
Resume

JÉRÔME DRONIOU

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1 Career

Given names: **Jérôme, Daniel, Raymond**

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Positions:

- 01/2024 – . . . : Adjunct Professor (research) in the School of Mathematics at Monash University.
- 12/2023 – . . . : Directeur de recherche (senior researcher) at the CNRS (France), in the Institut Montpellierain Alexander Grothendieck (IMAG, University Montpellier).
- 07/2020 – 11/2023: Professor at Monash University (Australia).
- 01/2018 – 06/2020: Associate Professor at Monash University (Australia).
- 01/2012 – 12/2017: Senior Lecturer at Monash University (Australia).
- 09/2006 – 08/2011: Professor at the University Montpellier 2 (France).
- 2002-2006: “Maître de Conférences” at the University Montpellier 2.
- 2001-2002: “Agrégé préparateur” at the “Ecole Normale Supérieure de Lyon”.
- 1998-2001: PhD student in Applied Mathematics (supervisor: Prof. Thierry Gallouët).

Diplomas and titles:

- 2004: “Habilitation à Diriger des Recherches”¹, University Montpellier 2.
- 2001: PhD thesis, University Aix-Marseille I (supervisor: T. Gallouët).

2 Publications

Research interests: theoretical and numerical analysis of partial differential equations. My main focus is on the conception and rigorous analysis of numerical schemes on generic polytopal meshes, for linear and non-linear elliptic and parabolic models. I design analysis techniques that cover a wide range of numerical schemes (low- and high-order methods: finite volume schemes, hybrid high-order methods, etc.), and enable complete convergence analysis (via error estimates or compactness techniques) for a variety of models, including some encountered in real-world applications.

¹“Habilitation à Diriger des Recherches”, which translates as “Authorisation to Supervise Research”, is the highest diploma in France and is required to become Professor in a French university.

Books

- [1] *The Hybrid High-Order Method for Polytopal Meshes: Design, Analysis, and Applications*. Daniele Antonio Di Pietro and Jérôme Droniou. Modeling, Simulation and Applications, vol. 19. Springer International Publishing, **2020**, xxxi + 525p. DOI: 10.1007/978-3-030-37203-3. URL: <https://hal.archives-ouvertes.fr/hal-02151813>.
- [2] *The gradient discretisation method*. Jérôme Droniou, Robert Eymard, Thierry Gallouët, Cindy Guichard, and Raphaèle Herbin. Mathematics & Applications, vol. 82. Springer, **2018**, 511p. DOI: 10.1007/978-3-319-79042-8. URL: <https://hal.archives-ouvertes.fr/hal-01382358>.

Book chapters

- [3] Clément Cancès, Jérôme Droniou, Cindy Guichard, Gianmarco Manzini, Manuela Bastidas Olivares, and Iuliu Sorin Pop. “Error Estimates for the Gradient Discretisation Method on Degenerate Parabolic Equations of Porous Medium Type”. In: *Polyhedral Methods in Geosciences*. Ed. by Daniele Antonio Di Pietro, Luca Formaggia, and Roland Masson. Vol. 27. SEMA–SIMAI series. Springer International Publishing, Cham, **2021**, pp. 37–72. DOI: 10.1007/978-3-030-69363-3_2. URL: www.uhasselt.be/Documents/CMAT/Preprints/2020/UP2004.pdf.
- [4] Jérôme Droniou, Robert Eymard, Thierry Gallouët, and Raphaèle Herbin. “Non-conforming Finite Elements on Polytopal Meshes”. In: *Polyhedral Methods in Geosciences*. Ed. by Daniele Antonio Di Pietro, Luca Formaggia, and Roland Masson. Vol. 27. SEMA–SIMAI series. Springer International Publishing, Cham, **2021**, pp. 1–35. DOI: 10.1007/978-3-030-69363-3_1. URL: <https://arxiv.org/abs/2007.06958>.

Articles in international peer-reviewed journals:

To appear:

- [5] Optimal error estimates for non-conforming approximations of linear parabolic problems with minimal regularity. Jérôme Droniou, Robert Eymard, Thierry Gallouët, Cindy Guichard, and Raphaèle Herbin. *SeMA*, 28p, **2024**. DOI: 10.1007/s40324-024-00360-w. URL: <https://hal.science/hal-04183945>.

Published:

- [6] Numerical analysis of a mixed-dimensional poromechanical model with frictionless contact at matrix–fracture interfaces. Francesco Bonaldi, Jérôme Droniou, and Roland Masson. *Math. Comp.* 93 (349), pp. 2103–2134, **2024**. DOI: 10.1090/mcom/3949. URL: <https://arxiv.org/abs/2201.09646>.
- [7] A pressure-robust Discrete de Rham scheme for the Navier-Stokes equations. Daniele A. Di Pietro, Jérôme Droniou, and Jia Jia Qian. *Comput. Methods Appl. Mech. Engrg.* 421, Paper no. 116765, 21p, **2024**. DOI: 10.1016/j.cma.2024.116765. URL: <https://arxiv.org/abs/2401.04456>.
- [8] A bubble VEM–fully discrete polytopal scheme for mixed-dimensional poromechanics with frictional contact at matrix fracture interfaces. Jérôme Droniou, Guillaume Enchéry, Isabelle Faille, Ali Haidar, and Roland Masson. *Comput. Methods Appl. Mech. Engrg.* 422, Paper no. 116838, 25p, **2024**. DOI: 10.1016/j.cma.2024.116838. URL: <http://arxiv.org/abs/2312.09319>.
- [9] Numerical analysis of the stochastic Stefan problem. Jérôme Droniou, Muhammad Awais Khan, and Kim-Ngan Le. *Comput. Math. Appl.* 173, pp. 114–140, **2024**. DOI: 10.1016/j.camwa.2024.08.007. URL: <https://arxiv.org/abs/2306.12668>.
- [10] Discretisations of mixed-dimensional Thermo-Hydro-Mechanical models preserving energy estimates. Jérôme Droniou, Mohamed Laaziri, and Roland Masson. *J. Comput. Phys.* 515, Paper no. 113295, 24p, **2024**. DOI: 10.1016/j.jcp.2024.113295. URL: <https://arxiv.org/abs/2401.12342>.

- [11] The eXtended Virtual Element Method for elliptic problems with weakly singular solutions. Jérôme Droniou, Gianmarco Manzini, and Liam Yemm. *Comput. Methods Appl. Mech. Engrg.* 429, Paper No. 117129, 16p, **2024**. DOI: 10.1016/j.cma.2024.117129. URL: <https://arxiv.org/abs/2402.02902>.
- [12] Two arbitrary-order constraint-preserving schemes for the Yang–Mills equations on polyhedral meshes. Jérôme Droniou and Jia Jia Qian. *Mathematics in Engineering*, 6 (3), pp. 468–493, **2024**. DOI: 10.3934/mine.2024019. URL: <https://arxiv.org/abs/2306.09751>.
- [13] A hybrid high-order scheme for the stationary, incompressible magnetohydrodynamics equations. Jérôme Droniou and Liam Yemm. *IMA J. Numer. Anal.* 44 (1), pp. 262–296, **2024**. DOI: 10.1093/imanum/drad005. URL: <https://arxiv.org/abs/2202.12436>.
- [14] A fully discrete plates complex on polygonal meshes with application to the Kirchhoff–Love problem. Daniele A. Di Pietro and Jérôme Droniou. *Math. Comp.* 92, pp. 51–77, 339 **2023**. DOI: 10.1090/mcom/3765. URL: <https://arxiv.org/abs/2112.14497>.
- [15] A polytopal method for the Brinkman problem robust in all regimes. Daniele A. Di Pietro and Jérôme Droniou. *Comput. Methods Appl. Mech. Engrg.* 409, Paper no. 115981, 33p, **2023**. DOI: 10.1016/j.cma.2023.115981. URL: <https://arxiv.org/abs/2301.03272>.
- [16] An arbitrary-order discrete de Rham complex on polyhedral meshes: Exactness, Poincaré inequalities, and consistency. Daniele A. Di Pietro and Jérôme Droniou. *Found. Comput. Math.* 23, pp. 85–164, **2023**. DOI: 10.1007/s10208-021-09542-8. URL: <https://arxiv.org/abs/2101.04940>.
- [17] Homological- and analytical-preserving serendipity framework for polytopal complexes, with application to the DDR method. Daniele A. Di Pietro and Jérôme Droniou. *M2AN Math. Model. Numer. Anal.* 57, pp. 191–225, 1 **2023**. DOI: 10.1051/m2an/2022067. URL: <https://arxiv.org/abs/2203.02939>.
- [18] Cohomology of the discrete de Rham complex on domains of general topology. Daniele A. Di Pietro, Jérôme Droniou, and Silvano Pitassi. *Calcolo*, 60 (2), Paper No. 32, 25p, **2023**. DOI: 10.1007/s10092-023-00523-7. URL: <https://arxiv.org/abs/2209.00957>.
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- [106] Two-Phase Darcy Flows in Fractured and Deformable Porous Media, Convergence Analysis and Iterative Coupling. Francesco Bonaldi, Konstantin Brenner, Jérôme Droniou, and Roland Masson. Vol. 2020. ECMOR XVII. European Association of Geoscientists & Engineers, **2020**, pp. 1–20. DOI: 10.3997/2214-4609.202035013.

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Submitted articles

- [1] A discrete trace theory for non-conforming hybrid discretisation methods. Santiago Badia, Jérôme Droniou, and Jai Tushar, 34p, **2024**. URL: <http://arxiv.org/abs/2409.15863>.
- [2] An exterior calculus framework for polytopal methods. Francesco Bonaldi, Daniele A. Di Pietro, Jérôme Droniou, and Kaibo Hu, 41p, **2024**. URL: <https://arxiv.org/abs/2303.11093>.
- [3] Analysis of a VEM–fully discrete polytopal scheme with bubble stabilisation for contact mechanics with Tresca friction. Jérôme Droniou, Ali Haidar, and Roland Masson, 31p, **2024**. URL: <http://arxiv.org/abs/2404.03045>.
- [4] A polytopal discrete de Rham complex on manifolds, with application to the Maxwell equations. Jérôme Droniou, Marien Hanot, and Todd Oliynyk, 33p, **2024**. URL: <https://arxiv.org/abs/2401.16130>.

Software:

- HARD::CORE (Hybrid Arbitrary Degree::Core) – Libraries to implement schemes with face/edge and cell polynomial unknowns on generic 2D and 3D polygonal meshes.
- Other implementations of some of the schemes designed and analysed in my papers can be found on my github page.

Textbook:

- MATHÉMATIQUES ET STATISTIQUE POUR LES SCIENCES DE LA NATURE (modéliser, comprendre et appliquer) (*Mathematics and statistics for the natural sciences (modelling, understanding and applying)*), G. Biau, J. Droniou et M. Herzlich, Collection Enseignement Sup / Mathématiques, EDP Sciences, mars 2010, 530p, ISBN 978-2-7598-0481-8.
This book is based on our experience of teaching mathematics to undergraduate students enrolled mainly in Biology, Chemistry and Earth Sciences studies.

Booklets:

- *A beginner's course in finite volume approximation of scalar conservation laws* (39p), J. Droniou, Pau – Toulouse – Zaragoza – summer school on nonlinear conservation laws, Jaca (Spain) 11-13/09/2008. http://users.monash.edu/~jdroniou/jaca_summer_school/.
- *Degrés topologiques et applications* (Topological degrees and applications) (56 p.), J. Droniou, 2006. <http://users.monash.edu.au/~jdroniou/docs/degre.pdf>.
- *Quelques Résultats sur les Espaces de Sobolev* (Some results on Sobolev spaces) (85 p.), J. Droniou, Polycopiés de l'Ecole Doctorale de Maths-Info de Marseille, 2001. <https://hal.archives-ouvertes.fr/hal-01382370>.
- *Intégration et Espaces de Sobolev à Valeurs Vectorielles* (Vector-valued integration and Sobolev spaces) (71 p.), J. Droniou, Polycopiés de l'Ecole Doctorale de Maths-Info de Marseille, 2001. <https://hal.archives-ouvertes.fr/hal-01382368>.

3 Grants

- 2024–2029: Principal Investigator for the ERC Synergy projet “NEMESIS” (NEw generation MEthods for numerical SIMulationS, No. 101115663).
Aim: development of polytopal methods (discretisation methods for PDEs that support generic meshes, such as DDR or VEM), with a focus on designing and analysing discrete version of differential complexes (e.g., the de Rham complex), that preserve analytical and homological properties. Multi-level solvers for these methods will also be considered, and applications are geared towards magneto-hydro-dynamics and porous media flow models.
- 2023–2025: Chief Investigator for the ARC Linkage Project “Three-dimensional Bayesian Modelling of Geological and Geophysical data” (LP210301239, Lead Chief Investigator: Dr Laurent Ailleres).
Aim: develop technologies enabling rapid informed decision-making related to the management of natural resources, including critical metals, copper and water.
- 2022–2024: Lead Chief Investigator for the ARC Discovery Project “A new numerical analysis for partial differential equations with noise” (DP220100937); investigators: J. Droniou, K.-N. Le, Z. Brzezniak, A. Prohl.
Aim: develop a framework for the design and analysis of a variety of numerical schemes (FE, FV, etc.) for stochastic PDEs.
- 2021–2023: Lead Chief Investigator for the ARC Discovery Project “Interface-aware numerical methods for stochastic inverse problems” (DP210103092); investigators: J. Droniou, S. Badia, T. Cui, Y. Marzouk, J. Carrerra.
Aim: develop and analyse high-performance numerical algorithms for PDEs in presence of interfaces with unknown precise location.
- 2019–2021: Co-Lead Chief Investigator, together with Prof. R. Masson (INRIA Nice Sophia-Antipolis), of the INRIA Associate Team project “Mathematical and numerical methods for thermo-hydro-mechanical models in porous media with discontinuities”.
Aim: design and rigorously analyse numerical methods for hybrid-dimensional matrix fracture models, motivated by applications to geothermal systems (thermo-hydro models and hydro-mechanical models).
- 2018–2021: Chief Investigator for the ARC Linkage Project “Enabling three dimensional stochastic geological modelling” (LP170100985, Lead Chief Investigator: Dr Laurent Ailleres).
Aim: develop technologies to mitigate three dimensional (3D) geological risk in resources management, using mathematical methods, structural geology concepts and probabilistic programming.

- 2017–2020: Lead Chief Investigator for the ARC Discovery Project “Discrete functional analysis: bridging pure and numerical mathematics” (DP170100605).
Aim: develop numerical analysis tools for fully nonlinear real-world models of elliptic and parabolic PDEs.
- 2011–2014: Chief Investigator for the ANR research grant “IDEE” (ANR-2010-0112-01, Lead Chief Investigator: Matthieu Alfaro).
Aim: study interface dynamics in reaction-diffusion partial differential equations. [My participation to this project ended mid-2011 when I moved to Australia.]
- 2009–2012: Lead Chief Investigator for the ANR² research grant “VFSitCom” (ANR-08-BLAN-0275-01).
Aim: study numerical methods for flows in porous media, with targeted applications in oil recovery, carbon storage and the study of nuclear waste disposal hazards. [My participation to this project ended mid-2011 when I moved to Australia.]

4 Conferences and seminars (since 2020)

Note: The slides are available on my webpage.

- *A bubble-enriched polytopal method for contact mechanics*, Seminaire ACSIOM, IMAG. Montpellier, France. **2024** (2 April).
- *Analysis approaches for polytopal schemes – the linear and nonlinear cases*, NEMESIS Kick-off workshop [keynote]. Montpellier, France. **2024** (19 June).
- *Bubble-stabilised polytopal scheme for flows in fractured media with frictional contact*, WCCM-PANCAM 24 [regular presentation]. Vancouver, Canada. **2024** (23 July).
- *The discrete de Rham complex, and its application to the Navier–Stokes equations*, PAMIR (Point values, Averages and Moments and their Inter-Relation) workshop [keynote]. Cambridge, UK. **2024** (8 March).
- *The Exterior Calculus Discrete De Rham complex*, New Trends in the Numerical Analysis of PDE [keynote]. Lille, France. **2024** (11 June).
- *A polytopal exterior calculus framework*, ICIAM 2023 [regular presentation]. Tokyo, Japan (hybrid). **2023** (23 August).
- *Arbitrary-order polytopal schemes for the Yang–Mills equations*, Seminaire NAGANA. Montpellier, France. **2023** (12 September).
- *Serendipity discrete de Rham method*, ICOSAHOM 2023 [regular presentation]. Seoul, South Korea. **2023** (16 August).
- *Introduction to the Discrete De Rham complex*, Seminar of the Mathematical Institute. Oxford, UK. **2022** (13 October).
- *Next generation methods for the simulation of geophysical flows (and more...)*, Mathematica Solis et Terrae conference [keynote]. ANU, Canberra. **2022** (11–12 April).
- *Pressure-Robust Discrete De Rham and Virtual Element Schemes for the Stokes Problem*, SIAM Annual Meeting [regular presentation]. Pittsburg, USA (hybrid). **2022** (11–15 July).
- *A discrete exact grad-curl-div complex on generic polyhedral meshes Part II: Analytical properties*, 16th U.S. National Congress on Computational Mechanics [regular presentation]. Online. **2021** (26 July).
- *An arbitrary-order robust polygonal scheme for the Reissner–Mindlin plate problem*, AustMS annual meeting [regular presentation]. Online. **2021** (7 December).

²French equivalent of ARC.

- *Convergence and error estimates of numerical schemes for the porous medium equation*, ANZIAM annual meeting [regular presentation]. Online. **2021** (4 February).
- *A fully discrete exact de Rham sequence, with application to magnetostatics*, CTAC [regular presentation]. UNSW (Sydney, Australia). **2020** (30 August - 2 September).
- *B-char: an efficient (and feasible!) approach for mass-conserving characteristic schemes in 2D and 3D*, MWNDEA [regular presentation]. Monash (Melbourne, Australia). **2020** (10-14 February).
- *High-order methods for linear and non-linear elliptic equations*, Algoritmy 2020 [keynote]. Podbanske (Slovakia). **2020** (10-15 September).
- *Interplay between diffusion anisotropy and mesh skewness in Hybrid High-Order schemes*, FVCA9 [keynote]. Bergen (Norway). **2020** (15-19 June).
- *Numerical analysis of two-phase flows models with mechanical deformation in fracture porous media*, AustMS annual meeting [regular presentation]. UNE (Armidale, Australia). **2020** (10 December).
- *Polynomial de Rham sequences of arbitrary degree on polyhedral meshes*, Seminar. Marseille, France. **2020** (8 December).

5 PhD supervisions

Ongoing PhD students

- JIA JIA QIAN. *Arbitrary-order constraint-preserving polytopal schemes for Yang–Mills equations* (co-supervised with T. Oliynyk; started February 2022).
- MUHAMMAD AWAIS. *Numerical analysis of the stochastic porous media equation* (co-supervised with K.-N. Le, funded by the Higher Education Commission of Pakistan; started July 2021).

Completed PhD students

- LIAM YEMM. *Hybrid High-Order methods for singular situations* (funded by Monash University, with an Excellence Scholarship top-up; Feb 2020 - Nov 2023).
- CHIRAPPURATHU REMESAN GOPIKRISHNAN. *Numerical methods for free boundary problems in three dimensions with applications in biology* (co-supervised with N. Nataraj (IITB) and Jennifer Flegg (University of Melbourne), funded by the IITB–Monash academy; Jan. 2017–Jun. 2021 [IITB=Indian Institute of Technology Bombay]).
 - ◇ Gopi was awarded the Prof. Prabhulal Bhatnagar Memorial Prize for most outstanding student in PhD in Mathematics, IITB (2020-2021).
 - ◇ Gopi received the first prize of the Three Minute Thesis Talk, IITB – Monash Research Academy in 2020.
- DEVIKA SHYLAJA. *Numerical methods for elliptic PDEs and optimal control problems* (co-supervised with N. Nataraj (IITB), funded by the IITB–Monash academy; Jul 2015–Sep 2019).
 - ◇ Devika was awarded a best student presentation prize at the Computational Techniques and Applications Conference in 2016.
 - ◇ Devika received the IIT Bombay “Excellence in PhD” research award for the years 2018–2020.
- HANZ MARTIN CHENG. *Design and analysis of numerical methods for flows in porous media* (Funded by a Monash PhD scholarship; Mar 2016–Aug 2019).
- JEAN-JEROME CASANOVA. *Self-regulation of flow in networks* (co-supervised with Jean-Pierre Raymond (University Toulouse III Paul Sabatier), funded by a scholarship of the French ministry of education; Sep 2015–Jul 2018).

- YAHYA ALNASHRI. *Numerical approximation of variational inequalities* (funded by the Saudi Arabia government; Jul 2013–Jul 2017).
- KYLE TALBOT. *Theoretical and numerical analysis of porous media flow models* (funded by a Monash PhD Scholarship with Faculty of Science top-up; Feb 2013–Apr 2017, with a 5-month Endeavour Fellowship in 2016).
 ◇ Kyle was awarded the 2017 Vice-Chancellor’s Commendation for Thesis Excellence in recognition of his outstanding doctoral thesis.
- MATHIEU CATHALA, from 09/2010 to 06/2011 (after my departure from France, F. Marche replaced me as supervisor). *Numerical analysis for flows in porous media* (funded by the French ministry of research; Sep 2010–Dec 2013).
- PIERRE ALIFRANGIS, co-supervised with M. Alfaro from 10/2009 to 06/2011 (after my departure from France, R. Carles replaced me as co-supervisor) *Partial differential equations and interface dynamics* (funded by the French ministry of research; Oct 2009–Jun 2013).
- THANH HAI ONG, co-supervised with C. Le Potier (CEA: French Nuclear Agency) from 11/2009 to 06/2011 (after my departure from France, R. Eymard replaced me as supervisor). *Cell-centered scheme for heterogeneous anisotropic diffusion problems on general meshes* (funded by the CEA; Nov 2009–Nov 2012).
- NATHAËL ALIBAUD, co-supervised with C. Imbert. *Study of some partial differential equations involving nonlocal terms* (funded by the French ministry of research; Sep 2003–Dec 2006).

6 Teaching

Monash University:

- 2023:
 - *Partial Differential Equations* (3rd year undergraduate): lectures (18h).
 - *Advanced numerical analysis of partial differential equations* (Master): lectures (18h), applied class (6h) and coordination.
 - *Advanced engineering mathematics* (2nd year undergraduate, Engineering): lectures (24h) and coordination.
- 2022:
 - *Real Analysis* (2nd and 3rd year undergraduate): lectures (36h) and coordination.
 - *Partial Differential Equations* (3rd year undergraduate): lectures (18h) and tutorials (17h).
 - *Advanced numerical analysis of partial differential equations* (Master): lectures (18h), applied class (6h) and coordination.
- 2021:
 - *Real Analysis* (2nd and 3rd year undergraduate): lectures (36h), applied class (17h) and coordination.
 - *Partial Differential Equations* (3rd year undergraduate): lectures (18h).
- 2020:
 - *Real Analysis* (2nd and 3rd year undergraduate): lectures (36h), applied class (17h) and coordination.
 - *Numerical analysis and control of differential equations* (Master): lectures (18h), applied class (6h) and coordination.

- 2019:
 - *Real Analysis* (2nd and 3rd year undergraduate): lectures (36h) and coordination.
 - *Differential Equations and Applications* (2nd year undergraduate): lectures (18h) and coordination.

AMSI (Australian Mathematical Sciences Institute):

- December 2012: *A beginner’s course in finite volume approximation of scalar conservation laws*, AGR short course (12h).
- January 2016: *Modern numerical methods for diffusion equations on generic grids*, AMSI Summer School, RMIT (Melbourne), 4-29 January 2016 (28h).

7 Recent scientific activities

(items marked \diamond are ongoing)

Editorial roles

- \diamond 2014-...: Associate editor of *North-Western European Journal of Mathematics*³.
- \diamond 2013-...: Associate editor of *Mathematical Modelling and Numerical Analysis (M2AN)*.
- 2017–2018: Co-editor (with P. Antonietti and R. Eymard) of the special issue “Advanced numerical methods: recent developments, analysis, and applications” of *Computational Methods in Applied Mathematics (CMAM)*.
- 2017: Co-editor (with M. Page and S. Clarke) of the proceedings of the 18th CTAC, published in the *ANZIAM electronic journal*. See <http://dx.doi.org/10.21914/anziamj.v58i0.11569>.

Conferences

- 2024: co-organiser of the NEMESIS workshop, Montpellier (France), 19–21 June 2024.
- 2022-2023: Member of the Scientific Committee of the FVCA10 conference (“Finite Volumes for Complex Applications 10”, Strasbourg (France), 30 Oct.–3 Nov. 2023).
- 2021 (14–15/06): Co-organisation (with P. Antonietti, L. Beirão da Veiga and D. Di Pietro) of the workshop on “NEW generation MEthods for numerical SIMulationS” (NEMESIS).
- 2020 (10–15/09): Co-organisation (with D. Di Pietro and I. S. Pop) of a minisymposium “Low and high-order numerical methods for porous media: developments and applications” in the ALGORITMY 2020 conference.
- 2020 (10–14/02): Co-organisation (with S. Badia) of the “Monash Workshop on Numerical Differential Equations and Applications 2020”.
- 2019 (29/04–03/05): Co-organisation (with P. Antonietti, L. Beirão da Veiga, D. Di Pietro and S. Krell) of the 3rd POEMS (Polytopal Element Methods in Mathematics and Engineering) workshop, CIRM (Marseille).
- 2017 (22–26/05): Co-organisation (with B. Andreianov and E. R. Jakobsen) of a minisymposium *Stability for evolution problems* during the 10th International Conference on Elliptic and Parabolic Problems, Gaeta (Italy).

³Recently created open-access journal by a non-profit publisher, supported by the French Mathematical Society (SMF).

- 2016-2017: Member of the Scientific Committee of the FVCA8 conference (“Finite Volumes for Complex Applications 8”, Lille (France), 12–16 June 2017).
- 2016 (3–7/10): co-organisation of the international conference on “Advanced numerical methods: recent developments, analysis, and applications” (one of the main events of the thematic quarter “Numerical PDEs at the IHP”, Paris).
- 2016 (27–30/11): co-chair of the “Computational Techniques and Applications Conference 2016” (CTAC16; Monash University, Melbourne).
- 2016 (15–19/02): co-organisation of the “Monash Workshop on Numerical PDEs” (Monash University, Melbourne).
- 2013-2014: Member of the Scientific Committee of the FVCA7 conference (“Finite Volumes for Complex Applications 7”, Berlin, 16-20 June 2014).

Administrative roles

- ◇ 2024-...: director of the Mathematics postgraduate program at IMAG.
- 2022: Member of the invited speakers committee for the ANZIAM annual meeting 2023.
- 2019-2023: head of the Applied and Computational Mathematics section in the School of Mathematics at Monash.
- 09/2018-12/2021: coordinator of the Master of Mathematics in the Faculty of Science at Monash.
- 2018-2020: chair of the AustMS implementation group for the re-development of the website
- 01/08/2018–31/12/2020: member of the Monash Academic Board.
- 2016-2020: co-founder and co-chair (until December 2018) of the Mathematics of Computation and Optimisation special interest group of the AustMS (Australian Mathematical Society). Regular member of the executive board 2019–2020.
- 2014-2016: Chair of the Computational Mathematics Group, special interest group of the ANZIAM (Australian and New-Zealand Industrial and Applied Mathematics, division of the Australian Mathematical Society).
- 2013-2016: Honours coordinator for the School of Mathematical Sciences at Monash University.
- 2013-2016: Member of the AustMS Student Support Scheme Committee (chair in 2015).