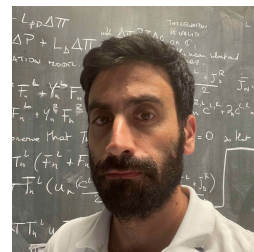


Giuseppe A. ZAMPOGNA

PERSONAL DATA

PLACE OF BIRTH: Rapallo, Italy
ADDRESS: Avenue de Milan 14, 1007, Lausanne, CH
PHONE: Mob. +41 76 227 31 66 (CH)
EMAIL: giuseppeszampogna@gmail.com
ORCID: <https://orcid.org/0000-0001-7570-9135>,
WEBPAGE: <http://gazampogna.weebly.com>
SKYPE: giuseppe.zampo1



WORK EXPERIENCE

TO PRESENT JAN 2021	SNFS AMBIZIONE FELLOW (PRINCIPAL INVESTIGATOR) <i>EPFL-STI-IGM-LFMI</i> Lausanne, Switzerland Development of a homogenization-based continuum approach to model flows through aquaporins. Financial management of a grant of about 900'000CHF. Supervisor of a doctoral student, and several master students.
DEC 2020 NOV 2018	MARIE SKŁOWDOSKA-CURIE & EUROTECHPOSTDOC FELLOW <i>EPFL-STI-IGM-LFMI</i> Lausanne, Switzerland Host Professor: François Gallaire Co-host Professor: Tomas Bohr (DTU, Copenhagen) Development of a new mathematical model to simulate fluid flows and chemical species interacting with thin microstructured membranes, based on an improved version of homogenization. Implementation of the model in Comsol Multiphysics and validation against direct numerical simulations carried out with OpenFOAM.
NOV 2018 JUNE 2018	RESEARCH FELLOWSHIP <i>Università di Genova - DICCA</i> Genova, Italy Scientific supervisor: Prof. Alessandro Bottaro Main achievements: numerical modelling of passive and active deformable rough surfaces. Numerical resolution via the use of the overlapping grids method implemented in OpenFOAM.
JUNE 2018 SEP 2016	POSTDOCTORAL FELLOWSHIP <i>Institut de Mécanique des Fluides de Toulouse</i> Toulouse, France Scientific supervisor: Prof. Jacques Magnaudet Main achievements: new model based on a multi-scale homogenization technique to analyze fluid flows over microstructured surfaces. Numerical implementation with OpenFOAM and MatLab.

SEP 2016	RESEARCH FELLOWSHIP
MARCH 2016	<i>Università di Genova – DICCA</i> Genova, Italy Main achievements: model for the analysis of fluid flows through porous media with three characteristics scales. Numerical implementation with OpenFOAM.
AUG 2015	VISITING FELLOW <i>KTH – Linné FLOW Centre</i> Stockholm, Sweden Collaboration with Prof. Shervin Bagheri Main achievements: multi-scale model for fluid flows through poroelastic media. Numerical implementation with OpenFOAM.
JUNE 2015	PHYSICS’ TEACHER
OCT 2014	<i>IIS “G. Natta”-“G. Deambrosio”</i> Sestri Levante, Italy Course taught: foundations of physics (mechanics, thermodynamics and electromagnetism).

EDUCATION

MARCH 2016	PHD degree in FLUID DYNAMICS
JAN 2013	<i>Università di Genova – DICCA</i> Genova, Italy Title: “Homogenized-based modeling of flows over and through poroelastic media” active link Advisor: Prof. Alessandro Bottaro Description: development of a framework, based on multi-scale homogenization to analyze flows through microstructured rigid and elastic porous media. Numerical resolution using in house solvers implemented in MatLab, and compared against direct numerical simulations carried out with OpenFOAM. Five scientific papers published on international peer reviewed journals.
OCT 2012	Master’s degree in APPLIED MATHEMATICS, <i>Università di Genova – DIMA</i> Genova, Italy Title: “Numerical analysis of linear and non-linear instability in a boundary layer” Advisor: Prof. Alessandro Bottaro, Co-advisor: Dr. Hakan Wedin Final grade: 110/110 <i>with honors</i> , one scientific paper published.
SEPT 2010	Bachelor’s Degree in MATHEMATICS <i>Università di Genova – DIMA, Genova</i> Genova, Italy Title: “Windowed-Fourier and Gabor transforms” Advisor: Prof. F. De Mari, Co-advisor: Prof. E. De Vito Final grade: 106/110

PUBLISHED PAPERS

16. “Von Kármán vortex street past a permeable circular cylinder: Two dimensional flow and dynamic-mode-decomposition-based secondary stability analysis”
F. Caruso, A. Bongarzone, G.A. Zampogna, S. Camarri, F. Gallaire, P.G. Ledda
Phys. Rev. Fluids Mechanics, 2023, **8**, 083901.
<https://doi.org/10.1103/PhysRevFluids.8.083901>
15. “From thin plates to Ahmed bodies: linear and weakly nonlinear stability of rectangular prisms”
G. A. Zampogna, E. Boujo
Journal of Fluid Mechanics, 2023, **966**, A19.
<https://doi.org/10.1017/jfm.2023.426>
14. “Permeability sets the linear path instability of buoyancy-driven disks”
G. Vagnoli, G.A. Zampogna, S. Camarri, F. Gallaire, P.G. Ledda
Journal of Fluid Mechanics, 2023, **955**, A29.
<https://doi.org/10.1017/jfm.2022.989>
13. “Transport across thin membranes: effective solute flux jump”
G. A. Zampogna, P.G. Ledda, F. Gallaire
Physics of Fluids, 2022, **34**, 083113.
<https://doi.org/10.1063/5.0101621>
12. “On the effect of a penetrating recirculation region on the bifurcations of the flow past a permeable sphere”
M. Ciuti, G.A. Zampogna, F. Gallaire, S. Camarri, P.G. Ledda
Physics of Fluids, 2021, **33**, 124103.
<https://doi.org/10.1063/5.0075244>
11. “Homogenization-based optimization of wake flows past permeable membranes”
P.G. Ledda, E. Boujo, S. Camarri, F. Gallaire, G. A. Zampogna
Journal of Fluid Mechanics, 2021, **927** A31.
<https://doi.org/10.1017/jfm.2021.756>
10. “Effective stress jump across membranes”
G. A. Zampogna, F. Gallaire
Journal of Fluid Mechanics, 2020, **892** A9.
<https://doi.org/10.1017/jfm.2020.144>
9. “Compliant riblets: problem formulation and effective macrostructural properties”
G. A. Zampogna, S. Naqvi, J. Magnaudet, A. Bottaro
Journal of Fluid and Structures, 2019, **91**, 102708
<https://doi.org/10.1016/j.jfluidstructs.2019.102708>
8. “Generalized slip condition for rough surfaces”
G. A. Zampogna, J. Magnaudet, A. Bottaro
Journal of Fluid Mechanics, 2019, **858**: 407–436
<https://doi.org/10.1017/jfm.2018.780>
7. “Modeling waves in fluids flowing over and through poroelastic media”
G. A. Zampogna, U. Lācis, S. Bagheri, A. Bottaro
International Journal of Multiphase Flows, 2019, **110**: 148–164
<https://doi.org/10.1016/j.ijmultiphaseflow.2018.09.006>

6. “A penalization method to handle the interface between a free-fluid region and a fibrous porous medium”
N. Luminari, G.A. Zampogna, C. Airiau, A. Bottaro
Journal of Porous Media, 2019, **22**, 1095–1107
<https://doi.org/10.1615/JPorMedia.2019025928>
5. “A homogenized model of flows over and through poroelastic media”
G. A. Zampogna, A. Bottaro
Meccanica, 2017, **52**: 1797–1808
<http://dx.doi.org/10.1007/s11012-016-0543-7>
4. “Computational continuum model of poroelastic beds”
U. Lācis, G. A. Zampogna, S. Bagheri
Proceedings of the Royal Society A, 2017, **473**: 20160932
<https://doi.org/10.1098/rspa.2016.0932>
3. “Instability in canopy flows”
G. A. Zampogna, F. Pluvinage, A. Kourta, A. Bottaro
Water Resources Research, 2016, **52**: 5421–5432
<https://doi.org/10.1002/2016wr018915>
2. “Fluid flow over and through a regular bundle of rigid fibres”
G. A. Zampogna, A. Bottaro
Journal of Fluid Mechanics, 2016, **792**: 5–35
<https://doi.org/10.1017/jfm.2016.66>
1. “Unstable flow structures in the Blasius boundary layer”
H. Wedin, A. Bottaro, A. Hanifi and G. A. Zampogna
The European Physical Journal, 2014, **37**: 34
<https://doi.org/10.1140/epje/i2014-14034-1>

proceedings of conferences

2. “Nonlinear vortex structures in boundary layer flow”
H. Wedin, G.A. Zampogna, A. Bottaro
Proceedings of the ETC14 2013, Lyon, France
[active link](#)
1. “Three-dimensional nonlinear states in the Blasius boundary layer”
H. Wedin, A. Bottaro, A. Hanifi and G. A. Zampogna
Proceedings of the AIMETA conference 2013, Turin, Italy
[active link](#)

GRANTS

- SEPT 2020 *SNSF Ambizione Fellowship*, (about 900'000 CHF), Lausanne, Switzerland
JULY 2018 *Marie Skłodowska-Curie & EuroTechPostDoc Fellowship*, (about 90'000 CHF)
Lausanne, Switzerland
JAN 2018 *Granted with 6×10^5 CPU hours at CALMIP (proj. n. P17021), Toulouse*
JAN 2017 *Granted with 10^6 CPU hours at CALMIP (proj. n. P17021), Toulouse*
JUNE 2016 *Best PhD Thesis of the Doctoral School in Fluid Mechanics, 2016, Genova*
OCT 2016 *PhD Thesis selected among the best five thesis in Europe at the
ERCOFTAC Leonardo Da Vinci Award 2016, Stockholm*
[active link](#)

SCHOOLS ATTENDED

- AUG 2019 *CMiF19 Summer School*, Copenhagen, Denmark
JAN 2017 *TEC21 Winter School*, Grenoble, France
MAY 2014 *6th Montestigliano workshop*, Montestigliano, Italy
JULY 2013 *Fluid2Bio Summer School*, L'Aquila, Italy
JUNE 2013 *PRACE Summer School*, Ostrava, Czech Republic

TALKS

at conferences

- SEP 2022 “Flows through Janus membranes”
EFMC14, Athens, GR.
JUL 2022 “Domain decomposition implementation of membrane flows”
DD27, Praha, CZ.
NOV 2021 “Solvent-solute transport across thin permeable membranes”
APS DFD Meeting, Phoenix, USA.
NOV 2020 “A homogenization-based model for fluids flowing across permeable thin interfaces”
APS DFD Meeting, Chicago, USA.
AUG 2019 “A homogenization-based model for fluids flowing across permeable thin interfaces”
CMiF19, Copenhagen, Denmark.
MAR 2018 “A multi-scale tool for flow control via surface manipulation”
GAMM2018, Munich, Germany.
NOV 2017 “Generalized slip condition for rough surfaces”
APS DFD Meeting, Denver, Colorado, USA.
JAN 2017 “Macroscopic flows through bioinspired PEL media: a homogenized perspective”
TEC21 Winter School, Grenoble, France, [active link](#)
SEPT 2015 “Fluid flow over and through a regular bundle of fibres”
AIMETA, University of Genova, Italy
SEPT 2013 “Three-dimensional nonlinear states in the Blasius boundary layer”
AIMETA, Politecnico di Torino, Italy

upon invitation

- JUN 2023 “Homogenization perspectives in the mass transport across membranes”
GSSI, L’Aquila, IT
- FEB 2023 “Multiscale modelling of flows across thin permeable surfaces”
University of Genoa, Genoa, IT
- DEC 2021 “Transport phenomena across thin permeable surfaces”
Stanford University, Palo Alto, USA
- MAY 2020 “Effective stress jump model”
MEGA Seminar Series, EPFL, Lausanne, Switzerland
- APR 2019 “Reduced-order solutions of the Navier-Stokes equations”
Unige, Genova, Italy
- JAN 2018 “Homogenization strategies in fluid-surface interactions”
EPFL, Lausanne, Switzerland
- SEPT 2017 “BIOSKINS: L’analogie macroscopique”
IMFT, Toulouse, France
- NOV 2016 “A homogenization approach in poroelasticity”
IMFT, Toulouse, France
- APR 2016 “Homogenized-based modeling of flows over and through poroelastic media”
MOX, POLIMI, Milano, Italy
- SEPT 2014 “A homogenization approach for large-scale flows interacting
with fine-grained poroelastic media”
ERCOfTAC Autumn Festival, KTH, Sweden
- SEPT 2014 “A homogenization technique in poroelasticity”
PelSKIN technical meeting, City University London, United Kingdom
- DEC 2013 “Macroscopic and microscopic approaches in poroelasticity”
PelSKIN technical meeting, University of Genova, Italy

LANGUAGES

ITALIAN: Mother tongue ENGLISH: C1 FRENCH: C1

TECHNICAL SKILLS

CFD & SCIENTIFIC SOFTWARE: OpenFoam, Comsol Multiphysics, MatLab
PRE/POST-PROCESSING SOFTWARE: Salome, OnShape, Paraview
PROGRAMMING LANGUAGES: MatLab, Python, C++, SQL
OPERATING SYSTEMS: Mac OS, Windows, Linux
OTHERS: Microsoft Office, Adobe Suite, Sketchup,
InkScape, OpenMpi.

MISCELLANEOUS

Journal referee: *Journal of Fluid Mechanics*, *Meccanica*, *Theoretical and Applied Mechanics Letters*, *European Journal of Applied Mathematics*, *Journal of Hydraulic Research*, *Advances in Water Resources*, *Physics of Fluids*.

Co-director of one doctoral thesis at the EPFL.

Supervisor of one postdoctoral scientist at EPFL. Co-director of three master thesis at the University of Genoa and five master thesis at the EPFL.

Assistant in the courses of Fluid Mechanics and Aerodynamics at the University of Genoa.

Assistant in the course of “Information, calcul et communication”, “Numerical Flows Simulations” and “Two-phase flows” at EPFL.

Speaker at the Open Day for the EPFL’s 50th anniversary.

Speaker at the EPFL Open Day for mid-school students.

Qualified for the functions of "Maître de Conférences" (associate professor) in France.

Habilitated as "Associate Professor" in Italy, disciplinary sector ING-IND/09 (Fluid Dyn).

24CFU in pedagogical disciplines obtained at University of Genoa in 2018.