CURRICULUM VITÆ

Daniele A. Di Pietro

Full Professor of Numerical Analysis
Université de Montpellier

Contents

1 About me **2**
1.1 Education . . . 2
1.2 Current positions . . . 2
1.3 Previous positions . . . 2
1.4 Fellowships, awards, and distinctions . . . 2

2 Research activities **3**
2.1 Topics . . . 3
2.2 Bibliometrics . . . 3

3 Scientific service and outreach **3**
3.1 Research evaluation . . . 3
3.2 Editorial activity . . . 3
3.3 Organization of scientific meetings . . . 3
3.4 Selection of recent invited presentations . . . 5
3.5 Press . . . 7

4 Research funding track record **7**
4.1 Academic research projects . . . 7
4.2 Industrial collaborations as PI . . . 8

5 Supervision of doctoral and postdoctoral fellows **9**
5.1 Supervision of PhD students . . . 9
5.2 Supervision of postdoctoral fellows . . . 10
5.3 Participation in PhD and HDR committees . . . 10

6 Teaching activities **11**
6.1 Doctoral courses . . . 11
6.2 Undergraduate courses . . . 11

7 Institutional responsibilities **13**
7.1 Main responsibilities . . . 13
7.2 Participation in selection committees . . . 13

8 Publications **14**
8.1 Research monographs . . . 14
8.2 Edited monographs . . . 14
8.3 Papers in international peer-reviewed journals . . . 14
8.4 Book chapters . . . 20
8.5 Preprints . . . 21
8.6 Proceedings . . . 21
8.7 Theses . . . 23

1 About me

Family name: Di Pietro **Scopus ID:** 6603444428
Given names: Daniele Antonio **MathSciNet ID:** 790640
Age: 47 **ORCID:** 0000-0003-0959-8830
Website: http://imag.umontpellier.fr/~di-pietro
Work address: Université de Montpellier CC051, place Eugène Bataillon, 34090 Montpellier (France)

1.1 Education

6/12/2010 **Habilitation** (*Habilitation à Diriger des Recherches*), École des Ponts (ENPC), Université Paris-Est, *Nonconforming methods for PDEs with diffusion*

28/3/2006 **PhD thesis**, Università di Bergamo, *Discontinuous Galerkin methods for the incompressible Navier–Stokes equations*. Part of my doctoral research was conducted at École Polytechnique Fédérale de Lausanne (EPFL)

11/7/2002 **Master's degree in Engineering**, Università di Bergamo, 110/110 with honors (lode)

1.2 Current positions

2024–pres. Corresponding Principal Investigator of **ERC Synergy NEMESIS**, a €7.8 million project developing next-generation numerical methods for partial differential equations.

1/9/2012–pres. **Full professor** (*Professeur des universités, classe exceptionnelle*) at IMAG

1.3 Previous positions

2021–2025 **Director of Institut Montpelliérain Alexander Grothendieck (IMAG)**, Université de Montpellier (UM)

2019–2020 **Deputy director of IMAG**

2014–2020 Head of the *Analyse, Calcul Scientifique Industriel et Optimisation de Montpellier* (ACSIOM) research team

1/4/2007–31/8/2012 **Senior researcher** at the Department of Applied Mathematics of IFP Energies Nouvelles (IFPEN), Rueil-Malmaison (France)

1/2/2006–31/3/2007 **Postdoctoral researcher** at the Centre d'Enseignement et de Recherche en Mathématiques et Calcul Scientifique (CERMICS), ENPC, Paris (France)

1/1/2005–30/6/2005 **Visiting PhD assistant**, CMCS, EPFL, Lausanne (Switzerland)

1.4 Fellowships, awards, and distinctions

2024 *Frontiers of Science Award in Mathematics* prize of the International Congress of Basic Science for the paper *Bridging the Hybrid High-Order and Hybridizable Discontinuous Galerkin methods*, https://dx.doi.org/10.1051/m2an/2015051. A summary of the award-winning paper can be found at the following address: http://hal.archives-ouvertes.fr/hal-04680610

4–5/2018 STaRs invited professor (*Supporting Talented Researchers*) at Università di Bergamo

2016 ITALY (*Italian TALented Young researchers*) fellowship, Università di Bergamo, Italy

2 Research activities

2.1 Topics

My main research topics are advanced numerical methods for partial differential equations (PDEs), a priori and a posteriori error analysis, and efficient implementation algorithms. I have worked on problems in fluid and solid mechanics, porous media flow, and electromagnetism, primarily arising from applications in energy and the environment.

2.2 Bibliometrics

As of 3 October 2026, Scopus records **120 documents**, **3663 citations from 1700 documents**, and an **h-index of 33**; see https://www.scopus.com/authid/detail.uri?authorId=6603444428.

At the same date, MathSciNet records **112 works**, **cited 3642 times in 1772 publications**; see https://mathscinet.ams.org/mathscinet/author?authorId=790640.

At the same date, Google Scholar records **8305 citations** (4586 since 2021), an **h-index of 41** (31 since 2021), and an **i10-index of 92** (76 since 2021); see https://scholar.google.com/citations?user=KFd4Jm8AAAAJ&hl=en.

3 Scientific service and outreach

3.1 Research evaluation

I have served as a referee for major international journals in numerical analysis and scientific computing (*Numer. Math.*, *SIAM J. Numer. Anal.*, *Math. Comp.*, *Math. Models Meth. Appl. Sci.*, *SIAM J. Sci. Comput.*, *J. Comput. Phys.*, *Comp. Math. Appl.*, etc.).

I have also reviewed proposals for the European Research Council as well as several national research agencies and institutions (ANR France, CONACYT Chile, FWF Austrian Science Fund, PRIN Italy, the Royal Swedish Academy of Sciences, NWO Netherlands, Los Alamos National Laboratory, POR FSE Regione Friuli-Venezia-Giulia, etc.).

I have served on evaluation panels for the European Research Council, for ANR, and for the Italian Ministry of Universities and Research. Details are omitted to respect confidentiality agreements.

3.2 Editorial activity

2024–pres. Associate editor of Boletín de la Sociedad Matemática Mexicana, Springer and Electronic Research Archive, AIMSPress

2020–pres. Associate editor of Numerical Algorithms, Springer

2020 Editor of the volume *Polyhedral methods in geosciences* of the SEMA-SIMAI Springer series [3]

2016 Editor of the volume *Numerical methods for PDEs: State of the Art Techniques* of the SEMA-SIMAI Springer series [4]

3.3 Organization of scientific meetings

2027 Organizer of the minisymposium *High-order polytopal methods for PDEs and related applications: a NEMESIS mini-symposium* at the ICOSAHOM 2027 conference (Milan, Italy)

2026 Organizer of the minisymposium *New methods and techniques for the approximation of PDEs* at the Equadiff 2026 conference (Prague, Czech Republic)

2026 Organizer of the minisymposium *Polytopal methods in mechanics: Bridging mathematics and engineering* at the WCCM-ECCOMAS 2026 conference (Munich, Germany)

2025 Organizer of the minisymposium *Polytopal methods and applications: A NEMESIS minisymposium* at the M2P conference (Valencia, Spain)

2024 ERC SyG NEMESIS kick-off seminar (Montpellier, France)

2023 Organizer of the minisymposium *Recent advancements in Polytopal Methods for Fluid Mechanics* at the CFC2023 conference (Cannes, France)

2022 Member of the Scientific Committee of the POEMS 2022 conference (Milan, Italy). See https://mox.polimi.it/POEMS2022/

2021 Organizer of the NEMESIS virtual workshop, https://imag.umontpellier.fr/~di-pietro/NEMESIS.html

2020 Organizer of the minisymposium *Polyhedral discretization methods for geomechanical simulation*, SIAM Conference on Mathematical & Computational Issues in the Geosciences (GS21), June 21–24, 2021 (Milan, Italy)

2020 Organizer of the minisymposium *Low and high-order polytopal methods: developments and applications*, ALGORITHMY 2020 conference (Vysoke Tatry, Podbanske). The conference switched to a hybrid format because of the COVID-19 pandemic

2020 Organizer of the minisymposium *Numerical Methods for Polygonal and Polyhedral Meshes*, WCCM XIV-ECCOMAS 2020 conference (Paris, France). The conference was postponed to January 2021 and held entirely online because of the COVID-19 pandemic

2019 Organizer of the POEMS 2019 conference at CIRM (29 Apr.– 3 May 2019). See https://imag.umontpellier.fr/~di-pietro/poems2019.html, where slides and posters from the conference can be found

2019 Organizer of the minisymposium *Theoretical and computational advances in polygonal and polyhedral methods*, MAFELAP 2019 (Brunel University, London)

2019–pres. Co-organizer of the *Numerical Algebraic Geometry and Algebraic Numerical Analysis (NAGANA)* workgroup at IMAG. See https://imag.umontpellier.fr/~di-pietro/nagana.html

2017 Organizer of the minisymposia *Polyhedral Methods and Applications* and *Recent advances on polyhedral discretizations*, ENUMATH 2017 international conference (Bergen, Norway)

2016 Coordinator of the **IHP thematic quarter** *Numerical Methods for PDEs*. The quarter included one summer school and three international conferences:

- Introductory school (IESC, Corse, 5–9 Sept. 2016)
- *Advanced numerical methods: recent developments, analysis, and applications* (IHP, 3–7 Oct. 2016)
- *Recent developments in numerical methods for model reduction* (IHP, 7–10 Nov. 2016)
- *Industry and mathematics* (IHP, 21–23 Nov. 2016)

Further information is available at https://imag.umontpellier.fr/~di-pietro/ihp-nmpdes.html. An IHP thematic quarter requires two years of preparation after the project is selected. The thematic quarter led to one book and two special issues:

- D. A. Di Pietro, A. Ern, and L. Formaggia, eds. *Numerical Methods for PDEs. State of the Art Techniques*. Vol. 15 SEMA-SIMAI. Springer International Publishing, 2019. ISBN: 978-3-319-94675-7 (Hardcover) 978-3-319-94676-4 (eBook). DOI: 10.1007/978-3-319-94676-4.
- P. F. Antonietti, J. Droniou, and R. Eymard, eds., *Special Issue: Advanced Numerical Methods: Recent Developments, Analysis and Applications*, Computational Methods in Applied Mathematics, Volume 18, Issue 3.
- T. Leliévre, S. Perotto, G. Rozza, eds. *Special Issue on Model Reduction*, Journal of Scientific Computing, Volume 81, Issue 1. ISSN: 0885-7474 (Print) 1573-7691 (Online).

2007 Organizer of the international workshop *Discontinuous Galerkin Methods: From theoretical developments to industrial applications* (Bergamo, Italy)

3.4 Selection of recent invited presentations

For some of the following presentations, slides (and, occasionally, videos) are available on my web page http://imag.umontpellier.fr/~di-pietro.

3.4.1 Abroad (selected, 2011–present)

Aug. 2026 Invited plenary speaker at *International Congress of Basic Science*, Beijing

July 2026 Invited speaker at the workshop *Foundations of Numerical PDEs*, FoCM 2026, Vienna

May 2026 Invited speaker at the workshop *Discretization of Differential Complexes* within the ESI thematic programme *Differential Complexes: Theory, Discretization, and Applications*, Vienna

Feb. 2025 Eight-hour doctoral course at Scuola Superiore Meridionale, Naples

Feb. 2025 Invited remote seminar at the University of Arizona, USA

April–May 2024 Invited doctoral seminar (2h + 2h) at IIT Bombay, India (remote)

May 2024 Invited doctoral seminar at Scuola Superiore Meridionale, Napoli

Feb. 2024 Invited lecture at Collegio Ghislieri, Pavia

Feb. 2024 Invited doctoral seminar at Università di Bergamo

May 2023 Invited speaker at M2P, minisymposium *Numerical methods for coupled problems in geometrically complex domains*

May 2023 Invited seminar at MOX, Politecnico di Milano

July 2022 Invited speaker at SIAM AN22, minisymposium *Recent developments in mathematical analysis and numerics for incompressible flow and related problems*

June 2022 Invited speaker at ECCOMAS 2022, minisymposia *Structure preserving and adaptive polytopal methods*, *Structure-Preserving Finite Element Methods in Computational Fluid Dynamics*, and *Multi-scale and multi-level numerical methods for non-linear solids*, Oslo (Norway)

May 2022 Plenary speaker at *100 years Unione Matematica Italiana – 800 years Università di Padova* conference

Jan. 2022 Colloquium talk at École Polytechnique Fédérale de Lausanne

May 2021 Invited seminar at Dipartimento di Matematica *Tullio Levi-Civita*, Università di Padova (Italy)

April 2021 Invited speaker at the Bi.discrete seminar, Universität Bielefeld (Germany). The seminar was held online because of the COVID-19 pandemic

Mar. 2021 Invited speaker at the SIAM Conference on Computational Science and Engineering, minisymposium *Compatible Discretizations for Models in Magnetostatics, Magnetohydrodynamics and Fluid Flow*, Fort Worth, Texas (US). The conference was held in a hybrid format because of the COVID-19 pandemic

Jan. 2021 Keynote lecturer at the Oberwolfach thematic week *Nonstandard Finite Element Methods*

Nov. 2020 Invited seminar at Dipartimento di Matematica *Tullio Levi-Civita*, Univ. Padova (Italy). The seminar was held online because of the COVID-19 pandemic

Jul. 2020 Invited speaker at the ICOSAHOM conference, minisymposium *High order methods on polyhedral meshes*, Vienna (Austria). Held online in 2021 because of the COVID-19 pandemic

May 2020 Keynote speaker at the InDAM Workshop *Polygonal methods for PDEs: Theory and applications*, Rome (Italy). Held online in 2021 because of the COVID-19 pandemic

Jul. 2019 Invited speaker at the ICIAM 2019 international conference (Valencia, Spain), minisymposium *Polygonal and polyhedral methods in Applied Mathematics*

June 2019 Invited speaker at the MAFELAP 2019 international conference (Brunel University, UK), minisymposium *High Performance Finite Element Technique*

Mar. 2019 Invited seminar at SISSA (Italy)

Oct. 2018 Invited seminar at Univ. Udine (Italy)

May 2018 STaRs (*Supporting Talented Researchers*) invited seminar (4h) at Univ. Bergamo (Italy)
Dec. 2017 Invited seminar at Univ. Bergamo (Italy)
July 2017 Plenary speaker at the *POEMS 2017* international workshop (Univ. Milano Bicocca)
July 2017 Invited doctoral mini-course at Univ. Bergamo
Dec. 2016 Invited seminar at MOX, Politecnico di Milano (Italy)
June 2016 Invited speaker at the MAFELAP 2016 conference, Brunel University (UK), minisymposia *PDE discretization methods on polygonal and polyhedral meshes* and *Hybridizable discontinuous Galerkin methods*
May 2016 Invited speaker at the ZHACM Colloquium, Univ. Zürich-ETHZ (Switzerland)
Feb. 2016 Invited seminar at Univ. di Pavia-IMATI (Italy)
Sept. 2015 Invited speaker at the *eXtended Discretization Methods 2015* conference, minisymposium *Polygonal and polyhedral methods*, Ferrara (Italy)
July 2015 Invited lecturer for the PhD course *An introduction to Hybrid High-Order methods*, Univ. di Bergamo
Feb. 2015 Invited seminar at Univ. Milano Bicocca (Italy)
July 2014 Invited speaker at the *World Congress on Computational Mechanics XI*, minisymposium *Structure-preserving and polyhedral discretizations* (Barcelona, Spain)
Feb. 2013 Invited seminar at MOX, Politecnico di Milano (Italy)
Dec. 2011 Invited seminar at Univ. Bergamo (Italy)
June 2011 Invited plenary speaker at the *Finite Volumes for Complex Applications VI* conference, Prague (Czech Republic)
May 2011 Invited seminar at the Department of Mathematics, Univ. of Sussex (UK)

3.4.2 In France (selected, 2011–present)

Dec. 2026 Speaker at the ANR HIPOTHEC workshop, IHP, Paris
Dec. 2024 Plenary speaker at the POEMS 2024 conference, Paris
June 2024 Opening lecture at ERC NEMESIS kick-off workshop, Montpellier
June 2024 Opening lecture at the *Journées MIPS* de l'Université de Montpellier
Mar. 2024 Invited presentation at the ANR HIPOTHEC kick-off workshop, Wissant
Oct. 2023 Invited seminar at Laboratoire Jacques-Louis Lions
June 2023 Lecturer at the école d'été EDF-CEA-INRIA *Discrétisations polyédriques robustes pour la mécanique numérique* (EDF Lab, Paris)
June 2023 Invited speaker at the *Journées d'Occitanie en Mathématiques Appliquées*, Perpignan
Mar. 2023 Keynote speaker at the *Journées Ondes du Sud-Ouest 2023*, Onera, Toulouse
Dec. 2022 LMA2S seminar at Onera (in virtual mode)
Dec. 2021 Keynote speaker at the SimRace workshop, IFPEN, Rueil-Malmaison
Dec. 2020 NAGANA seminar at IMAG, Univ. Montpellier
July 2020 Keynote speaker at the session *Advances in polygonal and polyhedral methods*, WCCM-ECCOMAS 2020, Paris. Held online in 2021 because of the COVID-19 pandemic
Dec. 2019 Invited seminar at IFP Energies Nouvelles
Sept. 2019 Invited seminar at Laboratoire de Mathématiques de Besançon
May 2019 Invited seminar at Laboratoire J. A. Dieudonné, Nice
May 2018 Invited speaker at the minisymposium on *Polyhedral methods and applications*, *44e Congrès National d'Analyse Numérique*, Cap d'Agde
Nov. 2017 Invited plenary speaker at the *Journées Multiphasiques et Incertitudes* Nantes
Apr. 2017 Invited seminar at UMPA, Lyon

Mar. 2017 Invited seminar at Institut de Mathématiques de Bordeaux
Sept. 2016 Invited seminar at *EDF research lab Chatou*, Paris
Sept. 2016 Invited seminar at the *Laboratoire de Mécanique et Génie Civil*, Univ. de Montpellier
May 2016 Invited lecturer at the *Journées Numériques*, Laboratoire Jean Dieudonné, Univ. de Nice
June 2015 Invited lecturer at the CEA-EDF-INRIA school *New Trends in Compatible Discretizations* (Paris)
June 2015 Invited lecturer at the international workshop *Méthode de Galerkine discontinue et ses applications*, CNAM, Paris
June 2015 Invited lecturer at the *École de Mécanique des Fluides Numérique 2015* (Porquerolles, France)
Mar. 2015 Invited seminar at Département de Mathématiques d'Orsay, Univ. Paris 11
Jan. 2015 Invited seminar at Institut Camille Jordan, Lyon
Oct. 2014 Invited seminar at Saint-Gobain-CNRS research unit *Surface du Verre et Interfaces*, Paris Aubervilliers
Jan. 2014 Invited seminar at EDF research lab Clamart, Paris
Oct. 2013 Invited seminar at I2M, Aix–Marseille Univ.
June 2013 Invited lecturer at the *École de Mécanique des Fluides Numérique 2013* (Porquerolles, France)
Jan. 2013 Invited seminar at LAMSID, EDF, Paris Clamart
Dec. 2012 Invited seminar at Laboratoire J. A. Dieudonné, Nice
Oct. 2012 Invited speaker at the workshop *Innovative schemes and highly performing methods for the numerical simulation of fluid flows*, Marseille
Apr. 2012 Invited speaker at the *Workshop on complex grids and fluid flows*, Lyon
Dec. 2011 Invited seminar at Laboratoire de Mathématiques de Besançon
Nov. 2011 Invited seminar at Institut de Mathématiques de Bordeaux
May 2011 Invited seminar at LAGA, Univ. Paris 13

3.5 Press

2026 NEMESIS: Un ERC Synergy hors norm qui commence à faire ses épreuves
2024 Frontiers of Science Award announcement
2023 Portrait "Talents CNRS" (https://www.insmi.cnrs.fr/fr/personne/daniele-di-pietro)
2015 MaddMaths interview by M. Briani (in Italian): *Daniele Di Pietro: l'analisi numerica come antidoto contro noia e frustrazione*, in the column *Giovani matematici crescono*

4 Research funding track record

4.1 Academic research projects

4.1.1 As Principal Investigator (PI)

Reference	Timeframe	Funding	Description
ERC 101115663 (NEMESIS)	2024–2029	2 379 506€	ERC Synergy grant (tot. 7 818 782€). The other PIs are P. Antonietti (Politecnico di Milano), L. Beirão da Veiga (Università Milano Bovisa), and J. Droniou (CNRS). See https://erc-nemesis.eu/
DICE (Région Occitanie)	2022–2025	51 790€	Co-funding for the PhD thesis of M. Salah
ANR-16-IDEX-0006 (RHAMNUS)	2021–2023	75 000€	Funding for an 18-month postdoctoral fellowship

ANR-20-MRS2-0004 (NEMESIS)	2020–2022	23 281€	*New methods for numerical simulations*. MRSEI funding scheme
ANR-10-LABX-0002-01	2017–2018	47 700€	Co-funding for the project *Development of an HHO method for the direct simulation of turbulent flows in Code_Saturne*
ANR-15-CE40-0005 (HHOMM)	2015–2019	172 224€	*Hybrid High-Order Methods on polyhedral Meshes*. See http://imag.umontpellier.fr/~di-pietro/HHOMM.html
NUMEV 2014-2-006	2015–2018	50 000€	Co-funding for the PhD thesis of M. Botti
UFI Vinci	2015–2018	90 000€	PhD thesis of F. Chave
ERT IFPEN-LJLL	2008–2013	220 000€	*Enhanced oil recovery and geological sequestration of CO_2: mesh adaptivity, a posteriori error control, and other advanced techniques*, co-PI with M. Vohralík

4.1.2 As unit coordinator or co-investigator

Reference	Timeframe	Role	Funding	Description
MSCA EffECT	2024–2026	MSCA supervisor	195 914€	*Breaking frontiers of Eddy Current Testing simulations through Discrete De Rham methods* (PI: S. Pitassi)
ANR HIPOTHEC	2023–2028	Unit coordinator	604 193€	*HIgh-order POlyhedral meTHods for Eddy Current testing simulations* (PI: S. Lemaire)
ANR MSMΦ*	2023–2027	Co-investigator	268 276€	*Partial differential equations for Multi-Scale and MultiPhysics modelling* (PI: M. Hillairet)
ANR fast4hho	2017–2021	Unit coordinator	465 686€	*Fast Solvers for robust discretisations in CFD* (PI: F. Hülsemann)
ANR HAMM	2010–2014	Co-investigator	1 060 721€	*Hybrid Architectures and Multiscale Methods* (PI: C. Prud'homme)
ANR VFSitCom	2009–2012	Co-investigator	180 000€	*Volumes Finis pour Situations Complexes* (PI: J. Droniou)

* After receiving ERC funding and another ANR grant (HIPOTHEC) in the same year, I decided to withdraw from ANR MSMΦ.

4.2 Industrial collaborations as PI

Reference	Timeframe	Funding	Description
IFPEN	2022–2025	142 500€	Funding for the PhD thesis of A. Crippa + scientific collaboration (39 000€)
EDF	2018–2021	135 000€	Funding for the PhD thesis of I. Fontana + scientific collaboration (45 000€)

EDF	2017–2020	36 000€	Co-funding for the project *Development of an HHO method for the direct simulation of turbulent flows in Code_Saturne*
BRGM	2014–2018	60 000€	Co-funding for the PhD thesis of M. Botti
Saint-Gobain	2015–2016	15 000€	*Hybrid High-Order methods for the Cahn–Hilliard equation*, fundamental research program Phi-Zero
EDF	2014–2017	135 000€	Funding for the PhD thesis of R. Riedlbeck + scientific collaboration (45 000€)

5 Supervision of doctoral and postdoctoral fellows

5.1 Supervision of PhD students

2026–pres. **Lucas Garde**, DDR methods: hybridization and adjoint sequences, co-supervised with S. Lemaire (Inria Lille)

2025–pres. **Hodayfa Labbi**, HHO methods and nonconforming complexes with applications to fluid mechanics

2024–pres. **Emil Hössjer**, multigrid methods for HHO discretizations of elliptic problems, co-supervised with F. Rapetti (Université Côte d'Azur)

2024–pres. **Vito Patierno**, Reynolds-robust methods for magnetohydrodynamics, co-supervised with J. Droniou (CNRS)

2024–pres. **Arax Leroy**, Extended polytopal complexes: design and analysis, co-supervised with J. Droniou (CNRS)

2023–pres. **Kirubell Biniam Haile**, Reynolds-robust methods for the incompressible Navier–Stokes equations, co-supervised with L. Beirão da Veiga (Univ. Milano Bicocca)

Def. 2026 **Alessandra Crippa**, Hybrid High-Order methods for phase-field modeling of fracture propagation. A. Crippa is now a research engineer at Michelin (Clermont-Ferrand)

Def. 2025 **Marwa Salah**, Serendipity DOF reduction in advanced discrete complexes. M. Salah is now a postdoctoral researcher at Inria Lille

Def. 2025 **Aurelio Edoardo Spadotto**, Numerical simulation of the electrodeformation of blood cells. Applications to medical diagnosis, co-supervised with S. Mendez (UM). TEL manuscript tel-05305250. A. Spadotto is now a postdoctoral researcher at Université de Montpellier

Def. 2022 **Ilaria Fontana**, Interface models for dam modelling, in collaboration with EDF. TEL manuscript tel-03703584. Ilaria Fontana is now Visiting Assistant Professor at Northwestern University

Def. 2021 **André Harnist**, Hybrid High-Order methods for complex problems in fluid mechanics TEL manuscript tel-03518264. A. Harnist is now Associate Professor (Maître de Conférences) at Université de Technologie de Compiègne

Def. 2021 **Pierre Matalon**, Fast solvers for robust discretizations in computational fluid dynamics, co-supervised with U. Rüde (FAU). TEL manuscript tel-03401691. P. Matalon is now Research Engineer at École Polytechnique

Def. 2018 **Michele Botti**, Advanced polyhedral discretization methods for poromechanical modelling, in collaboration with BRGM. TEL manuscript tel-01871074. M. Botti was awarded a Marie Skłodowska–Curie fellowship and subsequently obtained a researcher position (RTD-A) at MOX, Politecnico di Milano

Def. 2018 **Florent Chave**, Hybrid High-Order methods for interface problems. TEL manuscript tel-01881007. F. Chave is now an engineer at EPSILON-ALCEN (Montpellier)

Def. 2017 **Rita Riedlbeck**, A posteriori-based adaptive algorithms for poro-mechanics. TEL manuscript tel-01676709. R. Riedlbeck is now a research manager at TWT

Def. 2016 **Joubine Aghili**, Numerical resolution of partial differential equations with variable coefficients. TEL manuscript tel-01616910. J. Aghili is now Associate Professor (*Maître de Conférences*) at University of Strasbourg

Def. 2013 **Jean-Marc Gratien**, Development of a domain-specific embedded language for lowest-order methods on general meshes. TEL manuscript tel-00926232. Co-supervised with C. Prud'homme (professor, Univ. Strasbourg). J.-M. Gratien is now a research engineer at IFPEN

Def. 2013 **Simon Lemaire**, Hybrid finite volume methods for poro-mechanics. TEL manuscript tel-00957292. Co-supervised with R. Eymard (professor, Univ. Paris-Est). S. Lemaire is now a researcher (*Chargé de Recherche*) at INRIA

Def. 2013 **Soleiman Yousef**, A posteriori error estimates and adaptivity for the SAGD process, co-supervised with M. Vohralík (senior researcher, INRIA) and V. Girault (professor, UPMC — Univ. Pierre et Marie Curie). S. Yousef is now a research engineer at IFPEN

I also supervised the PhD students **Mathias Dauphin** (Università di Napoli Federico II, Italy) during his three-month stay at IMAG (2023–2024), **Silvano Pitassi** (Università di Udine, Italy) during his two-month stay at IMAG (2021), **Lorenzo Botti** (Università di Bergamo, Italy) and **Sissel Mundal** (University of Bergen) during their six-month stays at IFPEN.

5.2 Supervision of postdoctoral fellows

2026–pres. **Louis Lamérand**, polytopal mesh refinement

2025–pres. **Aurelio Edoardo Spadotto**, HHO methods for Friedrichs systems

2024–pres. **Alexandros Skouras**, DDR methods

2024–pres. **Silvano Pitassi**, DDR methods for electromagnetism. Marie Skłodowska–Curie fellowship

2024–2025 **Thomas Radley**, pressure- and Reynolds-robust methods for incompressible flows

2023 **Marien Hanot**, DDR methods for the elasticity complex

2021–2022 **Francesco Bonaldi**, DDR methods for the incompressible Navier–Stokes equations. F. Bonaldi is now a Maître de Conférences at Université de Perpignan

2017–2019 **Daniel Castanon Quiroz**, Advanced implementation of Hybrid High-Order methods. D. Castanon Quiroz is now Assistant Professor at UNAM (Mexico City)

2018 **Saghar Heidari**, Advanced aspects of Hybrid High-Order methods for applications in computational physics. S. Heidari is now a researcher at Shahid Beheshti University (Iran)

2017–2018 **Alice Raeli**, Hybrid High-Order methods on octree meshes. A. Raeli is now a research assistant at Politecnico di Torino, Italy

2016–2017 **Francesco Bonaldi**, Advanced discretization methods for plate problems

2016–2017 **Roberta Tittarelli**, A posteriori error estimators for incompressible problems. R. Tittarelli is now Associate Professor (*Maître de Conférences*) at Université de Besançon

2008–2009 **Ivan Kapyrin**, Multipoint finite volume methods for porous media flows. I. Kapyrin is now Senior Researcher at the Institute of Numerical Mathematics of the Russian Academy of Sciences

5.3 Participation in PhD and HDR[1] committees (* Referee)

2027 T. Chaumont-Frélet (HDR, Université de Lille)

2026 T. Bouchez (PhD, INSA Lyon)

[1] French habilitation for professorship

2024 F. Bonaldi (HDR, Université de Perpignan Via Domitia), W. Boscheri (HDR, Université de Savoie Mont Blanc)
2023 M. Hanot (PhD, UM)
2022 S. Pitassi* (PhD, Università di Udine)
2021 L. Sokhna (PhD, UM), S. Krell (HDR, Université de Nice Côte d'Azur)
2019 C. Facciolà* (PhD, Politecnico di Milano)
2018 C. Marcati* (PhD, Université Pierre et Marie Curie)
2017 A. Raeli* (PhD, Université de Bordeaux), A. Della Rocca* (PhD, Politecnico di Milano, Italy), S. Zonca (PhD, Politecnico di Milano, Italy)
2016 R. Porcù* (PhD, Politecnico di Milano, Italy), K. Haddaoui* (PhD, Université Pierre et Marie Curie)
2015 V. Baron* (PhD, Univ. Nantes, France), K. Mallem* (PhD, Aix-Marseille Univ., France)
2014 J. Bonelle (PhD, EDF-Univ. Paris-Est), A. Duran (PhD, UM)
2013 S. Gérald* (PhD, ONERA-UPMC, referee), M. Cathala (PhD, UM), A. Baldit (PhD, UM)
2012 J. Richard (PhD, UM), T. Hai Ong* (PhD, Univ. Paris-Est, France).

6 Teaching activities

6.1 Doctoral courses

2025 *From finite elements to polytopal methods*, Scuola Superiore Meridionale, Naples (Italy)
2024 *Hybrid High-Order methods* (2h + 2h), IIT Bombay, India (remote)
2024 *Basic principles of polytopal approximations of partial differential equations* (1h), Scuola Superiore Meridionale (Napoli)
2024 Online introductory course on *Hybrid High-Order methods* (4h / 8h), IIT Bombay (India)
2024 *An introduction to Discrete de Rham (DDR) methods* (1h), Università di Bergamo (Italy)
2023 *An introduction to Discrete de Rham (DDR) methods* (2.5h), École d'été CEA-EDF-Inria
2018 *An introduction to the convergence analysis of discretisation methods for PDEs with application to Hybrid High-Order methods* (4h), Univ. Bergamo (Italy)
2016 *Hybrid High-Order methods* (6h), Institut Henri Poincaré (Paris), cf. http://imag.umontpellier.fr/event/ihp-nmpdes
2016 *An introduction to Hybrid High-Order methods* (3h), Università di Bergamo (Italy)
2015 *Hybrid High-Order methods and applications* (18h), doctoral school *Information, Structures et Systèmes*, Univ. Montpellier
2015 *Discontinuous Galerkin methods and applications* (4h), École de Mécanique des Fluides Numériques (Porquerolles, France)
2016 *An introduction to Hybrid High-Order methods* (3h), Università di Bergamo (Italy)
2013 *Discontinuous Galerkin methods and applications* (6h), École de Mécanique des Fluides Numériques (Porquerolles, France)
2012 *Discontinuous Galerkin methods and applications* (20h), doctoral school I2S, Univ. Montpellier

6.2 Undergraduate courses

Legend: CM = *Cours Magistral* (Lectures), TD = *Travaux Dirigés* (Tutorials), TP = *Travaux Pratiques* (Practical classes). In France, one hour of CM counts as 1.5 hours of TD; LX denotes year X of a bachelor's degree (Licence); MX denotes year X of a master's degree.

6.2.1 As a professor at the University of Montpellier

2025–2026 **Analyse Numérique 4** (M2, 33 CM), **Optimisation** (M2, 6CM + 9TD)
2024–2025 **Analyse Numérique 4** (M2, 33 CM), **Optimisation** (M2, 6CM + 9TD)
2023–2024 **Analyse Numérique 4** (M2, 33 CM), **Optimisation** (M2, 12CM + 12TD)
2022–2023 **Analyse Numérique 4** (M2, 33 CM), **Algèbre Linéaire Numérique** (L2, 15 CM + 10.5 TD)
2021–2022 **Analyse Numérique 4** (M2, 33 CM), **Algèbre Linéaire Numérique** (L2, 15 CM + 10.5 TD)
2020–2021 **Analyse Numérique 3** (M2, 33 CM), **Modélisation Numérique** (M2, 8CM), **Analyse Numérique Matricielle** (L2, 18 CM + 10.5 TD + 13.5 TP)
2019–2020 **Analyse Numérique 3** (M2, 33 CM), **Analyse Numérique Matricielle** (L2, 18 CM + 10.5 TD + 9 TP)
2018–2019 **Analyse Numérique 3** (M2, 33 CM), **Modélisation Numérique** (M2, 7 CM), **Analyse Numérique Matricielle** (L2, 21 CM + 12 TD + 15 TP), **Analyse et Algèbre** (L1, 48 TD), **Biomaths** (L1, 24 TD)
2017–2018 **Analyse Numérique 3** (M2, 33 CM), **Modélisation Numérique** (M2, 7 CM), **Analyse Numérique Matricielle** (L2, 21 CM + 12 TD)
2016–2017 **Analyse Numérique des EDP 3** (M2, 33 CM), **Analyse Numérique Matricielle** (L2, 21 CM + 12 TD)
2015–2016 **Analyse Numérique des EDP 3** (M2, 33 CM), **Analyse Numérique Matricielle** (L2, 21 CM + 12 TD), **Algèbre Linéaire et Analyse 1** (2 x 48 TD)
2014–2015 **Calcul scientifique et Applications** (M2, 28 CM), **Algèbre Linéaire Analyse 1** (48 TD), **Optimisation numérique** (M1, 24 CM + 15 TD + 12 TP), **Biomaths** (L1, 36 TD)
2013–2014 **Calcul scientifique et Applications** (M2, 30 CM), **Algèbre Linéaire Analyse 1** (78 TD + 6 CM)
2012–2013 **Calcul scientifique et Applications** (M2, 30 CM), **Algèbre Linéaire Analyse 1** (78 TD + 6 CM), **Analyse Numérique Matricielle** (21 CM + 12 TD)

Teaching materials for some of the above courses are available on my website at http://imag.umontpellier.fr/~di-pietro.

6.2.2 Other undergraduate courses in France

UPMC = Université Pierre et Marie Curie (Paris 6)

2011–2012 **Discontinuous Galerkin Methods and Applications** (M2, UPMC, 24h CM), **Calcul Scientifique** (L3, Ecole des Ponts ParisTech, 27 CM)
2010–2011 **Discontinuous Galerkin Methods and Applications** (M2, UPMC, 24h CM), **Calcul Scientifique** (L3, Ecole des Ponts ParisTech, 27 CM)
2009–2010 **Discontinuous Galerkin Methods and Applications** (M2, UPMC, 24h CM), **Calcul Scientifique** (L3, Ecole des Ponts ParisTech, 27 CM)
2008–2009 **Discontinuous Galerkin Methods and Applications** (M2, UPMC, 10 CM), **Calcul Scientifique** (L3, Ecole des Ponts ParisTech, 27 CM)
2007–2008 **Calcul Scientifique** (L3, Ecole des Ponts ParisTech, 27 CM)

6.2.3 Internships (* followed by a PhD under my supervision)

2026 **Lucas Garde**, hybridization of DDR methods
2024 **Vito Patierno***, DDR methods for magnetohydrodynamics problems
2023 **Giulia Quarta Castelbarco Albani** (2023), co-supervised with P. Antonietti, L. Beirão da Veiga, and J. Droniou
2022 **Marwa Salah*** (3–8/2022), DDR methods for problems in continuum mechanics
2022 **Alessandra Crippa*** (2–8/2022), HHO methods for interface problems

2021 **Aurelio Edoardo Spadotto***, HHO methods for magnetostatics
2020 **Rafiq Driss**, de Rham cohomology for an HHO discretization of the Maxwell equations
2019 **Isaak Bachache**, A numerical exploration of Finite Element Exterior Calculus
2019 **Hind Bouyri**, Implementation of Hybrid High-Order methods for convective terms in Code_Saturne, in collaboration with EDF
2019 **Alessandra Guglielmana**, A low-order method for linear elasticity on general meshes
2018 **André Harnist***, Applications of Hybrid High-Order methods to computational mechanics
2016 **Bastien Hamlat**, Discontinuous Galerkin methods for free-surface flows
2015 **Michele Botti***, Nonconforming discretization methods for poro-mechanics
2015 **Florent Chave***, Hybrid High-Order methods for the Cahn–Hilliard problem, in collaboration with Saint–Gobain
2013 **Rita Riedlbeck***, Spectral methods for the incompressible Navier–Stokes equations
2009 **Soleiman Yousef***, Finite volume methods for petroleum reservoir modelling
2005 **Nicoletta Franchina**, Discontinuous Galerkin methods for problems in fluid mechanics
2004 **Pietro Gabbiadini**, Development of a Matlab code for brake modelling, in collaboration with Freni Brembo

7 Institutional responsibilities

7.1 Main responsibilities

2021–2025 **Director of IMAG**
2022–2025 *Correspondant recherche* for the Department of Mathematics
2019–2020 **Deputy director of IMAG**
2014–2020 Head of the **ACSIOM research team**
2014–2020 Member of the board of directors of **IMAG**
2015–2019 Coordinator of the second year of the master's programme in *Modeling and Numerical Analysis*
2013–2019 Member of the board of the **Department of Mathematics** of the University of Montpellier
2017–2020 Member of the *Commission de Section 26* (local expert committee for Applied Mathematics)
2012–2015 Coordinator of the first year of the master's programme in *Mathématiques, Statistique et Applications*

7.2 Participation in selection committees

2022 Member of the selection committee for a position of **Full Professor** (ref. PR-0342490X-9, Université de Montpellier)
2020 Member of the selection committee for a position of **Full Professor** (Politecnico di Milano, Italy)
2019 Member of the selection committee for a position of **Full Professor** (Università di Trento, Italy)
2016 Chair of the selection committee for a position of **Associate Professor** (ref. 26MCF99, Université de Montpellier)
2015 Chair of the selection committee for a position of **Full Professor** (ref. 2526PR4118, Université de Nîmes, France)
2014 Member of the selection committee for a position of **Associate Professor** (MAT/08, ref. 2010/MAT3, Politecnico di Milano, Italy)
2014 Chair of the selection committee for a position of **Full Professor** (ref. 26PR4171, Université de Montpellier)

8 Publications

8.1 Research monographs

[1] D. A. Di Pietro and J. Droniou. *The Hybrid High-Order method for polytopal meshes. Design, analysis, and applications*. Vol. 19. Modeling, Simulation and Application. Springer International Publishing, 2020. ISBN: 978-3-030-37202-6. DOI: 10.1007/978-3-030-37203-3.

[2] D. A. Di Pietro and A. Ern. *Mathematical aspects of discontinuous Galerkin methods*. Vol. 69. Mathématiques & Applications (Berlin) [Mathematics & Applications]. Springer, Heidelberg, 2012. ISBN: 978-3-642-22979-4. DOI: 10.1007/978-3-642-22980-0.

8.2 Edited monographs

[3] D. A. Di Pietro, L. Formaggia, and R. Masson, eds. *Polyhedral Methods in Geosciences*. Vol. 27. SEMA-SIMAI. Springer International Publishing, 2021. ISBN: 978-3-030-69362-6. DOI: 10.1007/978-3-030-69363-3.

[4] D. A. Di Pietro, A. Ern, and L. Formaggia, eds. *Numerical Methods for PDEs. State of the Art Techniques*. Vol. 15. SEMA-SIMAI. Springer International Publishing, 2018. ISBN: 978-3-319-94675-7. DOI: 10.1007/978-3-319-94676-4.

8.3 Papers in international peer-reviewed journals

[5] L. Botti, M. Botti, D. A. Di Pietro, and F. C. Massa. "Stability, convergence, and pressure-robustness of numerical schemes for incompressible flows with hybrid velocity and pressure". In: *Math. Comp.* 95.357 (2026), pp. 1–28. DOI: 10.1090/mcom/4049. arXiv: 2404.12732 [math.NA].

[6] L. Botti, D. A. Di Pietro, and F. C. Massa. "Hybrid High-Order formulations with turbulence modelling capabilities for incompressible flow problems". In: *Comp. & Fl.* 305.106915 (2026). DOI: 10.1016/j.compfluid.2025.106915. arXiv: 2505.22480 [math.NA].

[7] A. Crippa, J. Coatlèven, D. A. Di Pietro, N. Guy, and S. Yousef. "A Hybrid High-Order method for fracture modelling". In: *Internat. J. Numer. Methods Engrg.* 127.13 (2026), e70374. DOI: 10.1002/nme.70374. arXiv: 2511.15345 [math.NA].

[8] D. A. Di Pietro, J. Droniou, and V. Patierno. "A Reynolds- and Hartmann-semirobust hybrid method for magnetohydrodynamics". In: *J. Comput. Phys.* 568.115400 (2026). DOI: 10.1016/j.jcp.2026.115400. arXiv: 2602.09626 [math.NA].

[9] D. A. Di Pietro and A. E. Spadotto. "Hybrid methods for Friedrichs systems with application to scalar and vector diffusion-advection-reaction". In: *Math. Models Methods Appl. Sci.* (2026). Accepted for publication. arXiv: 2602.10890 [math.NA].

[10] I. Fontana, G. Bacquaert, D. A. Di Pietro, and K. Kazymyrenko. "Hyperelastic nature of the Hoek–Brown criterion". In: *European Journal of Mechanics A/Solids* 115.105782 (2026). DOI: 10.1016/j.euromechsol.2025.105782. arXiv: 2507.15813 [math.NA].

[11] D. Castañón Quiroz, D. A. Di Pietro, J. Droniou, and M. Salah. "A Hybrid High-Order method for the power-law Brinkman problem robust in all regimes". In: *SIAM J. Numer. Anal.* (2026). Accepted for publication. arXiv: 2507.12140 [math.NA].

[12] L. Beirão da Veiga, D. A. Di Pietro, and K. B. Haile. "A Reynolds-semi-robust $H(\mathrm{div})$-conforming method for unsteady incompressible non-Newtonian flows". In: *IMA J. Numer. Anal.* (2026). Published online. DOI: 10.1093/imanum/drag058. arXiv: 2505.08708 [math.NA].

[13] F. Bonaldi, D. A. Di Pietro, J. Droniou, and K. Hu. "An exterior calculus framework for polytopal methods". In: *J. Eur. Math. Soc.* (2025). Published online. DOI: 10.4171/JEMS/1602. arXiv: 2303.11093 [math.NA].

[14] D. A. Di Pietro, Z. Dong, G. Kanschat, P. Matalon, and A. Rupp. “Homogeneous multigrid for hybrid discretizations: application to HHO methods”. In: *Numer. Meth. for PDEs* 41.5 (2025), e70023. DOI: 10.1002/num.70023. arXiv: 2403.15858 [math.NA].

[15] D. A. Di Pietro, M.-L. Hanot, and M. Salah. “Serendipity discrete complexes with enhanced regularity”. In: *Calcolo* 62 (2025), p. 41. DOI: 10.1007/s10092-025-00665-w. arXiv: 2407.12625 [math.NA].

[16] D. A. Di Pietro, S. Mendez, and A. E. Spadotto. “A discrete de Rham discretization of interface diffusion problems with application to the Leaky Dielectric Model”. In: *J. Comput. Phys.* 530.113920 (2025). DOI: 10.1016/j.jcp.2025.113920. arXiv: 2409.15042 [math.NA].

[17] D. Castañón Quiroz and D. A. Di Pietro. “A Reynolds-semi-robust and pressure-robust Hybrid High-Order method for the time dependent incompressible Navier–Stokes equations”. In: *Comput. Meth. Appl. Mech. Engrg.* 436 (2025), p. 117660. DOI: 10.1016/j.cma.2024.117660. arXiv: 2409.07037 [math.NA].

[18] L. Beirão da Veiga, D. A. Di Pietro, J. Droniou, K. B. Haile, and T. J. Radley. “A Reynolds-semi-robust method with hybrid velocity and pressure for the unsteady incompressible Navier–Stokes equations”. In: *SIAM J. Numer. Anal.* 63.6 (2025), pp. 2317–2342. DOI: 10.1137/25M1736104. arXiv: 2502.15293 [math.NA].

[19] D. A. Di Pietro. “An arbitrary-order discrete rot-rot complex on polygonal meshes with application to a quad-rot problem”. In: *IMA J. Numer. Anal.* 44.3 (2024), pp. 1699–1730. DOI: 10.1093/imanum/drad045. arXiv: 2210.15581 [math.NA].

[20] D. A. Di Pietro, J. Droniou, and J. J. Qian. “A pressure-robust Discrete de Rham scheme for the Navier–Stokes equations”. In: *Comput. Meth. Appl. Mech. Engrg.* 421.116765 (2024). DOI: 10.1016/j.cma.2024.116765. arXiv: 2401.04456 [math.NA].

[21] D. A. Di Pietro and M.-L. Hanot. “A discrete three-dimensional divdiv complex on polyhedral meshes with application to a mixed formulation of the biharmonic problem”. In: *Math. Models Methods Appl. Sci.* 34.9 (2024), pp. 1597–1648. DOI: 10.1142/S0218202524500313. arXiv: 2305.05729 [math.NA].

[22] D. A. Di Pietro and M.-L. Hanot. “Uniform Poincaré inequalities for the Discrete de Rham complex on general domains”. In: *Results Appl. Math.* 23.100496 (2024). DOI: 10.1016/j.rinam.2024.100496. arXiv: 2309.15667 [math.NA]. URL: https://authors.elsevier.com/sd/article/S2590-0374(24)00066-9.

[23] I. Fontana and D. A. Di Pietro. “An a posteriori error analysis based on equilibrated stresses for finite element approximations of frictional contact”. In: *Comput. Meth. Appl. Mech. Engrg.* 425.116950 (2024). DOI: 10.1016/j.cma.2024.116950. arXiv: 2401.02944 [math.NA].

[24] D. Castañón Quiroz and D. A. Di Pietro. “A pressure-robust HHO method for the solution of the incompressible Navier–Stokes equations on general meshes”. In: *IMA J. Numer. Anal.* 44.1 (2024), pp. 397–434. DOI: 10.1093/imanum/drad007. arXiv: 2203.07180 [math.NA].

[25] L. Beirão da Veiga, D. A. Di Pietro, and K. B. Haile. “A Péclet-robust discontinuous Galerkin method for nonlinear diffusion with advection”. In: *Math. Models Methods Appl. Sci.* 34.9 (2024), pp. 1781–1807. DOI: 10.1142/S0218202524500350. arXiv: 2402.09814 [math.NA].

[26] M. Botti, D. A. Di Pietro, and M. Salah. “A serendipity fully discrete div-div complex on polygonal meshes”. In: *Comptes Rendus Mécanique* 351.S1 (2023). DOI: 10.5802/crmeca.150. arXiv: 2207.07194 [math.NA].

[27] D. A. Di Pietro and J. Droniou. “A fully discrete plates complex on polygonal meshes with application to the Kirchhoff–Love problem”. In: *Math. Comp.* 92.339 (2023), pp. 51–77. DOI: 10.1090/mcom/3765. arXiv: 2112.14497 [math.NA].

[28] D. A. Di Pietro and J. Droniou. “A polytopal method for the Brinkman problem robust in all regimes”. In: *Comput. Meth. Appl. Mech. Engrg.* 409.115981 (2023). DOI: 10.1016/j.cma.2023.115981. arXiv: 2301.03272 [math.NA].

[29] D. A. Di Pietro and J. Droniou. “An arbitrary-order discrete de Rham complex on polyhedral meshes: Exactness, Poincaré inequalities, and consistency”. In: *Found. Comput. Math.* 23 (2023), pp. 85–164. DOI: 10.1007/s10208-021-09542-8. arXiv: 2101.04940 [math.NA].

[30] D. A. Di Pietro and J. Droniou. “Homological- and analytical-preserving serendipity framework for polytopal complexes, with application to the DDR method”. In: *ESAIM: Math. Model. Numer. Anal.* 57.1 (2023), pp. 191–225. DOI: 10.1051/m2an/2022067. arXiv: 2203.02939 [math.NA].

[31] D. A. Di Pietro, J. Droniou, and S. Pitassi. “Cohomology of the discrete de Rham complex on domains of general topology”. In: *Calcolo* 60.32 (2023). DOI: 10.1007/s10092-023-00523-7. arXiv: 2209.00957 [math.NA].

[32] D. A. Di Pietro, F. Hülsemann, P. Matalon, P. Mycek, U. Rüde, and D. Ruiz. “Algebraic multigrid preconditioner for statically condensed systems arising from lowest-order hybrid discretizations”. In: *SIAM J. Sci. Comput.* 45.3 (2023). DOI: 10.1137/21M1429849.

[33] D. A. Di Pietro, P. Matalon, P. Mycek, and U. Rüde. “High-order multigrid strategies for HHO discretizations of elliptic equations”. In: *Numer. Linear Algebra with Appl.* 30.e2456 (2023). DOI: 10.1002/nla.2456.

[34] D. Castañón Quiroz, D. A. Di Pietro, and A. Harnist. “A Hybrid High-Order method for incompressible flows of non-Newtonian fluids with power-like convective behaviour”. In: *IMA J. Numer. Anal.* 43.1 (2023), pp. 144–186. DOI: 10.1093/imanum/drab087.

[35] L. Botti and D. A. Di Pietro. “p-Multilevel preconditioners for HHO discretizations of the Stokes equations with static condensation”. In: *Commun. Appl. Math. Comput.* 4.3 (2022), pp. 783–822. DOI: 10.1007/s42967-021-00142-5.

[36] F. Chave, D. A. Di Pietro, and S. Lemaire. “A discrete Weber inequality on three-dimensional hybrid spaces with application to the HHO approximation of magnetostatics”. In: *Math. Models Methods Appl. Sci.* 32.1 (2022), pp. 175–207. DOI: 10.1142/S0218202522500051.

[37] D. A. Di Pietro and J. Droniou. “A discrete de Rham method for the Reissner–Mindlin plate bending problem on polygonal meshes”. In: *Comput. Math. Appl.* 125 (2022), pp. 136–149. DOI: 10.1016/j.camwa.2022.08.041. arXiv: 2105.11773 [math.NA].

[38] D. A. Di Pietro, I. Fontana, and K. Kazymyrenko. “A posteriori error estimates via equilibrated stress reconstructions for contact problems approximated by Nitsche’s method”. In: *Comput. Math. Appl.* 111 (2022), pp. 61–80. DOI: 10.1016/j.camwa.2022.02.008. URL: https://authors.elsevier.com/c/1egEh3CDPQ2-a5.

[39] L. Beirão da Veiga, F. Dassi, D. A. Di Pietro, and J. Droniou. “Arbitrary-order pressure-robust DDR and VEM methods for the Stokes problem on polyhedral meshes”. In: *Comput. Meth. Appl. Mech. Engrg.* 397.115061 (2022). DOI: 10.1016/j.cma.2022.115061. URL: https://authors.elsevier.com/a/1fChmAQEIzVqH.

[40] L. Botti, M. Botti, and D. A. Di Pietro. “An abstract analysis framework for monolithic discretisations of poroelasticity with application to Hybrid High-Order methods”. In: *Comput. Math. Appl.* 91.1 (2021), pp. 150–175. DOI: 10.1016/j.camwa.2020.06.004.

[41] M. Botti, D. Castañón Quiroz, D. A. Di Pietro, and A. Harnist. “A Hybrid High-Order method for creeping flows of non-Newtonian fluids”. In: *ESAIM: Math. Model. Numer. Anal.* 55.5 (2021), pp. 2045–2073. DOI: 10.1051/m2an/2021051.

[42] D. A. Di Pietro and J. Droniou. “An arbitrary-order method for magnetostatics on polyhedral meshes based on a discrete de Rham sequence”. In: *J. Comput. Phys.* 429.109991 (2021). DOI: 10.1016/j.jcp.2020.109991.

[43] D. A. Di Pietro, J. Droniou, and A. Harnist. “Improved error estimates for Hybrid High-Order discretizations of Leray–Lions problems”. In: *Calcolo* 58.19 (2021). DOI: 10.1007/s10092-021-00410-z.

[44] D. A. Di Pietro, F. Hülsemann, P. Matalon, P. Mycek, U. Rüde, and D. Ruiz. “An h-multigrid method for Hybrid High-Order discretizations”. In: *SIAM J. Sci. Comput.* 43.5 (2021), S839–S861. DOI: 10.1137/20M1342471.

[45] D. A. Di Pietro, F. Hülsemann, P. Matalon, P. Mycek, U. Rüde, and D. Ruiz. “Towards robust, fast solutions of elliptic equations on complex domains through HHO discretizations and non-nested multigrid methods”. In: *Internat. J. Numer. Methods Engrg.* 122.22 (2021), pp. 6576–6595. DOI: 10.1002/nme.6803.

[46] M. Botti, D. A. Di Pietro, O. Le Maître, and P. Sochala. “Numerical approximation of poroelasticity with random coefficients using Polynomial Chaos and Hybrid High-Order methods”. In: *Comput. Meth. Appl. Mech. Engrg.* 361.112736 (2020). DOI: 10.1016/j.cma.2019.112736.

[47] M. Botti, D. A. Di Pietro, and P. Sochala. “A Hybrid High-Order discretisation method for nonlinear poroelasticity”. In: *Comput. Meth. Appl. Math.* 20.2 (2020), pp. 227–249. DOI: 10.1515/cmam-2018-0142.

[48] D. A. Di Pietro, J. Droniou, and F. Rapetti. “Fully discrete polynomial de Rham sequences of arbitrary degree on polygons and polyhedra”. In: *Math. Models Methods Appl. Sci.* 30.9 (2020), pp. 1809–1855. DOI: 10.1142/S0218202520500372.

[49] D. Castañón Quiroz and D. A. Di Pietro. “A Hybrid High-Order method for the incompressible Navier–Stokes problem robust for large irrotational body forces”. In: *Comput. Math. Appl.* 79.8 (2020), pp. 2655–2677. DOI: 10.1016/j.camwa.2019.12.005.

[50] L. Botti, D. A. Di Pietro, and J. Droniou. “A Hybrid High-Order method for the incompressible Navier–Stokes equations based on Temam’s device”. In: *J. Comput. Phys.* 376 (2019), pp. 786–816. DOI: 10.1016/j.jcp.2018.10.014.

[51] M. Botti, D. A. Di Pietro, and A. Guglielmana. “A low-order nonconforming method for linear elasticity on general meshes”. In: *Comput. Meth. Appl. Mech. Engrg.* 354 (2019), pp. 96–118. DOI: 10.1016/j.cma.2019.05.031.

[52] F. Chave, D. A. Di Pietro, and L. Formaggia. “A Hybrid High-Order method for passive transport in fractured porous media”. In: *Int. J. Geomath.* 10.12 (2019). DOI: 10.1007/s13137-019-0114-x. URL: https://rdcu.be/bjHYw.

[53] T. Lelièvre, S. Perotto, G. Rozza, D. A. Di Pietro, A. Ern, and L. Formaggia. “Preface: Special Issue on Model Reduction”. In: *J. Sci. Comput.* 81 (1 2019). [Editorial], pp. 1–2. DOI: 10.1007/s10915-019-01037-7.

[54] J. Aghili and D. A. Di Pietro. “An advection-robust Hybrid High-Order method for the Oseen problem”. In: *J. Sci. Comput.* 77.3 (2018), pp. 1310–1338. DOI: 10.1007/s10915-018-0681-2.

[55] D. Boffi and D. A. Di Pietro. “Unified formulation and analysis of mixed and primal discontinuous skeletal methods on polytopal meshes”. In: *ESAIM: Math. Model. Numer. Anal.* 52.1 (2018), pp. 1–28. DOI: 10.1051/m2an/2017036.

[56] F. Bonaldi, D. A. Di Pietro, G. Geymonat, and F. Krasucki. “A Hybrid High-Order method for Kirchhoff–Love plate bending problems”. In: *ESAIM: Math. Model. Numer. Anal.* 52.2 (2018), pp. 393–421. DOI: 10.1051/m2an/2017065.

[57] L. Botti and D. A. Di Pietro. “Assessment of Hybrid High-Order methods on curved meshes and comparison with discontinuous Galerkin methods”. In: *J. Comput. Phys.* 370 (2018), pp. 58–84. DOI: 10.1016/j.jcp.2018.05.017.

[58] L. Botti, D. A. Di Pietro, and J. Droniou. “A Hybrid High-Order discretisation of the Brinkman problem robust in the Darcy and Stokes limits”. In: *Comput. Meth. Appl. Mech. Engrg.* 341 (2018), pp. 278–310. DOI: 10.1016/j.cma.2018.07.004.

[59] F. Chave, D. A. Di Pietro, and L. Formaggia. “A Hybrid High-Order method for Darcy flows in fractured porous media”. In: *SIAM J. Sci. Comput.* 40.2 (2018), A1063–A1094. DOI: 10.1137/17M1119500.

[60] M. Cicuttin, D. A. Di Pietro, and A. Ern. “Implementation of Discontinuous Skeletal methods on arbitrary-dimensional, polytopal meshes using generic programming”. In: *J. Comput. Appl. Math.* 344 (2018), pp. 852–874. DOI: 10.1016/j.cam.2017.09.017.

[61] D. A. Di Pietro and J. Droniou. “A third Strang lemma and an Aubin–Nitsche trick for schemes in fully discrete formulation”. In: *Calcolo* 55.40 (2018). DOI: 10.1007/s10092-018-0282-3. URL: https://rdcu.be/5L8F.

[62] D. A. Di Pietro, J. Droniou, and G. Manzini. “Discontinuous Skeletal Gradient Discretisation methods on polytopal meshes”. In: *J. Comput. Phys.* 355 (2018), pp. 397–425. DOI: 10.1016/j.jcp.2017.11.018.

[63] D. A. Di Pietro and S. Krell. “A Hybrid High-Order method for the steady incompressible Navier–Stokes problem”. In: *J. Sci. Comput.* 74.3 (2018), pp. 1677–1705. DOI: 10.1007/s10915-017-0512-x.

[64] D. A. Di Pietro and F. Marche. “Weighted Interior Penalty discretization of fully nonlinear and weakly dispersive free surface shallow water flows”. In: *J. Comput. Phys.* 355 (2018), pp. 285–309. DOI: 10.1016/j.jcp.2017.11.009.

[65] J. Aghili, D. A. Di Pietro, and B. Ruffini. “An hp-Hybrid High-Order method for variable diffusion on general meshes”. In: *Comput. Meth. Appl. Math.* 17.3 (2017), pp. 359–376. DOI: 10.1515/cmam-2017-0009.

[66] M. Botti, D. A. Di Pietro, and P. Sochala. “A Hybrid High-Order method for nonlinear elasticity”. In: *SIAM J. Numer. Anal.* 55.6 (2017), pp. 2687–2717. DOI: 10.1137/16M1105943.

[67] D. A. Di Pietro and J. Droniou. “A Hybrid High-Order method for Leray–Lions elliptic equations on general meshes”. In: *Math. Comp.* 86.307 (2017), pp. 2159–2191. DOI: 10.1090/mcom/3180.

[68] D. A. Di Pietro and J. Droniou. “$W^{s,p}$-approximation properties of elliptic projectors on polynomial spaces, with application to the error analysis of a Hybrid High-Order discretisation of Leray–Lions problems”. In: *Math. Models Methods Appl. Sci.* 27.5 (2017), pp. 879–908. DOI: 10.1142/S0218202517500191.

[69] D. A. Di Pietro and A. Ern. “Arbitrary-order mixed methods for heterogeneous anisotropic diffusion on general meshes”. In: *IMA J. Numer. Anal.* 37.1 (2017), pp. 40–63. DOI: 10.1093/imanum/drw003.

[70] D. A. Di Pietro, B. Kapidani, R. Specogna, and F. Trevisan. “An arbitrary-order discontinuous skeletal method for solving electrostatics on general polyhedral meshes”. In: *IEEE Transactions on Magnetics* 53.6 (2017), pp. 1–4. DOI: 10.1109/TMAG.2017.2666546.

[71] R. Riedlbeck, D. A. Di Pietro, A. Ern, S. Granet, and K. Kazymyrenko. “Stress and flux reconstruction in Biot’s poro-elasticity problem with application to a posteriori error analysis”. In: *Comput. Math. Appl.* 73.7 (2017), pp. 1593–1610. DOI: 10.1016/j.camwa.2017.02.005.

[72] D. Boffi, M. Botti, and D. A. Di Pietro. “A nonconforming high-order method for the Biot problem on general meshes”. In: *SIAM J. Sci. Comput.* 38.3 (2016), A1508–A1537. DOI: 10.1137/15M1025505.

[73] F. Chave, D. A. Di Pietro, F. Marche, and F. Pigeonneau. “A Hybrid High-Order method for the Cahn–Hilliard problem in mixed form”. In: *SIAM J. Numer. Anal.* 54.3 (2016), pp. 1873–1898. DOI: 10.1137/15M1041055.

[74] B. Cockburn, D. A. Di Pietro, and A. Ern. “Bridging the Hybrid High-Order and Hybridizable Discontinuous Galerkin methods”. In: *ESAIM: Math. Model. Numer. Anal.* 50.3 (2016), pp. 635–650. DOI: 10.1051/m2an/2015051.

[75] D. A. Di Pietro, A. Ern, A. Linke, and F. Schieweck. “A discontinuous skeletal method for the viscosity-dependent Stokes problem”. In: *Comput. Meth. Appl. Mech. Engrg.* 306 (2016), pp. 175–195. DOI: 10.1016/j.cma.2016.03.033.

[76] D. A. Di Pietro and R. Specogna. “An a posteriori-driven adaptive Mixed High-Order method with application to electrostatics”. In: *J. Comput. Phys.* 326.1 (2016), pp. 35–55. DOI: 10.1016/j.jcp.2016.08.041.

[77] J. Aghili, S. Boyaval, and D. A. Di Pietro. “Hybridization of mixed high-order methods on general meshes and application to the Stokes equations”. In: *Comput. Meth. Appl. Math.* 15.2 (2015), pp. 111–134. DOI: 10.1515/cmam-2015-0004.

[78] J. Bonelle, D. A. Di Pietro, and A. Ern. “Low-order reconstruction operators on polyhedral meshes: Application to Compatible Discrete Operator schemes”. In: *Computer Aided Geometric Design* 35–36 (2015), pp. 27–41. DOI: 10.1016/j.cagd.2015.03.015.

[79] D. A. Di Pietro, J. Droniou, and A. Ern. “A discontinuous-skeletal method for advection-diffusion-reaction on general meshes”. In: *SIAM J. Numer. Anal.* 53.5 (2015), pp. 2135–2157. DOI: 10.1137/140993971.

[80] D. A. Di Pietro and A. Ern. “A hybrid high-order locking-free method for linear elasticity on general meshes”. In: *Comput. Meth. Appl. Mech. Engrg.* 283 (2015), pp. 1–21. DOI: 10.1016/j.cma.2014.09.009.

[81] D. A. Di Pietro and A. Ern. “Equilibrated tractions for the Hybrid High-Order method”. In: *C. R. Acad. Sci. Paris, Ser. I* 353 (2015), pp. 279–282. DOI: 10.1016/j.crma.2014.12.009.

[82] D. A. Di Pietro and A. Ern. “Hybrid high-order methods for variable-diffusion problems on general meshes”. In: *C. R. Acad. Sci. Paris, Ser. I* 353 (2015), pp. 31–34. DOI: 10.1016/j.crma.2014.10.013.

[83] D. A. Di Pietro and S. Lemaire. “An extension of the Crouzeix–Raviart space to general meshes with application to quasi-incompressible linear elasticity and Stokes flow”. In: *Math. Comp.* 84.291 (2015), pp. 1–31. DOI: 10.1090/S0025-5718-2014-02861-5.

[84] D. A. Di Pietro, M. Vohralík, and S. Yousef. “Adaptive regularization, linearization, discretization, and a posteriori error control for the two-phase Stefan problem”. In: *Math. Comp.* 84.291 (2015), pp. 153–186. DOI: 10.1090/S0025-5718-2014-02854-8.

[85] D. A. Di Pietro, A. Ern, and S. Lemaire. “An arbitrary-order and compact-stencil discretization of diffusion on general meshes based on local reconstruction operators”. In: *Comput. Meth. Appl. Math.* 14.4 (2014). Open access (editor’s choice), pp. 461–472. DOI: 10.1515/cmam-2014-0018.

[86] D. A. Di Pietro, E. Flauraud, M. Vohralík, and S. Yousef. “A posteriori error estimates, stopping criteria, and adaptivity for multiphase compositional Darcy flows in porous media”. In: *J. Comput. Phys.* 274 (2014), pp. 163–187. DOI: 10.1016/j.jcp.2014.06.061.

[87] D. A. Di Pietro and M. Vohralík. “A review of recent advances in discretization methods, a posteriori error analysis, and adaptive algorithms for numerical modeling in geosciences”. In: *Oil & Gas Science and Technology* 69.4 (2014), pp. 701–730. DOI: 10.2516/ogst/2013158.

[88] D. A. Di Pietro, M. Vohralík, and S. Yousef. “An a posteriori-based, fully adaptive algorithm for thermal multiphase compositional flows in porous media with adaptive mesh refinement”. In: *Comput. Math. Appl.* 68.12 (2014), pp. 2331–2347. DOI: 10.1016/j.camwa.2014.08.008.

[89] D. A. Di Pietro. “On the conservativity of cell centered Galerkin methods”. In: *C. R. Acad. Sci. Paris, Ser. I* 351.3–4 (2013), pp. 155–159. DOI: 10.1016/j.crma.2013.03.001.

[90] D. A. Di Pietro, J.-M. Gratien, and C. Prud’homme. “A domain-specific embedded language in C++ for lowest-order discretizations of diffusive problems on general meshes”. In: *BIT Numerical Mathematics* 53.1 (2013), pp. 111–152. DOI: 10.1007/s10543-012-0403-3.

[91] D. A. Di Pietro and S. Nicaise. “A locking-free discontinuous Galerkin method for linear elasticity in locally nearly incompressible heterogeneous media”. In: *App. Num. Math.* 63 (2013), pp. 105–116. DOI: 10.1016/j.apnum.2012.09.009.

[92] F. Bassi, L. Botti, A. Colombo, D. A. Di Pietro, and P. Tesini. “On the flexibility of agglomeration based physical space discontinuous Galerkin discretizations”. In: *J. Comput. Phys.* 231.1 (2012), pp. 45–65. DOI: 10.1016/j.jcp.2011.08.018.

[93] D. A. Di Pietro. “Cell centered Galerkin methods for diffusive problems”. In: *ESAIM: Math. Model. Numer. Anal.* 46.1 (2012), pp. 111–144. DOI: 10.1051/m2an/2011016.

[94] D. A. Di Pietro and A. Ern. “Analysis of a discontinuous Galerkin method for heterogeneous diffusion problems with low-regularity solutions”. In: *Numer. Meth. for PDEs* 28.4 (2012), pp. 1161–1177. DOI: 10.1002/num.20675.

[95] L. Botti and D. A. Di Pietro. “A pressure-correction scheme for convection-dominated incompressible flows with discontinuous velocity and continuous pressure”. In: *J. Comput. Phys.* 230.3 (2011), pp. 572–585. DOI: 10.1016/j.jcp.2010.10.004.

[96] D. A. Di Pietro. “A compact cell-centered Galerkin method with subgrid stabilization”. In: *C. R. Acad. Sci. Paris, Ser. I* 349.1–2 (2011), pp. 93–98. DOI: 10.1016/j.crma.2010.11.017.

[97] L. Agélas, D. A. Di Pietro, and J. Droniou. “The G method for heterogeneous anisotropic diffusion on general meshes”. In: *ESAIM: Math. Model. Numer. Anal.* 44.4 (2010), pp. 597–625. DOI: 10.1051/m2an/2010021.

[98] L. Agélas, D. A. Di Pietro, R. Eymard, and R. Masson. “An abstract analysis framework for nonconforming approximations of diffusion problems on general meshes”. In: *IJFV International Journal on Finite Volumes* 7.1 (2010), pp. 1–29.

[99] D. A. Di Pietro. “Cell centered Galerkin methods”. In: *C. R. Acad. Sci. Paris, Ser. I* 348.1–2 (2010), pp. 31–34. DOI: 10.1016/j.crma.2009.11.012.

[100] D. A. Di Pietro and A. Ern. “Discrete functional analysis tools for discontinuous Galerkin methods with application to the incompressible Navier–Stokes equations”. In: *Math. Comp.* 79 (2010), pp. 1303–1330. DOI: 10.1090/S0025-5718-10-02333-1.

[101] D. A. Di Pietro and A. Veneziani. “Expression template implementation of continuous and discontinuous Galerkin methods”. In: *Comp. Vis. in Sci.* 12 (2009), pp. 421–436. DOI: 10.1007/s00791-008-0117-x.

[102] D. A. Di Pietro, A. Ern, and J.-L. Guermond. “Discontinuous Galerkin methods for anisotropic semi-definite diffusion with advection”. In: *SIAM J. Numer. Anal.* 46.2 (2008), pp. 805–831. DOI: 10.1137/060676106.

[103] F. Bassi, A. Crivellini, D. A. Di Pietro, and S. Rebay. “An implicit high-order discontinuous Galerkin method for steady and unsteady incompressible flows”. In: *Comp. & Fl.* 36.10 (2007), pp. 1529–1546. DOI: 10.1016/j.compfluid.2007.03.012.

[104] D. A. Di Pietro. “Analysis of a discontinuous Galerkin approximation of the Stokes problem based on an artificial compressibility flux”. In: *Int. J. Num. Meth. Fluids* 55.8 (2007), pp. 793–813. DOI: 10.1002/fld.1495.

[105] F. Bassi, A. Crivellini, D. A. Di Pietro, and S. Rebay. “An artificial compressibility flux for the discontinuous Galerkin solution of the incompressible Navier-Stokes equations”. In: *J. Comput. Phys.* 218.2 (2006), pp. 794–815. DOI: 10.1016/j.jcp.2006.03.006.

[106] D. A. Di Pietro, S. Lo Forte, and N. Parolini. “Mass preserving finite element implementations of the level set method”. In: *App. Num. Math.* 56 (9 2006), pp. 1179–1195. DOI: 10.1016/j.apnum.2006.03.003.

[107] G. E. Cossali, D. A. Di Pietro, and M. Marengo. “Comparison of four analytical and numerical models for a microchannel heat sink”. In: *Int. J. Heat and Tech.* 21.2 (2003), pp. 31–42.

8.4 Book chapters

[108] L. Botti, M. Botti, and D. A. Di Pietro. “Polyhedral Methods in Geosciences”. In: ed. by R. Masson D. A. Di Pietro L. Formaggia. SEMA-SIMAI 27. Springer, 2021. Chap. A Hybrid High-Order method for multiple-network poroelasticity, pp. 227–258. ISBN: 978-3-030-69362-6. DOI: 10.1007/978-3-030-69363-3_6.

[109] D. A. Di Pietro, A. Ern, and L. Formaggia. “Numerical Methods for PDEs. State of the Art Techniques”. In: ed. by L. Formaggia D. A. Di Pietro A. Ern. SEMA-SIMAI 15. Springer, 2018. Chap. An introduction to recent developments in numerical methods for partial differential equations, pp. 1–4. ISBN: 978-3-319-94675-7. DOI: 10.1007/978-3-319-94676-4_1.

[110] D. A. Di Pietro and R. Tittarelli. “Numerical Methods for PDEs. State of the Art Techniques”. In: ed. by L. Formaggia D. A. Di Pietro A. Ern. SEMA-SIMAI 15. Springer, 2018. Chap. An introduction to Hybrid High-Order methods, pp. 75–128. ISBN: 978-3-319-94675-7. DOI: 10.1007/978-3-319-94676-4_4.

[111] D. A. Di Pietro, A. Ern, and S. Lemaire. “Building bridges: Connections and challenges in modern approaches to numerical partial differential equations”. In: ed. by G. Barrenechea, F. Brezzi, A. Cangiani, and M. Georgoulis. Springer, 2016. Chap. A review of Hybrid High-Order methods: formulations, computational aspects, comparison with other methods, pp. 205–236. ISBN: 978-3-319-41638-0. DOI: 10.1007/978-3-319-41640-3.

8.5 Preprints

[112] M. Dauphin, D. A. Di Pietro, J. Droniou, and A. Skouras. *A low-order hybrid method for the variable-density incompressible Navier–Stokes equations*. Jan. 2026. arXiv: 2601.14405 [math.NA].

[113] D. A. Di Pietro. *poly_rust: a domain-specific language for polytopal methods with a Rust interpreter*. Aug. 2026. arXiv: 2608.09414 [math.NA].

[114] D. A. Di Pietro, J. Droniou, K. Hu, and A. Leroy. *Analytical properties of polygonal Stokes and BGG Hessian complexes with application to Kirchhoff–Love plates*. Sept. 2026. arXiv: 2609.10150 [math.NA].

[115] D. A. Di Pietro and E. Hössjer. *Optimal hp-error estimates and p-multigrid convergence for Hybrid High-Order discretizations of the Poisson equation*. June 2026. arXiv: 2606.22492 [math.NA].

[116] D. A. Di Pietro, S. Mendez, and A. E. Spadotto. *Numerical simulation of biological capsules based on interface-fitted polygonal meshes*. 2026. arXiv: 2610.18172 [math.NA].

[117] L. Beirão da Veiga, D. A. Di Pietro, and J. Droniou. *Key challenges and bridges among convergence analysis techniques for polytopal methods*. May 2026. arXiv: 2605.23405 [math.NA].

[118] D. A. Di Pietro, J. Droniou, M.-L. Hanot, and S. Pitassi. *Uniform Poincaré inequalities for the discrete de Rham complex of differential forms*. Jan. 2025. arXiv: 2501.16116 [math.NA].

[119] D. A. Di Pietro, J. Droniou, K. Hu, and A. Leroy. *Design and homological analysis of twisted and BGG Stokes-de Rham complexes on polygonal meshes*. July 2025. arXiv: 2507.17333 [math.NA].

[120] D. A. Di Pietro, J. Droniou, and E. Nilsson. *Ghost stabilisation for cut finite element exterior calculus*. Oct. 2025. arXiv: 2510.14772 [math.NA].

[121] D. A. Di Pietro, J. Droniou, and S. Pitassi. *Conforming lifting and adjoint consistency for the Discrete de Rham complex of differential forms*. Sept. 2025. arXiv: 2509.21449 [math.NA].

8.6 Proceedings

[122] B. Cockburn, D. A. Di Pietro, and A. Ern. “Bridging the Hybrid High-Order and Hybridizable Discontinuous Galerkin methods: Summary”. In: *Frontiers of Science Awards for Math/TCIS/Phys*. International Press, 2024.

[123] F. Chave, D. A. Di Pietro, and S. Lemaire. “A three-dimensional Hybrid High-Order method for magnetostatics”. In: *Finite Volumes for Complex Applications IX – Methods, Theoretical Aspects, Examples*. Ed. by R. Klöfkorn, E. Keilegavlen, F. A. Radu, and J. Fuhrmann. 2020, pp. 255–263. DOI: 10.1007/978-3-030-43651-3_22.

[124] M. Botti, D. A. Di Pietro, and P. Sochala. “A nonconforming high-order method for nonlinear poroelasticity”. In: *Finite Volumes for Complex Applications VIII – Hyperbolic, Elliptic and Parabolic Problems*. Ed. by C. Cancès and P. Omnes. 2017, pp. 537–546. DOI: 10.1007/978-3-319-57397-7.

[125] F. Chave, D. A. Di Pietro, and F. Marche. “A Hybrid High-Order method for the convective Cahn–Hilliard problem in mixed form”. In: *Finite Volumes for Complex Applications VIII – Hyperbolic, Elliptic and Parabolic Problems*. Ed. by C. Cancès and P. Omnes. 2017, pp. 517–526. DOI: 10.1007/978-3-319-57397-7.

[126] D. A. Di Pietro and S. Krell. “Benchmark session: The 2D Hybrid High-Order method”. In: *Finite Volumes for Complex Applications VIII – Methods and Theoretical Aspects*. Ed. by C. Cancès and P. Omnes. 2017, pp. 91–106. DOI: 10.1007/978-3-319-57397-7.

[127] R. Riedlbeck, D. A. Di Pietro, and A. Ern. “Equilibrated stress reconstruction for linear elasticity problems with application to a posteriori error analysis”. In: *Finite Volumes for Complex Applications VIII – Methods and Theoretical Aspects*. Ed. by C. Cancès and P. Omnes. 2017, pp. 293–302.

[128] D. A. Di Pietro, R. Eymard, S. Lemaire, and R. Masson. “Hybrid finite volume discretization of linear elasticity models on general meshes”. In: *Finite Volumes for Complex Applications VI*. Ed. by J. Fořt, J. Fürst, J. Halama, R. Herbin, and F. Hubert. Springer–Verlag, 2011, pp. 331–339. DOI: 10.1007/978-3-642-20671-9_35.

[129] D. A. Di Pietro and J.-M. Gratien. “Lowest order methods for diffusive problems on general meshes: A unified approach to definition and implementation”. In: *Finite Volumes for Complex Applications VI*. Ed. by J. Fořt, J. Fürst, J. Halama, R. Herbin, and F. Hubert. Invited paper. Springer–Verlag, 2011, pp. 3–19. DOI: 10.1007/978-3-642-20671-9_84.

[130] D. A. Di Pietro, M. Vohralík, and C. Widmer. “An a posteriori error estimator for a finite volume discretization of two-phase flow”. In: *Finite Volumes for Complex Applications VI*. Ed. by J. Fořt, J. Fürst, J. Halama, R. Herbin, and F. Hubert. Springer–Verlag, 2011, pp. 341–349. DOI: 10.1007/978-3-642-20671-9_36.

[131] L. Agélas, D. A. Di Pietro, and I. Kapyrin. “A comparison of last generation cell centered finite volume methods on challenging three dimensional problems”. In: *Proceedings of the 3rd International Conference on Approximation Methods and numerical Modeling in Environment and Natural Resources*. Pau, France, June 2009.

[132] L. Agélas and D. A. Di Pietro. “A symmetric finite volume scheme for anisotropic heterogeneous second-order elliptic problems”. In: *Finite Volumes for Complex Applications V*. Ed. by R. Eymard and J.-M. Hérard. John Wiley & Sons, 2008, pp. 705–716. ISBN: 978-1-84821-035-6.

[133] L. Agélas, D. A. Di Pietro, R. Eymard, and R. Masson. “A general framework for non-conforming approximations of the single phase Darcy equation”. In: *Proceedings of the 11th European Conference on the Mathematics of Oil Recovery*. Bergen, Norway, Sept. 2008.

[134] L. Agélas, D. A. Di Pietro, I. Kapyrin, and R. Masson. “Generalized L-scheme for the discretization of diffusion fluxes on general meshes”. In: *Proceedings of the 11th European Conference on the Mathematics of Oil Recovery*. Bergen, Norway, Sept. 2008.

[135] L. Agélas, D. A. Di Pietro, I. Kapyrin, and R. Masson. “The MPFA G scheme for heterogeneous anisotropic diffusion problems on general meshes”. In: *Proceedings of the 11th European Conference on the Mathematics of Oil Recovery*. Bergen, Norway, Sept. 2008.

[136] L. Agélas, D. A. Di Pietro, and R. Masson. “A symmetric and coercive finite volume scheme for multiphase porous media flow with applications in the oil industry”. In: *Finite Volumes for Complex Applications V*. Ed. by R. Eymard and J.-M. Hérard. Invited paper. John Wiley & Sons, 2008, pp. 35–52. ISBN: 978-1-84821-035-6.

[137] D. A. Di Pietro and A. Ern. “A discontinuous Galerkin flux for anisotropic heterogeneous second-order elliptic problems”. In: *Finite Volumes for Complex Applications V*. Ed. by R. Eymard and J.-M. Hérard. John Wiley & Sons, 2008, pp. 777–793. ISBN: 978-1-84821-035-6.

[138] S. Mundal, D. A. Di Pietro, and I. Aavatsmark. “Compact-stencil MPFA method for heterogeneous highly-anisotropic second order elliptic problems”. In: *Finite Volumes for Complex Applications V*. Ed. by R. Eymard and J.-M. Hérard. John Wiley & Sons, 2008, pp. 905–918. ISBN: 978-1-84821-035-6.

[139] F. Bassi, A. Crivellini, D. A. Di Pietro, and S. Rebay. “A high-order discontinuous Galerkin solver for 3D aerodynamic turbulent flows”. In: *ECCOMAS CFD 2006 Proceedings (Egmond an Zee, Netherlands)*. Ed. by P. Wesseling, E. Oñate, and J. Périaux. Sept. 2006.

[140] G. E. Cossali, D. A. Di Pietro, and M. Marengo. “Analytical and numerical modeling of microchannel heat sinks”. In: *Proceedings of the First International Conference on Microchannels and Minichannels (Rochester, New York)*. Apr. 2003.

[141] G. E. Cossali, D. A. Di Pietro, and M. Marengo. “Design of a microchannel cooling system for BTeV particle detector”. In: *Proceedings of the 8th International Workshop on Thermal Investigations of ICs and Systems (Madrid, Spain)*. Sept. 2002.

8.7 Theses

[142] D. A. Di Pietro. “Méthodes non conformes pour des équations aux dérivées partielles avec diffusion”. Habilitation thesis. Université de Paris-Est, 2010. URL: http://tel.archives-ouvertes.fr/tel-00550230.

[143] D. A. Di Pietro. “Discontinuous Galerkin methods for the incompressible Navier–Stokes equations”. Ph.D. thesis. Università di Bergamo, Mar. 2006.