head of project “Inverse Problems” (Nachwuchsgruppenleiter “Inverse Probleme”) Department of Mathematics, Technical University of Berlin, Germany.
10/2010-02/2012	Research fellow (Wissenchaftlicher Mitarbeiter) Department of Mathematics, Humboldt University of Berlin, Germany.
04/2010-10/2010	W2-Professorship (replacement position-Vertretungsprofessor), University RWTH Aachen, Germany.
09/2006-04/2010	Postdoc in the START Project : "Interfaces and Free Boundaries", University Karl-Franzens, Graz, Austria.

3 Education

2017	**Habilitation (Livre-docência)**, Title : "Shape optimization techniques for inverse problems" Institute of Mathematics and Statistics, University of São Paulo, Brazil.
2003-2006	**PhD in Mathematics**, Dissertation : "Singularly perturbed domains in shape optimization" Advisor : Jan Sokolowski, University Henri Poincaré, Nancy, France.
2002-2003	**MSc in Mathematics (DEA)**, *Partial differential equations-Probability*, University Henri Poincaré, Nancy, France.
2001-2002	**MA in Mathematics (Maîtrise)**, University Henri Poincaré, Nancy, France.
2000-2001	**BA in Mathematics (Licence)**, University Henri Poincaré, Nancy, France.
1997-2000	**Classes préparatoires MP**, Lycée Fabert, Metz, France.
1997	**Baccalauréat série S spécialité Mathématiques**, Lycée Fabert, Metz, France.

4 Publications

4.1 Refereed journals

46) *Analysis and application of a lower envelope method for sharp-interface multiphase problems*
Control and Cybernetics 53(1) :189-229 (2025)
Antoine Laurain
DOI : 10.2478/candc-2024-0009

45) *Reconstruction of Voronoi diagrams in inverse potential problems*
ESAIM : COCV 30 85 (2024)
Ernesto G. Birgin, Antoine Laurain, Danilo R. Souza
DOI : 10.1051/cocv/2024072

44) *On second-order tensor representation of derivatives in shape optimization*
Accepted for publication in Philosophical Transactions A (2024)
Antoine Laurain and Pedro T.P. Lopes

43) *Bounds on the Optimal Radius When Covering a Set with Minimum Radius Identical Disks*
Mathematics of Operations Research 2024 49 :3, 1855-1889
E.G. Birgin, J. L. Gardenghi, A. Laurain
https ://doi.org/10.1287/moor.2022.0104

42) *Optimization of the first Dirichlet Laplacian eigenvalue with respect to a union of balls*
The Journal of Geometric Analysis volume 33, 184 (2023)
E.G. Birgin, L. S. Fernandez, G. Haeser, A. Laurain
https ://doi.org/10.1007/s12220-023-01241-w

41) *Sensitivity analysis and tailored design of minimization diagrams*
Mathematics of Computation
Volume 92, Number 344, November 2023, Pages 2715-2768
E.G. Birgin, A. Laurain, T.C. Menezes
https ://doi.org/10.1090/mcom/3839

40) *An abstract Lagrangian framework for computing shape derivatives*
A. Laurain, P. T. P. Lopes, J. C. Nakasato
ESAIM : Control, Optimisation and Calculus of Variations 29 (2023) 5
https ://doi.org/10.1051/cocv/2022078

39) *A Shape-Newton approach to the problem of covering with identical balls*
E.G. Birgin, A. Laurain, R. Massambone, A.G. Santana
SIAM Journal on Scientific Computing 44, pp. A798-A824, 2022.
https ://doi.org/10.1137/21M1426067

38) *Shape optimization in acoustic-structure interaction*
P. Kliewe, A. Laurain, K. Schmidt
Engineering Computations, , Vol. 39 No. 1, pp. 172-200.
https ://doi.org/10.1108/EC-07-2021-0379

37) *Optimal control of volume-preserving mean curvature flow*
A. Laurain, S.W. Walker
Journal of Computational Physics, Volume 438, 1 August 2021, 110373,
https ://doi.org/10.1016/j.jcp.2021.110373

36) *A shape optimization approach to the problem of covering a two-dimensional region with minimum-radius identical balls*
E.G. Birgin, A. Laurain, R. Massambone, A.G. Santana
SIAM Journal on Scientific Computing, 43(3), A2047-A2078. (32 pages)
https ://doi.org/10.1137/20M135950X

35) *Shape optimization for superconductors governed by H(curl)-elliptic variational inequalities*
A. Laurain, M. Winckler, and I. Yousept
SIAM Journal on Control and Optimization, 59(3), 2247-2272. (26 pages)
https ://doi.org/10.1137/19M1294150

34) *Level set-based shape optimization approach for sharp-interface reconstructions in time-domain full waveform inversion*
Yuri F. Albuquerque, Antoine Laurain, and Irwin Yousept
SIAM Journal on Applied Mathematics, 81(3), 939-964
https ://doi.org/10.1137/20M1378090

33) *A shape optimization approach for electrical impedance tomography with point measurements*
Y. F. Albuquerque, A. Laurain, and K. Sturm
Inverse Problems
Volume 36, No. 9, September 2020
https ://doi.org/10.1088/1361-6420/ab9f87

32) *Distributed and boundary expressions of first and second order shape derivatives in nonsmooth domains*
A. Laurain
Journal de Mathématiques Pures et Appliquées
Volume 134, February 2020, Pages 328-368
https ://doi.org/10.1016/j.matpur.2019.09.002

31) *Analysing smooth and singular domain perturbations in level set methods*
A. Laurain
SIAM Journal on Mathematical Analysis, 50(4), 4327-4370. (44 pages) (2018)
https ://doi.org/10.1137/17M1118956

30) *A level set-based structural optimization code using FEniCS*
A. Laurain
Structural and Multidisciplinary Optimization,
September 2018, Volume 58, Issue 3, pp 1311–1334
https ://doi.org/10.1007/s00158-018-1950-2

29) *Properties of optimizers of the principal eigenvalue with indefinite weight and Robin conditions*
J. Lamboley, A. Laurain, G. Nadin and Y. Privat
Calculus of Variations and Partial Differential Equations (2016) 55 : 144.
DOI :10.1007/s00526-016-1084-6

28) *Stability Analysis of the Reconstruction Step of the Voronoi Implicit Interface Method*
A. Laurain
SIAM Journal on Numerical Analysis, Vol. 55, No. 1, pp. 1–30 (2017).
DOI : http ://dx.doi.org/10.1137/15M1046290

27) *Shape and parameter reconstruction for the Robin transmission inverse problem*

A. Laurain, H. Meftahi
Journal of Inverse and Ill-posed Problems. Volume 24, Issue 6, Pages 643-662, ISSN (Online) 1569-3945, ISSN (Print) 0928-0219,
DOI : 10.1515/jiip-2015-0008, May 2016

26) *A first order approach for worst-case shape optimization of the compliance for a mixture in the low contrast regime*
M. Dambrine, A. Laurain
Structural and Multidisciplinary Optimization (2016) 54 :215–231.
DOI : 10.1007/s00158-015-1384-z

25) *Shape optimization of an electric motor subject to nonlinear magnetostatics*
P. Gangl, U. Langer, A. Laurain, H. Meftahi, K. Sturm
SIAM J. Sci. Comput. Vol. 37, No. 6, pp. B1002-B1025 (2015)
DOI : 10.1137/15100477X

24) *Distributed shape derivative via averaged adjoint method and applications*
A. Laurain, K. Sturm
ESAIM : Mathematical Modelling and Numerical Analysis 50 (2016) 1241-1267
DOI : http ://dx.doi.org/10.1051/m2an/2015075

23) *A new reconstruction method for the inverse source problem from partial boundary measurements*
A. Canelas, A. Laurain, A.A. Novotny
Inverse Problems 31 (2015) 075009,
DOI :10.1088/0266-5611/31/7/075009

22) *Shape sensitivities for an inverse problem in magnetic induction tomography based on the eddy current model*
M. Hintermüller, A. Laurain, I. Yousept.
Inverse Problems 31 (2015) 065006,
DOI :10.1088/0266-5611/31/6/065006

21) *Droplet footprint control*
A. Laurain, S. Walker
SIAM J. Control Optim., 53(2), 771–799. (29 pages)
DOI :10.1137/140979721

20) *A bilevel shape optimization problem for the exterior Bernoulli free boundary value problem*
H. Kasumba, K. Kunisch, A. Laurain
Interfaces and Free Boundaries 16(2014), 459-487

19) *A new reconstruction method for the inverse potential problem*
A. Canelas, A. Laurain, A.A. Novotny
Journal of Computational Physics 268 (2014), 417–431.

18) *Global minimizers of the ground state for two phase conductors in low contrast regime*
A. Laurain
ESAIM : COCV 20 (2014), 362–388.

17) *A semismooth Newton method for a class of semilinear optimal control problems with box and volume constraints*
S. Amstutz, A. Laurain
Computational Optimization and Applications 56 (2013), no. 2, 369–403.

16) *Topological sensitivity analysis in fluorescence optical tomography*
A. Laurain, M. Hintermüller, M. Freiberger, H. Scharfetter
Inverse Problems 29 (2013) 025003.

15) *Minimization of the ground state for two phase conductors in low contrast regime*
C. Conca, A. Laurain, R. Mahadevan
SIAM Journal on Applied Mathematics : Vol. 72, No. 4 (2012), Pages 1238-1259.

14) *Principal Eigenvalue Minimization for an Elliptic Problem with Indefinite Weight and Robin Boundary Conditions*
M. Hintermüller, C.-Y. Kao, A. Laurain
Applied Mathematics & Optimization : Volume 65, Issue 1 (2012), Pages 111-146

13) *An image space approach to Cartesian based parallel MR imaging with total variation regularization*
S.L. Keeling, C. Clason, M. Hintermüller, F. Knoll, A. Laurain, G. Von Winckel
Medical Image Analysis, Volume 16, Issue 1, January 2012, Pages 189-200.

12) *A total variation based approach to correcting surface coil magnetic resonance images*
S.L. Keeling, M. Hintermüller, F. Knoll, D. Kraft, A. Laurain
Applied Mathematics and Computation, Volume 218, Issue 2, 15 September 2011, Pages 219-232

11) *Optimal shape design subject to variational inequalities*
M. Hintermüller and A. Laurain
SIAM Journal on Control and Optimization, Vol.49 (2011), No.3, pp. 1015-1047.

10) *Second-order topological expansion for electrical impedance tomography*
M. Hintermüller, A. Laurain and A.A. Novotny.
Advances in Computational Mathematics 36 (2012), no. 2, 235–265.

9) *On a Bernoulli problem with geometric constraints*
A. Laurain and Y. Privat
ESAIM : Control, Optimisation and Calculus of Variations (2012), no. 1, 157–180.

8) *Singular perturbations of curved boundaries in dimension three. The spectrum of the Neumann Laplacian.*
A. Laurain, S. Nazarov and J. Sokolowski,
Journal for Analysis and its Applications, Vol. 30 (2011), No. 2, pp. 148-180.

7) *Multiphase image segmentation and modulation recovery based on shape and topological sensitivity*
M. Hintermüller and A. Laurain,
Journal of Mathematical Imaging and Vision, September 2009, Vol. 35, No. 1, pp. 1-22.

6) *On the analysis of boundary value problems in nonsmooth domains*
G. Frémiot, W. Horn, A. Laurain, M. Rao and J. Sokolowski,
Dissertationes Mathematicae, 462 (2009), 149 pp.
DOI : 10.4064/dm462-0-1

5) *Electrical Impedance Tomography : From Topology to Shape*
M. Hintermüller and A. Laurain,
Control and Cybernetics, special issue on the occasion of Jean-Paul Zolésio's 60th birthday,
Vol. 37, No. 4, 2008.

4) *A shape and topology optimization technique for solving a class of linear complementary problems in function space*
M. Hintermüller and A. Laurain,
Computational Optimization and Applications, 2010, Vol. 46, No. 3, pp. 535-569

3) *Levelset method with topological derivatives in shape optimization*
P. Fulmanski, A. Laurain, J.-F. Scheid and J. Sokolowski,
International Journal of Computer Mathematics,

Vol. 85, No. 10, October 2008, pp. 1491-1514(24).

2) *A level set method in shape and topology optimization for variational inequalities*
P. Fulmanski, A. Laurain, J.-F. Scheid and J. Sokolowski,
Int. J. Appl. Math. Comput. Sci., 2007, Vol. 17, No. 3, 413-430.

1) *Structure of shape derivatives in non-smooth domains and applications*
A. Laurain,
Advances in Mathematical Sciences and Applications, Vol.15, No.1, 2005.

4.2 Extended abstracts

2) *Sharp-interface imaging in full waveform inversion using finite elements*
K. J. Roberts, Y. Albuquerque, A. Laurain
Conference Proceedings, 82nd EAGE Annual Conference & Exhibition,
Oct 2021, Volume 2021, p.1 - 5
European Association of Geoscientists & Engineers
DOI : https ://doi.org/10.3997/2214-4609.202113171

1) *Reconstruction of Sharp Interfaces in Time-Domain Full Waveform Inversion*
Y. Albuquerque, A. Laurain
Conference Proceedings, EAGE 2020 Annual Conference & Exhibition Workshop Programme,
Dec 2020, Volume 2020, p.1 - 5.
European Association of Geoscientists & Engineers
DOI : https ://doi.org/10.3997/2214-4609.202011976

4.3 Conference proceedings

10) *Topological derivative-based heat sink design with temperature constraints*
Giovanna C. Andrade, Antoine Laurain, Antonio A. Novotny
The 9th European Congress on Computational Methods in Applied Sciences and Engineering
ECCOMAS Congress 2024
3-7 June 2024, Lisboa, Portugal

9) *A new method for the inverse potential problem based on the topological derivative*
A.A. Novotny, A. Canelas, A. Laurain
Proceedings of the XXXIV Iberian Latin-American Congress on Computational Methods in Engineering
Z.J.G.N Del Prado (Editor), ABMEC, Pirenópolis, GO, Brazil, November 10-13, 2013.

8) *A Non-Iterative Method for the Inverse Potential Problem Based on the Topological Derivative*
Alfredo Canelas, Antoine Laurain, Antonio André Novotny,
Mini-Workshop : Geometries, Shapes and Topologies in PDE-based Applications.
Oberwolfach Report No. 57/2012 (DOI : 10.4171/OWR/2012/57).

7) *Minimization of the ground state for two phase conductors in low contrast regime*

C. Conca, A. Laurain, R. Mahadevan
Mini-Workshop : Geometries, Shapes and Topologies in PDE-based Applications.
Oberwolfach Report No. 57/2012 (DOI : 10.4171/OWR/2012/57).

6) *Using the topological derivative for initializing a Markov-chain Monte Carlo reconstruction in fluorescence tomography*
M. Freiberger, A. Laurain, M. Hintermüller, A. Köstinger and H. Scharfetter
Proceedings of SPIE-OSA Biomedical Optics, SPIE Vol. 8088,
Diffuse Optical Imaging III, 80881Q (2011). (DOI :10.1117/12.889609).

5) *Topological Derivative for Image Reconstruction in Fluorescence Tomography*
M. Freiberger, M. Hintermüller, A. Laurain and H. Scharfetter
Biomedizinische Technik/Biomedical Engineering. Volume 55, Issue s1, Pages 1–264,
44. DGBMT Jahrestagung Rostock (2010),
DOI : 10.1515/BMT.2010.447, October 2010

4) *Numerical algorithms for an inverse problem in shape optimization*
M. Grzanek, A. Laurain and K. Szulc
6th International Conference on Inverse Problems in Engineering : Theory and Practice,
Journal of Physics : Conference series, Vol. 135 (2008) 012047.

3) *Using self-adjoint extensions in shape optimization*
A. Laurain and K. Szulc
System modeling and optimization, 331–349,
IFIP Adv. Inf. Commun. Technol., 312, Springer, Berlin, 2009.

2) *Une méthode levelset en optimisation de formes*
P. Fulmanski, A. Laurain, J.-F. Scheid and J. Sokolowski
ESAIM proceedings, (2007), Vol. 22, 162-168.
CANUM 2006 - Congrès National d'Analyse Numérique

1) *Level set method for shape optimization of Signorini problem*
P. Fulmanski, A. Laurain and J.-F. Scheid
MMAR proceedings (2004), Vol. 1, 71-75.

4.4 Submitted

1) *Reconstruction of Voronoi diagrams : the case of inverse conductivity problems*
Ernesto G. Birgin, Antoine Laurain, Danilo R. Souza
submitted (2024)

2) *A unified framework for mixed-dimensional shape optimization problems*
Antoine Laurain
submitted (2024)

3) *Shape optimization of polytopes and application to the polyhedral Saint-Venant inequality*
Josué D. Díaz-Avalos, Antoine Laurain
submitted (2024)

4.5 Chapters in book

1) *Topological derivatives and Levelset method in shape optimization*
P. Fulmanski, A. Laurain, J.-F. Scheid, J. Sokolowski, K. Szulc
in *Electrical Capacitance Tomography. Theoretical Basis and Applications*, pp 12-67
Dominik Sankowski and Jan Sikora, Eds, Wydawnictwo Ksiazkowe Instytutu Elektrotechniki
Warszaw 2010, ISBN 978-83-61956-00-6
DOI : 10.13140/2.1.4689.9849

2) *Elliptic Mathematical Programs with Equilibrium Constraints in Function Space : Optimality Conditions and Numerical Realization*
M. Hintermüller, A. Laurain, C. Löbhard, C. Rautenberg, T. Surowiec
in *Trends in PDE Constrained Optimization*, pp 133-153
Editors : G. Leugering, P. Benner, S. Engell, A. Griewank, H. Harbrecht, M. Hinze, R. Rannacher, S. Ulbrich, International Series of Numerical Mathematics, 165
Springer International Publishing
DOI : 10.1007/978-3-319-05083-6_9

4.6 Technical reports

1) *Modulation recovery and image reconstruction in Parallel Magnetic Resonance Imaging : a structural study by parameterization*
M. Hintermüller, S.L. Keeling and A. Laurain
Technical University of Graz, SFB report no. 23, 2008.

4.7 Others

2) *Shape optimization for covering problems*
E. G. Birgin and A. Laurain
Notices of the American Mathematical Society 70, pp. 1584-1591, 2023.
DOI : 10.1090/noti2799

1) *Where to place a hole ?*
M. Hintermüller and A. Laurain,
ECMI Newsletter 41, march 2007.

4.8 Codes

1) *Level set-based 2D structural optimization using FEniCS*
`http://www.antoinelaurain.com/compliance.htm`

This educational code written for FEniCS is for compliance minimization in structural optimization, in two dimensions. The code is based on a level set formulation and on the distributed expression of the shape derivative, and exploits the powerful features of FEniCS to solve complicated PDEs with a simple implementation. The code is written for compliance minimization in the framework of linearized elasticity, but can be adapted for other functionals or other PDEs.

5 Grants & Projects

11/08/2022	*Honorable Mention of the CAPES Thesis Award 2022* PhD Thesis of Yuri F. Albuquerque Area : Mathematics / Probability and Statistics Graduate Program in Applied Mathematics at the University of São Paulo CAPES award (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) Brazil
03/2022 - 03/2026	*Bolsa CNPq de Produtividade em Pesquisa - PQ 2021, Nível : PQ-1D.* *"Nonsmooth shape optimization and applications"* Process Nr. 303243/2021-0 Grant for productivity in research from CNPq, Conselho Nacional de Desenvolvimento Científico e Tecnológico, (National Council for Scientific and Technological Development, Brazil).
02/2019 - 02/2022	*Chamada MCTIC/CNPq No 28/2018 - Universal/Faixa B* *"Nonsmooth shape optimization and control of free boundary problems"* Process Nr. 408175/2018-4 Conselho Nacional de Desenvolvimento Científico e Tecnológico, (National Council for Scientific and Technological Development, Brazil).
03/2019 - 03/2022	*Bolsa CNPq de Produtividade em Pesquisa - PQ 2018, Modalidade/Nível : PQ-2.* *"Nonsmooth shape optimization and control of free boundary problems"* Process Nr. 304258/2018-0 Grant for productivity in research from CNPq, Conselho Nacional de Desenvolvimento Científico e Tecnológico, (National Council for Scientific and Technological Development, Brazil).
07/2018 - 07/2022	*"Optimization of finite-difference seismic wave solvers and their adjoints"* Our workstream is part of the major project *"Software technologies for simulation and inversion"* of the Research Centre for Gas Innovation of POLI-USP at the University of São Paulo (`http://www.rcgi.poli.usp.br/`). The project is funded by Shell, and consists of 11 principal investigators and a total of 64 participants. Our workstream is based at the Institute of Mathematics and Statistics (IME) of the University of São Paulo, and consists of three professors : Saulo R.M. Barros (Coordinator), Antoine Laurain (Principal Investigator), Pedro S. Peixoto (Principal Investigator), 2 Postdoctoral researchers, 4 PhD students, 1 MSc student, and 1 undergraduate student.

This project focuses on developing a range of software technologies required for simulation and data inversion. Despite the fact that applications such as seismic imaging through data inversion predates the current surge in interest in data analytics and machine learning by many years, it remains an incredibly challenging problem due to the inherent complexity of the problem, large data volumes and high computational cost. The software required is highly specialized, both in terms of mathematics and high performance computing methods, and takes many person-years to develop. This poses a serious barrier to the development of new methods and innovation, for example to better image below salt layers commonly found off the coast of Brazil.

06/2017 - 11/2019	*Projeto de Pesquisa FAPESP - Regular, Processo : 2016/24776-6* *"Otimização de forma e problemas de fronteira livre"* FAPESP grant (Fundação de Amparo á Pesquisa do Estado de São Paulo), Brazil.
08/06/2017	*Apoio à Participação em Eventos Científicos no Exterior* Process Nr. 452990/2017-3 Grant for participation in scientific events abroad from CNPq, Conselho Nacional de Desenvolvimento Científico e Tecnológico, (National Council for Scientific and Technological Development, Brazil).
2016 - 2019	*Bolsa CNPq de Produtividade em Pesquisa - PQ 2015, Modalidade/Nível : PQ-2.* *"Shape optimization / control of free boundaries"* Process Nr. 302493/2015-8 Grant for productivity in research from CNPq, Conselho Nacional de Desenvolvimento Científico e Tecnológico, (National Council for Scientific and Technological Development, Brazil).
03/2012-04/2015	*MATHEON-Project C37* *"Shape / Topology optimization methods for inverse problems"* DFG Research Center MATHEON "Mathematics for key technologies".

6 Teaching

6.1 Student supervision

11/2024 (in progress)	Alessio Canicchio Master Student University of Duisburg-Essen. Erasmus Scholarship Period of grant award : 11/2024 - 04/2025
12/2023 (in progress)	Josué Daniel Díaz Avalos Postdoctoral researcher University of Duisburg-Essen.

	Period of grant award : 12/2023 - 12/2026
07/2022 (in progress)	Beatriz Dionizio Gomes Master student *A free boundary problem for the Stokes equations* Institute of Mathematics and Statistics, University of São Paulo. CNPQ scholarship
03/2022 (in progress)	Giovanna Castello de Andrade PhD student Institute of Mathematics and Statistics, University of São Paulo. Fapesp scholarship Period of grant award : 01/03/2022 - 01/03/2026
12/2021 - 06/2023 (concluded)	Yuri Flores Albuquerque Postdoctoral researcher Institute of Mathematics and Statistics, University of São Paulo. FUSP PD scholarship, project *"Software technologies for simulation and inversion"* Period of grant award : 01/12/2021 - 30/06/2023
06/2021 (in progress)	Paula Neves de Araujo PhD student Instituto de Matemática e Estatística, University of São Paulo. FUSP DO-2 scholarship, project *"Software technologies for simulation and inversion"* Period of grant award : 01/12/2020 - 30/06/2023
02/2020 (in progress)	André Matos de Souza PhD student (co-orientation with Prof. Irwin Yousept) University of Duisburg-Essen and Institute of Mathematics and Statistics, University of São Paulo. CNPQ scholarship Period of grant award : 03/2020 - 02/2024 (interrupted in 2022 to switch to a DFG scholarship in Germany)
01/2020 - 12/2022 (concluded)	Benedito Silva Abreu Postdoctoral researcher Institute of Mathematics and Statistics, University of São Paulo. FUSP PD scholarship, project *"Software technologies for simulation and inversion"* Period of grant award : 01/01/2020 - 31/12/2022
08/2019 - 05/2020 (concluded)	Jean Carlos Nakasato Postdoctoral researcher Institute of Mathematics and Statistics, University of São Paulo.
06/2018 - 10/2021 (concluded)	Yuri Flores Albuquerque PhD student *Shape optimization and level set method applied in inverse problems* Institute of Mathematics and Statistics, University of São Paulo. FUSP DO-2 scholarship, project *"Software technologies for simulation and inversion"* Period of grant award : 01/09/2018 - 31/10/2021
02/2018 - 04/2021 (concluded)	Diego Ruge Master student *Cálculo de forma usando formas diferenciais e cálculo exterior* Institute of Mathematics and Statistics, University of São Paulo. CNPQ scholarship

	Period of grant award : 03/2018 - 07/2018
09/2016 - 06/2024 (concluded)	Jadevilson Cruz Ribeiro PhD student *Otimização de forma e controle ótimo para problemas de fronteira livre* Institute of Mathematics and Statistics, University of São Paulo.
09/2016 - 09/2019 (concluded)	Vanessa Soares Borges da Silva Master student *O método do adjunto médio em otimização de forma e aplicações* Institute of Mathematics and Statistics, University of São Paulo. CAPES scholarship Period of grant award : 08/2015 - 07/2017
2013 - 2015 (concluded)	Houcine Meftahi Postdoctoral researcher in the MATHEON-Project C37 *Shape / Topology optimization methods for inverse problems*. Technical University of Berlin, DFG Research Center Matheon.
2014 (concluded)	Philipp Kliewe Master student *Analysis, Numerik und Formoptimierung von gekoppelten Fluid-Struktur-Problemen.* Technical University of Berlin.
2013 (concluded)	Dominik Beinert Graduation Thesis *Formoptimierungsmethoden für Bernoulli-Freirandprobleme.* Technical University of Berlin.

6.2 Lectures

(S) = summer semester, (W) = winter semester

2024 (S)	- *Numerische Mathematik II* 1 semester - graduation - teaching in German Faculty of Mathematics, University of Duisburg-Essen
2023 (W)	- *Numerische Mathematik I* 1 semester - graduation - teaching in German Faculty of Mathematics, University of Duisburg-Essen
2023 (W)	- *Introduction to Numerical Methods* 1 semester - post-graduation- teaching in English Faculty of Mathematics, University of Duisburg-Essen
2023 (S)	- *Programmierkurs zur Numerischen Mathematik* Block course (two weeks) - graduation - teaching in German Faculty of Mathematics, University of Duisburg-Essen
2023 (S)	- *Inverse Probleme* 1 semester - post-graduation - teaching in German Faculty of Mathematics, University of Duisburg-Essen
2022 (W)	- *Resolução Numérica de Equações Diferenciais Parciais* 1 semester - post-graduation - teaching in Portuguese

	Instituto de Matemática e Estatística, Universidade de São Paulo
2022 (S)	- *Introdução á Análise Numérica*
	1 semester - graduation - teaching in Portuguese
	Escola Politécnica, Universidade de São Paulo
2021 (S)	- *Introdução á Análise Numérica*
	1 semester - graduation - teaching in Portuguese
	Escola Politécnica, Universidade de São Paulo
2020 (W)	- *Resolução Numérica de Equações Diferenciais Parciais Elípticas*
	1 semester - post-graduation - teaching in Portuguese
	Instituto de Matemática e Estatística, Universidade de São Paulo
2020 (S)	- *Introdução á Análise Numérica*
	1 semester - graduation - teaching in Portuguese
	Escola Politécnica, Universidade de São Paulo
2019 (S)	- *Introdução á Análise Numérica*
	1 semester - graduation - teaching in Portuguese
	Escola Politécnica, Universidade de São Paulo
2018 (W)	- *Fundamentos de Análise Numérica*
	1 semester - graduation - teaching in Portuguese
	Instituto de Matemática e Estatística, Universidade de São Paulo
2018 (S)	- *Introdução á Análise Numérica*
	1 semester - graduation - teaching in Portuguese
	Escola Politécnica, Universidade de São Paulo
2017 (W)	- *Resolução Numérica de Equações Diferenciais Parciais Elípticas*
	1 semester - post-graduation - teaching in Portuguese
	Instituto de Matemática e Estatística, Universidade de São Paulo
2017 (S)	- *Introdução á Análise Numérica*
	1 semester - graduation - teaching in Portuguese
	Escola Politécnica, Universidade de São Paulo
2016 (W)	- *Cálculo diferential*
	1 semester - graduation - teaching in Portuguese
	Instituto de Matemática e Estatística da Universidade de São Paulo
2016 (S)	- *Métodos Numéricos em Equações Diferenciais I*
	1 semester - graduation - teaching in Portuguese
	Instituto de Matemática e Estatística da Universidade de São Paulo
2016 (S)	- *Introdução á Análise Numérica*
	1 semester - post-graduation - teaching in Portuguese
	Instituto de Matemática e Estatística da Universidade de São Paulo
2015 (W)	- *Shape optimization*
	1 semester - post-graduation - teaching in English
	Instituto de Matemática e Estatística da Universidade de São Paulo
2014 -2015 (W)	- *Numerik I für Ingenieure (Numerical analysis for Engineering - 1st year)*
	recitations - graduation - teaching in German
	Technical University of Berlin, Institute of Mathematics, Berlin, Germany
2013 (W)	- *Nonlinear optimization (Master)*
	Block course (2 weeks)
	Viện Toán Học, Institute of Mathematics, Hanoi, Vietnam
2012 - 2013 (W)	- *Students seminar (Bachelor)*
	Technical University of Berlin, Germany
2012 - 2013 (W)	- *Inverse problems (Master)*
	1 semester - post-graduation - teaching in English
	Technical University of Berlin, Germany

2011-2012	- *Optimization with equilibrium constraints (Master)* replacements-teaching in English Humboldt University of Berlin, Germany
2011 (S)	- *Computer Mathematics* recitations - graduation - teaching in German Humboldt University of Berlin, Germany.
2010-2011	- *Nonlinear optimization (Master)* replacements - teaching in German Humboldt University of Berlin, Germany.
2010 (S)	- *Mathematics 4* 1 semester - post-graduation - teaching in German University of Aachen, Germany.
2010 (S)	- *Mathematics 2* 1 semester - graduation - teaching in German University of Aachen, Germany.
2009-2010 (W)	- *Shape and topology sensitivity analysis (Master and Ph.D)* 1 semester - post-graduation - teaching in English University of Graz, Austria.
2003-2006	- *Linear Algebra, Analysis (1st year)* 64 hours/year - graduation - teaching in French ESSTIN Nancy, France.

7 Scientific visits

08/2022 **University Duisburg-Essen**
Invitation from Prof. Irwin Yousept
Essen, Germany

12/2019 **University Duisburg-Essen**
Invitation from Prof. Irwin Yousept
Essen, Germany

05/2019 **University of Strasbourg**
Invitation from Prof. Yannick Privat
Strasbourg, France

12/2018 **University Duisburg-Essen**
Invitation from Prof. Irwin Yousept
Essen, Germany

06/2017 **LNCC Petrópolis**
Invitation from Dr. Antonio André Novotny
Petrópolis, Brazil

02/2017 **University Duisburg-Essen**
Invitation from Prof. Irwin Yousept
Essen, Germany

06/2015 **CMM Santiago**
Invitation from Prof. Carlos Conca
Santiago, Chile

04/2014 **Université Pierre et Marie Curie**
Visiting Professorship (one month)
Paris, France

01/2014 **University of Concepción**
Invitation from Pr. Rajesh Mahadevan
Concepción, Chile

05/2013 **LNCC Petrópolis**
Invitation from Dr. Antonio André Novotny
Petrópolis, Brazil

12/2012 **University of Pau**
Invitation from Pr. Marc Dambrine
Pau, France

09/2012 **University of Concepción**
Invitation from Pr. Rajesh Mahadevan
Concepción, Chile

07/2011 **ENS Cachan Bretagne**
Invitation from Dr. Yannick Privat
Rennes, France

08/2010 **CMM Santiago**
Invitation from Prof. Carlos Conca
Santiago, Chile

08/2010 **LNCC Petrópolis**
Invitation from Dr. Antonio André Novotny
Petrópolis, Brazil

03/2010 **ENS Cachan Bretagne**
Invitation from Dr. Yannick Privat
Rennes, France

02/2010 **University of Avignon**
Invitation from Prof. Samuel Amstutz
Avignon, France

03/2009 **Humboldt University of Berlin**
Invitation from Prof. Michael Hintermüller
Berlin, Germany

07/2008 **University of Sussex**
Invitation from Prof. Michael Hintermüller

Brighton, England

04/2008 **Institute Elie Cartan, University of Nancy**
Invitation from Prof. Jan Sokolowski
Nancy, France

03/2008 **ETH (Eidgenössische Technische Hochschule Zürich)**
Invitation from Prof. Christoph Schwab
Zürich, Switzerland

8 Organization of scientific events

08/2021 **Minisymposium "Optimization, modeling and representation of shapes."**
Organizers : Estefania Loayza Romero, Kathrin Welker, Antoine Laurain
IFIP TC7 2021.
Quito, Ecuador.

03/2018 **Section S19 "Optimization of differential equations"**
GAMM 2018, Munich, Germany.
Invited co-organizer of the section with Prof. Irwin Yousept.

03/2014 **Young Researchers' Minisymposium "Geometry and Shape Optimization"**
GAMM 2014.
Erlangen, Germany.

08/2012 **Minisymposium "Numerical methods in shape and topology optimization"**
ISMP 2012.
Berlin, Germany.

09/2011 **Minisymposium "Modern applications and techniques of shape optimization"**
IFIP TC 7 Conference 2011.
Berlin, Germany.

07/2009 **Minisymposium "Recent Advances in Shape and Topology Optimization"**
SIAM 2009 Annual meeting.
Denver, Colorado, U.S.A.

09/2008 **Workshop "Advances in Shape and Topology Optimization[1]"**
University of Graz, Austria.
Co-organizer of the Workshop with the START Project.

09/2007 **ENUMATH 2007**[2]
University of Graz, Austria.
Co-organizer of the conference.

10/2005 **International meeting "Shape optimization and its applications"**
Institute Elie Cartan, University Henri Poincaré Nancy-1, France.
Co-organizer of the meeting.

9 Talks

9.1 Talks in Conferences

2024 - *Reconstruction of Voronoi diagrams in inverse problems*
11th International Conference "Inverse Problems : Modeling and Simulation" (IPMS 2024)
Malta, May 2024

2023 - *Sensitivity analysis and tailored design of minimization diagrams*
Workshop “New perspective on Shape and Topology Optimization”
Erwin Schrödinger International Institute for Mathematics and Physics (ESI)
Vienna, Austria, December 2023.
- *Sensitivity analysis and tailored design of minimization diagrams*
European Conference on Computational Optimization (EUCCO 2023)
Heidelberg, Germany, September 2023.
- *Shape optimization approach for sharp-interface reconstructions in time-domain full waveform inversion*
11th Applied Inverse Problems Conference (AIP 2023)
Göttingen, Germany, September 2023.

2022 - *Sharp interface imaging in full waveform inversion*
STMI 2022 - Workshop on Software for Modeling and Inversion
Polytechnic School of the University of São Paulo, October 2022.
- *Optimal control of volume-preserving mean curvature flow*
Computational Methods in Applied Mathematics (CMAM-22)
Vienna, Austria, August 2022.

2021 - *A shape optimization approach to the problem of covering a two-dimensional region with minimum-radius identical balls*
International conference on Mathematics and Data Science (ICMDS-21)
Khouribga, Morocco, October 2021 (online).
- *Sharp-interface imaging in full waveform inversion using finite elements*
EAGE Annual 2021, 82nd Conference & Exhibition
Amsterdam, The Netherlands, October 2021 (online).
- *A shape optimization approach to the problem of covering a two-dimensional region with minimum-radius identical balls*
IFIP TC7 Conference on System Modelling and Optimization,
Quito, Ecuador, September 2021 (online).
- *Shape optimization approach for sharp-interface reconstructions in time-domain full waveform inversion*
IFIP TC7 Conference on System Modelling and Optimization,
Quito, Ecuador, September 2021 (online).

2019 - *Shape design for superconductors governed by $H(\mathrm{curl})$-elliptic variational inequalities*
Dynamics, Equations and Applications (DEA 2019),
Kraków, Poland, September 2019.
- *Nonsmooth shape optimization and application to inverse problems*
ICCOPT International Conference on Continuous Optimization
Berlin, Germany, August 2019.
- *A shape optimization approach for electrical impedance tomography with point measurements*

ICIAM International Congress on Industrial and Applied Mathematics,
Valencia, Spain, July 2019.
- *Recent advances in nonsmooth shape optimization*
ICIAM International Congress on Industrial and Applied Mathematics,
Valencia, Spain, July 2019.
- *Recent advances in nonsmooth shape optimization*
ICMC Summer Meeting on Differential Equations,
São Carlos, Brazil, February 2019.

2018 - *Distributed shape derivative and applications*
IFIP TC 7 Conference on System Modelling and Optimization,
Essen, Germany, July 2018.
- *Shape optimization for an eigenvalue problem with indefinite weight*
South American Workshop on Integral and Differential Equations,
São Paulo, Brazil, February 2018.
- *Controlling the footprint of droplets*
ICMC Summer Meeting on Differential Equations, São Carlos, Brazil, February 2018.

2017 - *Controlling the footprint of droplets*
ENUMATH 2017, Voss, Norway, September 2017.
- *Structural Optimization using the Level Set Method*
31st Colóquio Brasileiro de Matemática, IMPA, Rio de Janeiro, Brazil, August 2017.

2016 - *Structural Optimization using the Level Set Method*
II Congresso Brasileiro de Jovens Pesquisadores em Matemática Pura e Aplicada,
IMECC/Unicamp, Campinas, Brazil, December 2016.

2014 - *Control of free boundaries*
Workshop on shape and topology optimization with PDE constraints in Celebration to the 65th Birthday of Professor Jan Sokolowski, LNCC Petrópolis, Brazil, August 2014.
- *Shape and Topology Optimization Methods for Inverse Problems*
SIAM Conference on Imaging Science, Hong Kong Baptist University, May 2014.
- *Controlling the footprint of droplets*
Workshop on PDE-Constrained Optimization, RICAM Linz, Austria, March 2014.

2013 - *Introduction to the topological derivative in shape optimization*
Summer school on Evolutionary Solid Bodies, Münster, Germany, September 2013.
- *A Shape Optimization Method for Magnetic Induction Tomography*
IFIP TC 7/2013, Klagenfurt, Austria, September 2013
- *Shape optimization of the ground state for two phase conductors*
EQUADIFF 2013, Prague, Czech Republic, August 2013.
- *A Shape Optimization Method for Magnetic Induction Tomography*
ICCOPT 2013, Lisbon, Portugal, July 2013

2012 - *Shape optimization for eigenvalue problems*
Mini-Workshop : Geometries, Shapes and Topologies in PDE-based Applications,
MFO Oberwolfach, Germany, November 2012.
- *A shape and topology optimization method for inverse problems in tomography*
ISMP 2012, Berlin, Germany, August 2012.
- *A shape and topology optimization method for the resolution of inverse problems*
SIAM Conference on Imaging Science, Philadelphia, U.S.A., May 2012.
- *A semismooth Newton method for a class of semilinear optimal control problems*
PICOF 2012, Paris, France, April 2012.

2011 - *Minimization of the ground state for two phase conductors in low contrast regime*

JFCO7, Perpignan, France, November 2011.
- *Minimization of the ground state for two phase conductors in low contrast regime*
IFIP TC7 2011, Berlin, Germany, September 2011.
- *Minimization of the ground state for two phase conductors in low contrast regime*
Workshop p.d.e., optimal design and numerics, Benasque, Spain, August 2011.
- *A shape and topology optimization method for the resolution of inverse problems*
AIP 2011, College Station, Texas, U.S.A., May 2011.
- *Multiphase image segmentation based on shape and topological sensitivity*
AIP 2011, College Station, Texas, U.S.A., May 2011.
- *Optimal shape design subject to variational inequalities*
SIAM conference on optimization, Darmstadt, Germany, May 2011.
- *A shape and topology optimization method for the resolution of inverse problems*
GAMM 2011, Graz, Austria, April 2011.

2010 - *A shape and topology optimization method for the resolution of inverse problems*
Advances in Topological Sensitivity Analysis for Computational Modelling,
LNCC Petrópolis, Brazil, August 2010.
- *A shape and topology optimization method for the resolution of inverse problems*
Workshop on Optimal Control in Image Processing, Heidelberg, Germany, June 2010.

2009 - *Higher-order expansions in Electrical Impedance Tomography*
Workshop p.d.e., optimal design and numerics, Benasque, Spain, August 2009.
- *Higher-order expansions in Electrical Impedance Tomography*
AIP 2009, Vienna, Austria, July 2009.
- *Higher-order expansions in Electrical Impedance Tomography*
SIAM annual meeting, Denver, Colorado, U.S.A. , July 2009.

2008 - *Optimal shape design subject to variational inequalities*
OPTPDE (Optimization with PDE constraints), Warsaw, Poland, December 2008.
- *Multiphase image segmentation by shape and topological sensitivity*
Jahrestagung der Deutschen Mathematiker-Vereinigung 2008,
Erlangen, Germany, September 2008.
- *Optimal shape design subject to variational inequalities*
SIAM Conference on Optimization, Boston, Massachusetts, U.S.A., March 2008.

2007 - *Optimal shape design subject to variational inequalities*
SIAM Conference on Analysis of Partial Differential Equations
Phoenix, Arizona, U.S.A., December 2007
- *Multiphase image segmentation by shape and topological sensitivity*
ÖMG/JSMF conference 2007
Podbanske, Slovakia, September 2007
- *Optimal shape design subject to variational inequalities*
ENUMATH 2007, University of Graz, Austria, September 2007
- *A TOPSHAPE algorithm for the solution of a state-constrained problem*
First joint international meeting between the AMS and the PTM
University of Warsaw, Poland, August 2007
- *Using Self-adjoint Extensions in Shape Optimization*
IFIP 2007, Krakow, Poland, July 2007
- *A TOPSHAPE Algorithm for obstacle problems*
Cinquième journées singulières,
CIRM, Luminy, France, April 2007

2006 - *A Level set method in shape optimization for variational inequations*
ISMP 2006, Rio de Janeiro, Brazil, August 2006

- *Numerical methods for shape optimization of variational inequalities*
Oberwolfach Workshop : Applications of Asymptotic Analysis,
Mathematisches Forschungsinstitut Oberwolfach, Germany, June 2006
- *A Level set method in Shape optimization*
Analytical and numerical methods for scientific computing in science and engineering,
French-Japanese seminar, University Henri Poincaré, Nancy, France, Februar 2006

2005 - *Self-adjoint extensions and topology optimization*
International meeting Shape optimization and its applications, Nancy, France, October 2005
- *Level set methods for variational inequalities*
22nd IFIP TC7 conference, Torino, Italy, July 2005

9.2 Talks in Seminars

2024 - *Reconstruction of Voronoi diagrams in inverse problems*
Research Seminar, Eindhoven, Holland, September 2024

2023 - *Shape Optimization : Introduction and Recent Advances*
Inaugural lecture, Faculty of Mathematics of the University of Duisburg-Essen, June 2023
- *Optimal control of volume-preserving mean curvature flow*
Research Seminar, Den Haag, Holland, October 2023

2022 - *Optimal control of volume-preserving mean curvature flow*
Webinar on Evolution Equations and Dynamical Systems (online),

2021 - *Shape optimization approach for sharp-interface reconstructions in inverse problems*
SIAM One World IMAGINE Seminar, October 2021 (online),
- *A shape optimization approach to the problem of covering a two-dimensional region with minimum-radius identical balls*
Seminar of the Mathematics department (online),
Universidad de Concepción, Chile, June 2021
- *Sharp-interface imaging in full waveform inversion using finite elements*
Fórum de Cooperação para P&D em Geofísica (online),
University of São Paulo, Brazil, June 2021
- *Shape optimization approach for sharp-interface reconstructions in inverse problems*
Seminario de Investigación del Centro de Modelización Matemática - Modemat (online),
EPN, Quito, Ecuador, February 2021

2020 - *Shape optimization approach for sharp-interface reconstructions in inverse problems*
Séminaire de Mathématiques et Colloquium (online),
Département de Mathématiques de l'IRIMAS
Mulhouse, France, December 2020
- *Shape optimization approach for sharp-interface reconstructions in inverse problems*
Séminaire de l'équipe ANEDP de Paris-Saclay,
Université Paris-Saclay
Orsay, France, September 2020

2019 - *Recent advances in nonsmooth shape optimization*
Lectures on Partial Differential Equations, IME-USP, July 2019

2017 - *Shape Optimization and Application to Inverse Problems*

Instituto de Astronomia, Geofísica e Ciências Atmosféricas,
Universidade de São Paulo, Brazil, May 2017
- *Control of free boundaries*
University of Duisburg-Essen, Essen, Germany

2016 - *Shape and Topology Optimization Methods for Inverse Problems*
Universidade Federal de Santa Catarina, Florianópolis, Brazil, November 2015

2015 - *Introduction to shape optimization*
IMECC, Campinas, Brazil, October 2015
- *Introduction to shape optimization*
IME-USP, São Paulo, Brazil, August 2015

2014 - *Control of free boundaries*
Seminar on PDE-constrained optimization, TU Berlin, Germany, November 2014

2013 - *Shape and topology optimization methods for inverse problems*
DTU, Lyngby, Denmark, June 2013
- *Shape optimization for eigenvalue problems*
TU Berlin, Germany, June 2013
- *Shape and topology optimization methods for inverse problems*
LNCC petropolis, Brazil, May 2013.

2012 - *Recent advances in shape and topology optimization*
University of Concepción, Chile, September 2012
- *Math meets images*
Mathinside seminar, Urania, Berlin, Germany, March 2012

2011 - *Propagating interfaces and level set methods*
"What is ?" seminar, Urania, Berlin, Germany, December 2011
- *A shape and topology optimization method for the resolution of inverse problems*
TU Berlin, Germany, November 2011
- *Recent Advances in Shape and Topology Optimization : Theory and Applications*
WIAS, Berlin, Germany, November 2011
- *A shape and topology optimization method for the resolution of inverse problems*
RICAM, Linz, Austria, April 2011
- *On a Bernoulli problem with geometric constraints*
University of Clermont-Ferrand, France, January 2011

2010 - *A shape and topology optimization method for the resolution of inverse problems*
University RWTH Aachen, Germany, June 2010
- *A shape and topology optimization method for the resolution of inverse problems*
University of Rennes, France, March 2010
- *A shape and topology optimization method for the resolution of inverse problems*
University of Avignon, France, Februar 2010

2009 - *Image reconstruction in Cartesian parallel MRI*
SFB status seminar, Admont, Austria, November 2009.
- *Recent advances in shape optimization*
University of Besançon, France, April 2009.

2008 - *Multiphase image segmentation and modulation recovery in MRI*
SFB status seminar, Admont, Austria, November 2008.
- *Electrical Impedance Tomography : From Topology to Shape*
Institute Elie Cartan, University of Nancy, France, April 2008
- *Avancées récentes en Optimisation de Formes*

University of Limoges, France, March 2008
- *Recent Advances in Shape and Topology Optimization*
ETH (Eidgenössische Technische Hochschule Zürich),
Zürich, Switzerland, March 2008

2006 - *A Level set method in shape optimization for variational inequations*
Institute of Applied Mathematics ,
University of Erlangen, Germany, April 2006
- *Une méthode "levelset" en optimisation de formes pour des inéquations variationnelles*
LAMA, University of Savoie, Chambéry, France, April 2006

2005 - *Structure des dérivées de forme dans des domaines non-réguliers et applications*
ENS Cachan, Antenne de Bretagne,
Campus de Ker-Lann, Bruz, France, March 2005

10 Reviews

93 manuscripts reviewed for the following journals :

Applied Mathematical Modelling.
Applied Mathematics and Computation (AMC).
Applied Mathematics and Optimization (AMOP).
Applied Numerical Mathematics (APNUM).
Archive for Rational Mechanics and Analysis (ARMA).
Communications in Nonlinear Science and Numerical Simulation (CNSNS).
Computational Optimization and Applications (COAP).
Computational and Applied Mathematics (COAM).
Computer Methods in Applied Mechanics and Engineering (CMAME)
Discrete & Continuous Dynamical Systems - A
Engineering Computations
ESAIM : Control, Optimisation and Calculus of Variations (ESAIM : COCV)
ESAIM : Mathematical Modelling and Numerical Analysis (ESAIM : M2AN)
Inverse Problems.
Journal de l'École polytechnique (JEP)
Journal of Applied Mathematics and Computing (JAMC).
Journal of Computational Physics (JCP).
Journal of Differential Equations (JDE).
Journal of Elliptic and Parabolic Equations (JEPE).
Journal of Engineering Mathematics
Journal of Optimization Theory and Applications (JOTA)
Mathematical Methods in the Applied Sciences.
Nonlinear Analysis : Real World Applications (NONRWA).
Numerical Methods for Partial Differential Equations (NMPDE)
Optimization Methods and Software (OMS).
Proceedings in Applied Mathematics and Mechanics (PAMM).
São Paulo Journal of Mathematical Sciences
SIAM Journal on Applied Mathematics (SIAP)
SIAM Journal on Scientific Computing (SISC).

SIAM Journal on Control and Optimization (SICON).
SIAM Journal on Mathematical Analysis (SIMA).
SIAM Journal on Numerical Analysis (SINUM).
SIAM Journal on Optimization (SIOPT).
Structural and Multidisciplinary Optimization (SAMO).
The Journal of Geometric Analysis (JGEA).

11 Service for the Faculty and University

2024-2025	Organisation of the Colloquium of the Faculty of Mathematics University of Duisburg-Essen, Germany.
2024	Member of the Commission : “Postdoc-Preis 2024 der Fakultät für Mathematik” University of Duisburg-Essen, Germany.
2024	Member of the Commission for a W3 position on Discrete and Stochastic Optimization University of Duisburg-Essen, Germany.
2023-2024	Member of the Commission for a W1-W3 tenure track position on Applied Mathematics, Numerical Mathematics and Scientific Computing University of Duisburg-Essen, Germany.
29-30/10/2019	Membro da Comissão Julgadora do concurso de Livre Dôcencia. (Member of the Judging Commission of a Habilitation Thesis) University of São Paulo, Brazil.
12-15/12/2016	Banca examinadora do concurso público para provimento do cargo de professor adjunto. (Examiner of the public competition to fill the position of assistant professor) UNIFESP (Universidade Federal de São Paulo), Brazil.
17/12/2024	Participation in thesis defense panel at the University of Strasbourg, France. Examiner (Examinateur) PhD Thesis of Tom Sprunck
19/12/2024	Participation in thesis defense panel at the University of Avignon, France. Reviewer (Rapporteur) and Chair of the Examination Committee PhD Thesis of Luca Gorini
17/11/2023	Participation in thesis defense panel at the University of Duisburg-Essen, Germany. Chair of the Examination Committee (Vorsitzender der Prüfungskommission) PhD Thesis of Johanna Burtscheidt
Since 2015	Participation in thesis/dissertation defense panels at the University of São Paulo (Brazil) Master (4) PhD (6) Graduation (2)
Since 2015	Participation in qualification exam panels at the University of São Paulo (Brazil) Master (13) PhD (8)

12 Scientific Popularization & Educational outreach

2024-2025	*Co-organizer of MATh.en.JEANS at the Faculty of Mathematics of the University of Duisburg-Essen*
2023-2024	*Co-organizer of MATh.en.JEANS at the Faculty of Mathematics of the University of Duisburg-Essen* MATh.en.JEANS (`https://www.mathenjeans.fr/`) is primarily a method that, since 1989, aims to bring mathematics to life for young people according to the principles of mathematical research. It allows young people to meet researchers and engage in authentic scientific inquiry within a school setting, encompassing both theoretical and applied dimensions and, if possible, connected to current research themes. The organization of MATh.en.JEANS involved creating five mathematical projects for pupils of the Lycée Français International Simone Veil in Düsseldorf. Throughout the 2023-2024 school year, several workshops were held at the school to assist with these projects. Additionally, a final workshop was organized at the Faculty of Mathematics, where the students presented their results. During this event, I also delivered a talk titled "Les formes dans la nature" ("The Shapes in Nature").

13 Miscellaneous

Languages	French (native), English (fluent), German (advanced), Portuguese (fluent).
IT skills	Python, C++, Matlab, FEniCS, HTML, CSS.

1. `http://math.uni-graz.at/start-workshop08/`
2. `http://www.uni-graz.at/enumath07/`