

CURRICULUM VITÆ
Marco De Paoli

January 30, 2023



General Information

Date and place of birth: January 21, 1989; Udine (Italy);
Citizenship: Italian;
Marital status: married;
Affiliation 1: Physics of Fluids Group, University of Twente;
Affiliation 2: Institute of Fluid Mechanics and Heat transfer, TU Wien;
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YouTube 1: [Multiphase Flow Laboratory of the University of Udine](#)
YouTube 2: [Institute of Fluid Mechanics and Heat Transfer, TU Wien](#)
Publons: <https://publons.com/researcher/1429495/marco-de-paoli/>
ResearchGate: http://www.researchgate.net/profile/Marco_De_Paoli
Google Scholar: <https://scholar.google.it/citations?user=C0MUFNQAAAAJ&hl=en>
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Education

2014 - 2016 | Ph.D. cum laude - Energy Engineering, University of Udine (Italy). Thesis: “Convection in Porous Media”. Advisors: Prof. A. Soldati, Dr. F. Zonta.
2011 - 2013 | MS cum laude - Mechanical Engineering, University of Udine (Italy)
2008 - 2011 | BS cum laude - Mechanical Engineering, University of Udine (Italy)

Academic Positions and Qualifications

2024 - 2025 | Erwin Schrödinger Fellow (awarded by the *Austria Science Fund*, FWF), Vienna University of Technology - Institute of Fluid Mechanics and Heat Transfer
2022 - 2024 | Erwin Schrödinger Fellow (awarded by the *Austria Science Fund*, FWF), University of Twente - Physics of Fluids Group (supervised by prof. Detlef Lohse)
2017 - 2022 | University Assistant (Post-Doctoral Fellow), Institute of Fluid Mechanics and Heat Transfer, Vienna University of Technology, Vienna (Austria)
2017 - 2017 | Research Fellow, Polytechnic Department, University of Udine, Udine (Italy)
2016 - 2016 | Visiting Researcher, Institute of Fluid Mechanics and Heat Transfer, Vienna University of Technology, Vienna (Austria)
2014 - 2015 | Tutor, Mechanical Engineering students of the University of Udine, Udine (Italy)
2013 - 2013 | Visiting Student, Institute de Mechanique des Fluides Toulouse (IMFT), Institute National Polytechnique de Toulouse (INPT), Toulouse (France)

Editorships

2023 - | Associate Editor of The European Physical Journal - E

Research interests

Carbon dioxide sequestration, convection in porous media, particle- and fiber-laden flows, experimental methods for fiber-laden flows, experimental methods for convective flows;

Honors and awards

- 2022 Marie Skłodowska-Curie Fellowship (2-years competitive postdoctoral fellowship), awarded from *European Commission* (Horizon Europe).
 - 2021 Erwin Schrödinger Fellowship (3-years competitive postdoctoral fellowship), awarded from *Austria Science Fund* (FWF).
 - 2021 Paper “Influence of reservoir properties on the dynamics of a migrating current of carbon dioxide”, *Physics of Fluids*, **33**, 016602, selected as “noteworthy article” (Editor’s Pick).
 - 2020 Invited contribution to the special issue in *Physics of Fluids*, for “outstanding early-career researchers” (published in 2021).
 - 2018 *GAMM* Junior fellow for “young researchers who have accomplished an excellent Master or Doctoral thesis in the fields of Applied Mathematics or Mechanics”, International Association of Applied Mathematics and Mechanics, Elected 2017, GAMM-GESCHÄFTSSTELLE, Technische Universität Dresden.
 - 2016 Awarded scholarship from ARGONNE NATIONAL LABORATORY (USA) for the International School “Argonne Training Program on Extreme Scale Computing 2016 (ATPESC 2016)”, Chicago (USA).
 - 2015 Best Poster Award (*ex aequo*) from UNIVERSITÀ DEGLI STUDI DI UDINE - PhD program in Environmental and Energy Engineering Science, Udine (Italy).
 - 2015 Awarded scholarship from PRACE for the international school “High-performance Computing Summer School 2015”, Toronto (Canada).
 - 2008 Winner “Cecilia Danieli Fellowship” for a “Distinguished student” (ranked 2nd out of 500 candidates), MARSH SPA, Udine (Italy).
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Grants

Research grants

- Marie Skłodowska-Curie Fellowship (2-years competitive postdoctoral fellowship), competitive fellowship awarded from *European Commission* (Horizon Europe), to investigate “Models for dispersion effects in porous media”. Hosting institutions: University of Twente - Physics of Fluids Group (supervised by prof. Detlef Lohse).
- 2022-2024 Erwin Schrödinger Fellowship (3-years competitive postdoctoral fellowship), competitive fellowship awarded from *Austria Science Fund* (FWF), to investigate “dispersion effects in porous media flows”. Hosting institutions: University of Twente - Physics of Fluids Group (supervised by prof. Detlef Lohse) and Technische Universität Wien (supervised by prof. Soldati).
- 2022-2024 Co-applicant for a successful grant, awarded from *Austria Science Fund* (FWF), to investigate “Micro fibers in turbulent open channel flow”, based at the Technische Universität Wien, Austria.
- 2020 Co-applicant for a successful grant for “the improvement of existing experimental facilities”, based at the Technische Universität Wien, Austria.
- 2019 Co-applicant for a successful grant for “the realisation of research- and teaching-oriented experimental setups”, based at the Technische Universität Wien, Austria.

High Performance Computing grants

- 2019 Pirozzoli S., Zonta F., **De Paoli M.**, Soldati A. Three-dimensional simulation of convection in porous media, Italian Supercomputing Resource Allocation - CINECA Supercomputing Centre, Bologna (Italy). 9.6 millions core hours allocated Marconi KNL (Tier 0)
 - 2016 Zonta F., **De Paoli M.**, Soldati A. Simulation of Geological Carbon Dioxide Sequestration, Vienna Scientific Cluster, Vienna (Austria). 8 million core hours allocated on VSC-3
 - 2016 Zonta F., Roccon A., **De Paoli M.**, Soldati A. Influence of viscosity on the dynamics of deformable droplets in turbulence, Italian Supercomputing Resource Allocation - CINECA Supercomputing Centre, Bologna (Italy). 1.6 millions core hours allocated on Marconi (Tier 0)
 - 2015 Zonta F., **De Paoli M.**, Soldati A. Simulation of geological carbon dioxide sequestration, Italian Supercomputing Resource Allocation - CINECA Supercomputing Centre, Bologna (Italy). 9.8 millions core hours allocated on Fermi (Tier 0)
 - 2014 Zonta F., **De Paoli M.**, Soldati A. Numerical simulations of geological CO₂ sequestration, Italian Supercomputing Resource Allocation, CINECA Supercomputing Centre, Bologna (Italy). 1.5 millions core hours allocated on Fermi (Tier 0)
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Scientific Production

PhD Thesis

“Convection in Porous Media”, University of Udine (Italy). Advisors: Prof. A. Soldati, Dr. F. Zonta.

Referred Journal Publications

Please refer to my profiles on:

Google Scholar: <https://scholar.google.it/citations?user=C0MUFNQAAAAJ&hl=en>

ORCID: [0000-0002-4709-4185](https://orcid.org/0000-0002-4709-4185)

Conference Proceedings

- P2. Alipour M., **De Paoli M.** and Soldati A. (2019), Simultaneous measurement of velocity and concentration fields in Hele-Shaw cell, *Proceedings of the 13th International Symposium on Particle Image Velocimetry*. <https://athene-forschung.unibw.de/128868>
- P1. Alipour, M. and **De Paoli M.** (2019), Convective dissolution in porous media: experimental investigation in Hele-Shaw cell, *Proceedings in Applied Mathematics and Mechanics*, 201900236. <https://doi.org/10.1002/pamm.201900236>

Invited presentations

- I8. *Convection-driven porous media flows: Implications for carbon dioxide sequestration*, September 15, 2021, PHYSICS OF FLUIDS GROUP, UNIVERSITY OF TWENTE (virtual presentation), Coordinator: Prof. Detlef Lohse, Physics of Fluids Group, Twente (the Netherlands).
- I7. *Convective dissolution in confined porous media: An application to CO₂ sequestration*, January 13, 2021, EXPEC ADVANCED RESEARCH CENTER (virtual presentation), Coordinator: Dr. Sunil Kokal, Saudi Aramco, Dhahran (Kingdom of Saudi Arabia).
- I6. *Convective dissolution in confined porous media: An application to CO₂ sequestration*, December 15, 2020, COMPLEX FLUIDS AND FLOWS UNIT (virtual presentation), Coordinator: Prof. M. E. Rosti, Okinawa Institute for Science and Technology, Okinawa (Japan).
- I5. *Convective dissolution in confined porous media: The Darcy law and beyond*, November 21, 2019, DEPARTMENT OF MECHANICAL ENGINEERING, Coordinator: Prof. S. Ghaemi, University of Alberta, Edmonton (Canada).
- I4. *Theory and applications of PTV*, September 5, 2018, 18TH UIT SUMMER SCHOOL ON ADVANCED EXPERIMENTAL TECHNIQUES IN HEAT AND MASS TRANSFER, Unione Italiana Termofluidodinamica (UIT), Pontignano (Italy).

13. *Fluid dynamics: an introduction to experiments and CFD*, June 18, 2018, INSTITUTE FOR THE INTERNATIONAL EDUCATION OF STUDENTS, Vienna (Austria).
12. *Computational fluid dynamics, advances in fluid mechanics and European examples of hydropower plants*, June 19, 2017, INSTITUTE FOR THE INTERNATIONAL EDUCATION OF STUDENTS, Vienna (Austria).
11. *Flows in porous media: an application to CO₂ sequestration*, February 25, 2015, INTERNATIONAL SCHOOL FOR ADVANCED STUDIES (SISSA). Coordinator: Prof. G. Rozza, SISSA, Trieste, Italy.

Conference Contributions

Approximately 50 contributions in international scientific conferences, include annual meetings of American Physical Society, European Fluid Mechanics Conference, EuroMech colloquia, ERCOFTAC, GAMM, ...

Press and media

The publications in which I have contributed have been reported by national and international breaking news and scientific magazines, including [Physics Today](#), MNS, SkyTG24, Science Magazine, Pays.org, ANSA, APA.

Professional activities

Coordinator of

- *Summer School on Convection and deformation in porous media: Geophysical and biological flows*, CISM-IUTAM SUMMER SCHOOL, 15-22 July 2022, CISM, Udine, Italy. Coordinated in collaboration with Prof. C. MacMinn, University of Oxford, Oxford (UK).

Co-chairman of

- *10th GACM Colloquium on Computational Mechanics 2023 for Young Scientists from Academia and Industry*, GERMAN ASSOCIATION FOR COMPUTATIONAL MECHANICS, September 2023, Vienna, Austria. Co-chaired in collaboration with F. Key (TU Wien, Vienna, Austria), A. Wagner (TU Wien, Vienna, Austria), K. Mang (Leibniz University, Hannover, Germany) and M. Stender (Hamburg University of Technology, Hamburg, Germany).

Co-organizer of

- *Minisymposium on Numerical simulations in porous media flows at the 10th GACM Colloquium on Computational Mechanics 2023 for Young Scientists from Academia and Industry*, GERMAN ASSOCIATION FOR COMPUTATIONAL MECHANICS, September 2023, Vienna, Austria. Co-organized in collaboration with S. Mahmoodpour (TU München, München, Germany).

Member of

- Committee of the doctoral program of Happiness Imuetinyan, *CO₂ES/Geomechanics and Porous Media, Laboratory of Complex Fluids and its Reservoirs, Universitè de Pau et des Pays de l'Adour*, October 12th, 2022, Pau (France) (online).

Ongoing international collaborations

- *Pore-scale experimental and numerical investigation of heat transfer in a homogenous porous medium*, in collaboration with prof. Detlef Lohse, University of Twente, Twente (the Netherlands).
- *Numerical investigation on three-dimensional Rayleigh-Darcy convection at high Rayleigh number*, in collaboration with prof. Sergio Pirozzoli, University of Rome "La Sapienza" (Italy).
- *Experimental investigation on the dynamics of anisotropic particles in turbulent channel flow*, in collaboration with prof. Sina Ghaemi, University of Alberta at Edmonton (Canada).
- *Numerical and experimental investigation on airborne virus transmission*, in collaboration with prof. Francesco Picano, University of Padua, Padua (Italy).

Reviewer (Updated publons profile)

- **Scientific Journals:** *Journal of Fluid Mechanics, Journal of Fluid Mechanics - Rapids, International Journal of Multiphase Flow, Proceedings of the Royal Society A, Physics of Fluids, Water Resources Research, Advances in Water Resources, Acta Mechanica, Acta Mechanica Sinica, Meccanica, Journal of Turbulence, Journal of Fluids Engineering, International Journal of Ambient Energy, Heat Transfer, Applied Sciences, Chaos, Energies, Optics, Processes, Symmetry, Sustainability, Water, Engineering Reports.*
- **Other:** *International Conference on Multiphase Flows (ICMF 2016), Conference on Modelling Fluid Flow (CMFF 2018), National Science Center - Poland, ETH Zurich - Research Grant Proposal.*

Industrial investigations

- TR6. **De Paoli M.** (leader, project #1939516), Alipour M. and Soldati A., TR 01-21 (2021), Analysis of mask performance, prepared for *klarama UG*, Pforzheim, Germany.
- TR5. **De Paoli M.**, Alipour M. and Soldati A., TR 03-20 (2020), Analysis of mask performance, prepared for *Sperrer Industrieverpackungen GmbH*, Freilassing, Germany.
- TR4. **De Paoli M.**, Alipour M. and Soldati A., TR 02-20 (2020), Analysis of mask performance: Model Technomask Classic, prepared for *Blue Italy Group*, Pescara, Italy.
- TR3. **De Paoli M.**, Alipour M. and Soldati A., TR 01-20 (2020), Analysis of mask performance: Model Technomask Crystal, prepared for *Blue Italy Group*, Pescara, Italy.
- TR2. **De Paoli M.**, Zonta F. and Soldati A., TR 02-18 (2018), Analysis of electrophoretic deposition, prepared for *Silgan*, Ljubljana, Slovenia.
- TR1. **De Paoli M.**, Zonta F. and Soldati A., TR 01-18 (2018), Analysis of heat transfer in the oven, prepared for *Silgan*, Ljubljana, Slovenia.

Teaching and supervision

Teaching activities (approximate number of students in brackets)

2017–2022	Assistant for “Fluid Mechanics 2” undergraduate course, TU Wien (≈ 80).
2018–2022	Lecturer for “Applied Fluid Mechanics”, undergraduate course, TU Wien (≈ 30).
2018–2022	Lecturer for “Applied Fluid Mechanics Laboratory”, undergraduate course, TU Wien (≈ 30).
2018–2022	Lecturer for “CFD Applied Fluid Mechanics”, undergraduate course, TU Wien (≈ 30).
2019–2022	Assistant for “Fundamentals of Fluid Mechanics” undergraduate course, TU Wien (≈ 600).
2016–today	Co-supervisor of PhD students (2), supervisor (or co-supervisor) of MSc students (7), supervisor (or co-supervisor) of BSc students (16).
