# Curriculum vitæ

Daniele A. Di Pietro

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# 1 About me


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|---|---|---|---|
| **Family name:** | Di Pietro | **Scopus ID:** | 6603444428 |
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| **Age:** | 47 | **ORCID:** | 0000-0003-0959-8830 |
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## 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 PhD thesis was carried out at École Polytechnique Fédérale de Lausanne (EPFL)

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

## 1.2 Current positions

*2024–pres.* Corresponding PI of the **ERC SyG NEMESIS**. NEMESIS is a 7.8M€ project for the development of new generation numerical methods for parial 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* **Post-doctoral 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 include: advanced numerical methods for partial differential equations (PDEs), a priori and a posteriori error analysis, efficient implementation algorithms. I have worked on problems in several branches of fluid- and solid-mechanics, porous media flows, and electromagnetism, mostly issued from applications in the field of energy and environment.

### 2.2 Bibliometrics

As of 10 May 2026, my **117 works in Scopus** have been **cited 3485 times by 1624 documents** and my **h-index is 32**; see https://www.scopus.com/authid/detail.uri?authorId=6603444428.

At the same date, my **112 works in MathSciNet** have been **cited 3470 times in 1709 publications**; see http://www.ams.org/mathscinet/search/author.html?mrauthid=790640.

Finally, according to Google Scholar, at the same date I have collected **7867 citations** (4161 since 2021), corresponding to an **h-index of 1** (30 since 2021) and an **i10-index of 90** (74 since 2020); see https://scholar.google.fr/citations?user=KFd4Jm8AAAAJ&hl=en.

## 3 Scientific outreach

### 3.1 Evaluation of the research

I have acted as referee for all the 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 served as referee for the European Research Council as well as several national research agencies and institutions (ANR France, CONACYT Chile, FWF Austrian Science Found, PRIN Italy, The Royal Swedish Academy of Science, NWO Netherlands, Los Alamos National Labs, POR FSE Regione Friuli-Venezia-Giulia, etc.)

I have been member of evaluation panels for ANR and for various calls of the Italian Ministery of University. The details are omitted owing to the confidentiality agreement.

### 3.2 Editorial activity

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

*2020–pres.* Associate editor of Numerical Algorithms, Springer

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

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

### 3.3 Organization of scientific meetings

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

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

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

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

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

*2022* Member of the Scientific Committeee 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 mini-symposium *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 mini-symposium *Low and high-order polytopal methods: developments and applications*, ALGORITHMY 2020 conference (Vysoke Tatry, Podbanske). Conference switched to hybrid mode after the COVID-19 crisis

*2020* Organizer of the mini-symposium *Numerical Methods for Polygonal and Polyhedral Meshes*, WCCM XIV-ECCOMAS 2020 conference (Paris, France). Conference moved to January 2021 in fully virtual mode owing to the COVID-19 crisis

*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 mini-symposium *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 mini-symposia *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)

Detailed information at https://imag.umontpellier.fr/~di-pietro/ihp-nmpdes.html. An IHP thematic quarter requires two years of preparation after the project is selected. One book and two special issues resulted from this thematic quarter:

- 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 (selection 2011–pres.)

*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* 8h doctoral course at Scuola Superiore Meridionale, Naples

*Feb. 2025* Invited remote seminar at 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 conference 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*. Upcoming
*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). Upcoming
*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). Seminar held remotely owing to the COVID-19 crisis
*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). Conference in hybrid mode after the COVID-19 crisis
*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). Seminar held remotely owing to the COVID-19 crisis
*Jul. 2020* Invited speaker at the ICOSAHOM conference, minisymposium *High order methods on polyhedral meshes*, Vienna (Austria). Held remotely in 2021 owing to the COVID-19 crisis
*May 2020* Keynote speaker at the InDAM Workshop *Polygonal methods for PDEs: Theory and applications*, Rome (Italy). Held remotely in 2021 owing to the COVID-19 crisis
*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 (Swiss)
*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 (selection 2011–pres.)

*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 in virtual mode in 2021 owing to the COVID-19 crisis
*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 Mathémathiques 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 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 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

*2024* Frontier 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*, rubrica *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-months post-doctoral fellow |
| 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 MultiScale and MultiPhysics modelling* (PI: M. Hillairet) |

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|---|---|---|---|---|
| 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 VFSit-Com | 2009–2012 | Co-investigator | 180 000€ | *Volumes Finis pour Situations Complexes* (PI: J. Droniou) |

* Having received an ERC and another ANR funding (HIPOTHEC) the same year, I decided to retire 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 post-doctoral fellows

### 5.1 Supervision of PhD students

*2025–pres.* **Hodayfa Labbi**, HHO methods and non-conforming complexes with application to fluid mechanics

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

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

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

*2023–pres.* **Kirubell Biniam Haile**, Reynolds-robust methods for the incompressible Navier–Stokes equations, co-director 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 research engineer at Michelin (Clermont-Ferrand)

*Def. 2025* **Marwa Salah**, Serendipity DOF reduction in advanced discrete complexes. M. Salah is now post-doc at Inria Lille

*Def. 2025* **Aurelio Edoardo Spadotto**, Numerical simulation of the electrodeformation of blood cells. Application to medical diagnostic, co-director with S. Mendez (UM). TEL manuscript tel-05305250. A. Spadotto is now post-doc 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-director 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 has obtained a Marie Sklodowska–Curie fellowship then 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 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 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-director with C. Prud'homme (professor, Univ. Strasbourg). J.-M. Gratien is now research engineer at IFPEN

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

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

I also supervised the PhD students **Mathias Dauphin** (Università di Napoli Federico II, Italy) during his 3-months stay at IMAG (2023–2024), **Silvano Pitassi** (Università di Udine, Italy) during his 2-months stay at IMAG (2021), **Lorenzo Botti** (Università di Bergamo, Italy) and **Sissel Mundal** (University of Bergen) during their 6 months stay at IFPEN.

### 5.2 Supervision of post-doctoral 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 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 researcher at Shahid Beheshti University (Iran)

*2017–2018* **Alice Raeli**, Hybrid High-Order methods on octree meshes. A. Raeli is now 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**, Multi-points 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 theses and HDR[1] committees (* Referee)

*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 Post-graduate courses (PhD level)

*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* Virtual introductive 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

[1] French habilitation for professorship

## 6.2 Undergraduate courses

**Legend:** CM = *Cours Magistral* (Masterclass), TD = *Travaux Dirigés* (Exercices), TP = *Travaux Pratiques* (Practical exercises). In France 1h CM = 1.5h TD; L*X* = *X*th year of Licence, M*X* = *X*th year of Master

### 6.2.1 As professor at 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)

For some of the above courses, supports are available on my webpage 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 (* PhD thesis under my direction followed)

*2026* **Lucas Garde**, hybridization of DDR methods
*2024* **Vito Patierno***, DDR methods for magneto-hydro-dynamics problems
*2023* **Giulia Quarta Castelbarco Albani** (2023), co-advisor 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* In charge of the second year of the Master *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* In charge of the first year of the Master *Mathématiques, Statistique et Applications*

## 7.2 Participation in selection committees

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

[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. 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].

[6] 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].

[7] 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].

[8] 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].

[9] 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). Accepted for publication, e70374. DOI: 10.1002/nme.70374. arXiv: 2511.15345 [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] 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].

[12] 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].

[13] 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].

[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 (2025), p. 113920. DOI: 10.1016/j.jcp.2025.113920. arXiv: 2409.15042 [math.NA].

[17] 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].

[18] 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].

[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] 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].

[25] 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.

[26] 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].

[27] 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].

[28] 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].

[29] 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].

[30] 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].

[31] 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.

[32] 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.

[33] 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.

[34] 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.

[35] 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.

[36] 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].

[37] 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.

[38] 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.

[39] 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.

[40] 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.

[41] 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.

[42] 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.

[43] 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.

[44] 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.

[45] 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.

[46] 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.

[47] 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.

[48] 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.

[49] 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.

[50] 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.

[51] 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.

[52] 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.

[53] 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.

[54] 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.

[55] 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.

[56] 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.

[57] 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.

[58] 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.

[59] 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.

[60] 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.

[61] 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.

[62] 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.

[63] 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.

[64] 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.

[65] 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.

[66] 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.

[67] 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.

[68] 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.

[69] 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.

[70] 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.

[71] 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.

[72] 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.

[73] 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.

[74] 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.

[75] 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.

[76] 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.

[77] 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.

[78] 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.

[79] 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.

[80] 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.

[81] 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.

[82] 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.

[83] 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.

[84] 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.

[85] 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.

[86] 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.

[87] 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.

[88] 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.

[89] 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.

[90] 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.

[91] 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.

[92] 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.

[93] 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.

[94] 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.

[95] 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.

[96] 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.

[97] 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.

[98] 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.

[99] 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.

[100] 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.

[101] 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.

[102] 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.

[103] 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.

[104] 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.

[105] 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

[106] 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.

[107] 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.

[108] 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.

[109] 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

[110] 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].

[111] 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].

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

[113] D. A. Di Pietro, J. Droniou, and V. Patierno. *A Reynolds- and Hartmann-semirobust hybrid method for magnetohydrodynamics*. Feb. 2026. arXiv: 2602.09626 [math.NA].

[114] 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].

[115] D. A. Di Pietro and A. E. Spadotto. *Hybrid methods for Friedrichs systems with application to scalar and vector diffusion-advection-reaction*. Feb. 2026. arXiv: 2602.10890 [math.NA].

[116] 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].

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

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

[119] 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

[120] 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.

[121] 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.

[122] 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.

[123] 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.

[124] 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.

[125] 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.

[126] 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.

[127] 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.

[128] 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.

[129] 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.

[130] 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.

[131] 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.

[132] 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.

[133] 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.

[134] 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.

[135] 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.

[136] 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.

[137] 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.

[138] 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.

[139] 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

[140] 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.

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