

GIUSEPPE PUCCI

Curriculum Vitae

National Research Council of Italy, CNR-Nanotec - Ponte P. Bucci, Cubo 33C, Rende 87036 Italy
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I am a **researcher in physics** at the *National Research Council of Italy* (CNR), based at the Department of Physics of the University of Calabria.

Previously, I worked at the *Institut de Physique de Rennes* (France), *Brown University* (USA), *Massachusetts Institute of Technology* (USA), *Università della Calabria* (Italy), and *Université Paris Diderot* (France).

My research focuses on phenomena at *fluid interfaces* with the aim of contributing to the fields of fundamental **fluid dynamics**, **active complex systems**, and **quantum foundations**, the latter by developing classical *analogues of quantum phenomena*. My research occasionally touches on *physics teaching*, soft matter, and applied physics.

I am fascinated by the possibility of exploring **fundamental questions** in physics by working on **table-top experiments**. My research approach thus combines relatively low-cost experimental physics with **theoretical modeling**, and benefits from continuous collaboration with theorists.

EDUCATION

University of Paris VII Denis Diderot and University of Calabria. France/Italy
Ph.D. in Physics: Fluid Dynamics and Science of Mesophases. 2008–2011

Mention: *Very Honorable, with Committee Praise.*

Committee composed of: *Riccardo Barberi* (Università della Calabria, co-supervisor);
Roberto Bartolino (Università della Calabria, examiner);
Martine Ben Amar (École Normale Supérieure, examiner);
Christophe Clanet (CNRS - École Polytechnique, president);
Yves Couder (Université Paris VII Denis Diderot, supervisor);
Francesco Mantegazza (Università di Milano Bicocca, referee);
Marc Rabaud (Université Paris-Sud, referee).

- Research on the Faraday instability in floating drops: an example of a hydrodynamic instability in a domain with flexible boundaries. Collaboration with Prof. Martine Ben Amar (ENS Paris).
 - Experimentally characterized and theoretically rationalized the equilibrium shapes of floating liquid drops deformed by the radiation pressure of surface waves.
 - Experimentally characterized the non-equilibrium behavior of floating drops deformed by radiation pressure; rationalized their self-propulsion.
- Research on electrohydrodynamics and topological defects in nematic liquid crystals.
 - Characterized the variation of the threshold of a topological transition in nematic mixtures as a function of the concentration of the components.

University of Calabria. Rende (CS), Italy
Master in Physics of Matter. 110/110 cum laude 2006–2008

- Six-month internship at University Paris VII: Faraday instability in deformable domains.
 - Investigated the equilibrium shapes of drops deformed by the radiation pressure of surface waves.

University of Calabria. Rende (CS), Italy
Bachelor in Physics. 110/110 cum laude 2003–2006

- Three-month internship at University of Calabria: “A novel method to create probes for atomic force spectroscopy”.
 - Developed a new technique to obtain probes for the Atomic Force Microscope with a typical curvature radius of 100 nm.

RESEARCH EXPERIENCE

National Research Council of Italy (CNR), Institute of Nanotechnology. Rende, Italy
Researcher 2021–present

- Research topics: classical analogs of quantum mechanics, wave-particle interactions, active systems, fluid dynamics, physics education.
- From 2023 I am part of the project in theoretical physics entitled “Particles and Fields in Turbulence and in Complex Flows” (FIELDTURB) funded by the Italian National Institute for Nuclear Physics (INFN).

Institute of Physics of Rennes, CNRS and University of Rennes 1. Rennes, France
Researcher funded by the program CNRS-Momentum. 2018–2020

- PI of the project “Self-organization of fluid and solid structures on fluid interfaces at the macroscopic scale”. Supervising a post-doc. Topics:
 - Active volatile drops on liquid baths.
 - Faraday instability in a rotating liquid.
 - Capillary surfers: wave-driven particles at a fluid interface (with Prof. D. Harris at Brown University).

Brown University, School of Engineering. Providence (RI), USA
Post-doctoral Research Associate in the group of Prof. Daniel M. Harris. 2017–2018

- Research subject: Forces on capillary floaters.
 - Experimentally characterized and theoretically rationalized the friction experienced by centimetric objects that slide on water.
 - Experimentally characterized and theoretically rationalized the capillary attraction between centimetric objects resting on water (“Cheerios effect”).

Massachusetts Institute of Technology, Dept. of Mathematics. Cambridge (MA), USA
Post-doctoral Research Associate in the group of Prof. John W. M. Bush. 2015–2017

- Research subject: Walking droplets as a hydrodynamic analog of microscopic systems.
 - Characterized the non-specular reflection of a walking droplet from a planar wall.
 - Characterized the interaction of walking droplets with single and double slits.
 - Characterized the refraction-like behavior of walking droplets experiencing a reduction in liquid depth.
 - Experimentally investigated the diffusion of a droplet bouncing on a field of standing waves.
 - Experimentally investigated the spin lattices of walking droplets.

University of Calabria, Dept. of Physics. Rende (CS), Italy
Post-doc in the group of Prof. Riccardo Barberi 2012–2015

- Research on the project “Innovative nanotechnologic platforms for drugs delivery in Ophthalmology”. Collaboration with Marco Lombardo (Doctor of Medicine, Vision Engineering Italy).
 - PI of the group investigating the interaction of ultraviolet light with the human cornea.
 - Designed an apparatus that mimics the physiological conditions of the eye for the purpose of measuring the light absorbance of the human cornea and detecting the presence of clinical solutions inside the tissue.
 - Tested a number of trans-epithelial commercial solutions: assessed which solutions were effectively absorbed and could be used for medical treatment.
- Research subject n.2: electro-convective instabilities and topological defects in nematic liquid crystals.
 - Discovered curved patterns of electro-convection in nematics with planar-periodic alignment.
 - Characterized the topologically non-equivalent textures generated by the electrohydrodynamics of nematic liquid crystals.

- RESEARCH VISITS

ESPCI Paris

Paris, France

One-month visit to the laboratory "Physique et Mécanique des Milieux Hétérogènes" (PMMH). 2023

- Research subject: hydroelastic waves.

Brown University, School of Engineering.

Providence (RI), USA

Two-month visit to the group of Prof. Daniel M. Harris.

Summer 2022

- Research subject: wave-mediated interactions of surface spinners.

Brown University, School of Engineering.

Providence (RI), USA

Two-month visit to the group of Prof. Daniel M. Harris.

Summer 2019

- Research subject: capillary surfers, wave-driven particles at a vibrating fluid interface.

Massachusetts Institute of Technology, Dept. of Mathematics.

Cambridge (MA), USA

Eight-month visit as a post-doctoral Fellow in the group of Prof. John W. M. Bush.

2014

- Experimentally demonstrated and theoretically rationalized the partial coalescence of a soap bubble with a soap film.

- Designed and set up an experiment for the study of walking droplets interacting with a single slit.

GRANTS

Short-Term Mobility grant.

CNR-Nanotec, Rende, Italy

National Research Council of Italy (CNR).

2022

To visit the Harris' Laboratory in the School of Engineering at Brown University (RI), USA.

Short-Term Mobility grant.

CNR-Nanotec, Rende, Italy

National Research Council of Italy (CNR).

2021

- 2100€ for the visit to CNR-Nanotec of Antonin Eddi, researcher in the French CNRS.

Project grant.

Institute of Physics of Rennes, France

French National Center for Scientific Research (CNRS), Momentum program.

2018–2020

- About 350 k€ (included a personal salary and two-year salary for a post-doc).

Workshop grant.

Brown University, USA

National Science Foundation of U.S.A. (NSF), Condensed Matter Physics program.

2018

- 5000 \$ for organizing the workshop "Hydrodynamic Quantum Analogs 8" (with Prof. Daniel Harris, award number 1841840).

Mobility grant.

University of Paris VII, France

Université Franco-Italienne.

2009–2011

- About 4500 € to spend for travels during the Ph.D.

FELLOWSHIPS

Post-doctoral Fellowship

University of Haifa, Israel

The Hatter Departement of Marine Technology.

2015–2016

- To spend at the Massachusetts Institute of Technology, Cambridge (MA).

Ph.D. fellowship.

University of Paris VII, France

Ph.D. funded by Université Franco-Italienne

2008–2011

- To spend at University of Paris VII (main institution) and University of Calabria (secondary institution).

AWARDS

Gallery of Soft Matter Physics Award.

Las Vegas (NV), USA

American Physical Society - Division of Soft Matter

Mar. 2023

- Video “Mermaid cereal”.

Second best presentation in Physics of Matter, Italian Physical Society.

Italy (virtual)

Meeting of the Italian Physical Society.

2021

- Presentation “Hydrodynamic Spin Lattices”.

Gallery of Fluid Motion Award.

Denver (CO), USA

American Physical Society - Division of Fluid Dynamics

Nov. 2017

- Video “Spin lattices of walking droplets”.

Travel award.

Denver (CO), USA

American Physical Society - Division of Fluid Dynamics.

Nov. 2017

- 500\$ to participate to the meeting of the Division of Fluid Dynamics of the American Physical Society.

Milton van Dyke Award.

Boston (MA), USA

American Physical Society - Division of Fluid Dynamics.

Nov. 2015

- Video “The merger of a bubble and a soap film”.

Milton van Dyke Award.

San Francisco (CA), USA

American Physical Society - Division of Fluid Dynamics.

Nov. 2014

- Video “Faraday instability in floating drops”.

Best presentation in Physics of Matter, Italian Physical Society.

Naples, Italy

Meeting of the Italian Physical Society.

2012

- Presentation “Faraday instability in deformable domains”.

TEACHING EXPERIENCE

- Teaching Assistant of ‘Physics of Fluids’.** Univ. of Calabria, Italy
Developing experimental projects with 2nd-year bachelor students in Physics. Fall 2024
- Instructor of ‘Foundations of Quantum Mechanics’.** Univ. of Calabria, Italy
Bachelor students in Physics. Fall 2023 and 2024
- ‘Excellence Program’ (percorso di eccellenza) of the Department of Physics.
- Instructor of ‘Introduction to Nonlinear Physics’.** Univ. of Calabria, Italy
Bachelor students in Physics. Fall 2024
- ‘Excellence Program’ (percorso di eccellenza) of the Department of Physics.
- Teaching ‘Mentoring Projects in Experimental Physics’.** Univ. of Calabria, Italy
Bachelor students in Physics. Spring 2024
- ‘Excellence Program’ (percorso di eccellenza) of the Department of Physics.
- Teaching ‘Projects in Experimental Physics’ (PhyExp).** Univ. of Calabria, Italy
Advanced development of an experimental project with master students in Physics. Spring 2023
- ‘Excellence Program’ (percorso di eccellenza) of the Department of Physics.
- Teaching Assistant of Lab. of Mechanics and Thermodynamics.** Univ. of Calabria, Italy
Developing experimental projects with bachelor students in Physics. Spring 2022, 2023 and 2024
- Teaching Assistant of Scientific Data Acquisition and Processing.** Univ. of Calabria, Italy
Developing experimental projects with master students in Physics. Fall 2021, 2022 and 2023
- Instructor of Macroscopic Quantum Analogs.** Univ. of Calabria, Italy
PhD students in Physical, Chemical, Materials Sciences and Technologies. Summer 2021, Fall 2022
- Assistant Instructor of Electricity and Magnetism.** Univ. of Calabria, Italy
Bachelors in Electronic Engineering. Spring 2021
- Assistant Instructor of Fluid Mechanics.** Univ. of Rennes 1, France
Master in Fundamental Physics. Fall 2019 and 2020
- Instructor of Fluid Mechanics.** Univ. of Rennes 1, France
Master in Fundamental Physics. Fall 2018
- Teaching Assistant (Instructor) of Differential Equations.** MIT, USA
1st year bachelor level. Overall rating: 6.2/7. Spring 2017
- Assistant Instructor of Quantum Mechanics and General Physics.** Univ. of Calabria, Italy
Bachelors in Materials Science and Architectural Engineering. 2012–2013
- Assistant Instructor of Physics and Mathematics.** Univ. of Paris VII, France
Bachelors in Physics, Chemistry and Life Sciences. 2008–2011

- HIGH SCHOOL

- Instructor of Experimental Physics.** Liceo “A. Volta”, Reggio Calabria, Italy
Teaching in the context of the project entitled “Liceo Matematico”. Spring 2023 and 2024
- Experiments on fluid statics, optics and diffraction with water and light waves.

TEACHING QUALIFICATIONS

French Qualification for Assistant Professor.

Maître de conférences.

France
2017

Italian Qualification for teaching in high schools.

Active Formative Apprenticeship, for teaching Mathematics and Physics. Score 99/100.

Italy
2015

- Apprenticeship in a high school.
- Attended classes on the teaching of Mathematics and Physics, Pedagogy and didactics for inclusion, Didactical techniques for inclusion, History of Pedagogy, Theory and Methods of evaluation.

SUPERVISION

Post-docs

Benjamin Reichert

Post-doc within the program CNRS-Momentum.

Institute of Physics of Rennes, France
2018–2020

- Thermal active drops and Faraday instability in a rotating liquid.

PhD students

Wilson Reino

Joint supervision with Prof. R. Barberi, Univ. of Calabria, Italy

CNR-Nanotec, Italy
Jan. 2022 - Dec. 2024

- Capillary surfers.

Master students

Samuel Carneiro

Master student, École Nationale d'Ingénieurs de Brest, France.

CNR-Nanotec, Italy
Mar–July 2023

- Setups for the demonstration of experiments in fluid dynamics .

Capucine Eudes

Master student, École Nationale d'Ingénieurs de Brest, France.

CNR-Nanotec, Italy
Mar–July 2022

- Wave field of capillary surfers.

Antoine Bellaigue

Master student in Physics, University of Rennes 1, France.

Institute of Physics of Rennes, France
May–July 2020

- Numerical simulations of a classical wave-particle duality interacting with single and double slits.

Jérémy Archer

Master student in Physics, University of Rennes 1, France.

Institute of Physics of Rennes, France
May–July 2020

- Surface reconstruction of Faraday instability patterns.

Paul Remigereau

Master student in Physics, University of Rennes 1, France.

Institute of Physics of Rennes, France
May–July 2019

- Faraday instability in a rotating fluid.

Bachelor students

Alessia Cirimele

Final internship, co-supervision with Giuseppe Alì, University of Calabria, Italy.

CNR-Nanotec, Italy
Apr–July 2022

- Diffraction with a pilot-wave model.

Pierluigi Bilotto

University of Calabria, Italy

Final internship, co-supervision with Riccardo Barberi, University of Calabria, Italy.

2014

- Walking droplets interacting with a single slit.

Giuseppe Di Nardo

University of Calabria, Italy

Final internship, co-supervision with Roberto Beneduci, University of Calabria, Italy.

2014

- Analogies between the De Broglie-Bohm pilot-wave theory and walking droplets.

MENTORING

Giuseppe Accurso, Francesco Greco, Gian Marco Rizzo

CNR-Nanotec, Italy

Bachelor students in Physics, University of Calabria, Italy.

Sep. 2023 – present

- A point-mass approach to the motion of rigid bodies down an inclined plane.

Levon Tabirian

CNR-Nanotec, Italy

Bachelor student in Physics from Princeton University, USA.

June. 2023

- Building and testing a droplet generator.

Alessia Cirimele and Mariagabriella Marrella

CNR-Nanotec, Italy

Master students in Physics, University of Calabria, Italy.

Mar. 2023 – present

- Skylight polarization.

**Francesco Conidi, Andrea De Luca, Alessandra Mercuri
and Davide Meringolo**

CNR-Nanotec, Italy

Master students in Physics, University of Calabria, Italy.

Feb. 2022 – present

- The spinning of an Euler disk.

Sara Careaga

CNR-Nanotec, Italy

Master students in Physics, University of Calabria, Italy.

Feb. 2022 – present

- Detection of an acoustic source in two dimensions.

Paul Massiot

Institute of Physics of Rennes, France

Master student in Physics, University of Rennes 1, France.

Sep. 2019 – Jan. 2020

- Technique for the reconstruction of a perturbed fluid surface.

Ian Ho

Brown University, USA

Bachelor student.

Jan.–July 2018

- Centimetric objects sliding on water and their mutual interaction due to capillary forces.

Roy Glavanitz

Brown University, USA

Bachelor student from Munich University of the Federal Armed Force.

May–July 2018

- Design and implementation of a swimmer at intermediate Reynolds number.

Alexis Goujon

MIT, USA

Master student from Ecole Polytechnique.

Spring 2017

- Spin lattices of walking droplets.

Jean-Baptiste Moiroud

Master student from Ecole Polytechnique.

MIT, USA

Spring 2017

- Walking drops in double and triple cavities. Tunneling of walking drops.

Crystal Owen, Andrew M. Fiore and Filip Twarowski

Ph.D. and master students, for projects of the course Interfacial Phenomena.

MIT, USA

Spring 2016

- Vibration of soap bubbles.
- Non-linear phenomena in a liquid-on-liquid wetting system.
- Faraday-wave propelled boat.

Benjamin Aubin

Master student from Ecole Polytechnique.

MIT, USA

Apr.–July 2016

- Refraction of walking droplets.

Clément Fontaine

Bachelor student.

University of Paris VII

May 2010

- Faraday instability in a rotating fluid.

ORGANIZATION OF MEETINGS

International

Co-organizer of the meeting Hydrodynamic Quantum Analogs 8 Brown University, USA

July 2018

- About 30 participants from: MIT, University of Liège, IMPA (Rio de Janeiro), New Jersey Institute of Technology, National Autonomous University of Mexico, University of Bath (UK), California Polytechnic State University, Monash University (Australia) and Brown University.

Co-organizer of the meeting Hydrodynamic Quantum Analogs 5

Calabria, Italy

July 2015

- About 25 participants from: MIT, University of Liège, IMPA (Rio de Janeiro), KAUST (Saudi Arabia), New York University, Max Planck Institute for Dynamics and Self-organization (Göttingen), University of Bath (UK) and University of Calabria.

Local

Co-organizer of the PhysiCal Seminar Series

Univ. of Calabria, Italy

Nov. 2023 - present

- Joint Seminar Series in Physics between the Department of Physics of the University of Calabria and the local section of the Institute of Nanotechnology of the National Research Council of Italy.

Co-organizer of a joint Workshop in Physics

Univ. of Calabria, Italy

Dec. 2022

- Joint Workshop in Physics between the Department of Physics of the University of Calabria and the local section of the Institute of Nanotechnology of the National Research Council of Italy.
6 speakers and more than 30 participants from both institutions.

ACADEMIC SERVICE

Member of preliminary examination Ph.D. committee. Brown University, USA (online)
Defended by Jack-William Barotta. Mar. 2024

- Thesis Proposal: “Wave-driven propulsion and collective motion of chiral active matter.”

Invited member of Ph.D. defense committee. Paris Sciences et Lettres University, France
Defense by Federigo Ceraudo. Dec. 2022

- Title of the thesis: “Topological insulators and artificial crystals for Hydro-Elastic Waves”.

Member of Academic Board. Univ. of Calabria, Italy
Doctoral School in Physical, Chemical and Materials Sciences and Technologies. 2022–present

Elected representative of Ph.D. students. University of Paris VII, France
Doctorate School “Condensed Matter and Interfaces”. 2009–2011

Elected representative of Physics students. Univ. of Calabria, Italy
Laurea Course Council, addressing organization of classes and course work. 2006–2008

OUTREACH

Stand at the Science Festival ‘SuperScienceMe’. Univ. of Calabria, Italy
European Night of Researchers, with CNR-Nanotec. Sep. 2024

- Experimental demonstration of walking droplets and capillary surfers on vibrating liquid baths.

Seminar at Liceo ‘A. Volta’ (high school). Reggio Calabria, Italy
For the 100th anniversary of the National Research Council of Italy (CNR). Oct. 2023

- Title of the seminar: ‘Analogie quantistiche in fenomeni macroscopici’ (Quantum analogs in macroscopic phenomena).

Seminar at Liceo ‘Scorza’ (high school). Cosenza, Italy
Mar. 2023

- Title of the seminar: ‘Analogie quantistiche in fenomeni macroscopici’ (Quantum analogs in macroscopic phenomena).

Seminar and visit at Liceo ‘Pizi’ (high school). Palmi, Italy
Invited by Prof. Sergio Polito to a one-day visit to the high school. Apr. 2022

- Included seminar with title ‘Analogie quantistiche in fenomeni macroscopici’ (Quantum analogs in macroscopic phenomena) and assistance to students performing experiments in physics.

Organizer of a stand for a Science Festival. Rennes, France
Stand of the Soft Matter Department of the Institute of Physics of Rennes. Oct. 2020

Guide of high school students during the Science Week. University of Paris VII, France
One-day visit of students from Lycée Charles de Foucault of Paris. Oct. 2010

Guide of University students. University of Paris VII, France
One-day visit of the Physics Students Association of Perugia, Italy. Nov. 2010

- Includes a meeting with Prof. Atef Asnacios.

SEMINARS

Non-exhaustive list.

- Three years of Projects in Experimental Physics at the Univ. of Calabria** Rende, Italy
Department of Physics at the University of Calabria.
Joint seminar with D. Meringolo, F. Greco and G. M. Rizzo. Oct. 2024
- Hydrodynamic Quantum Analogs with focus on diffraction** Wroclaw, Poland
Institute for Theoretical Physics, Wroclaw University of Science and Technology May 2024
- Capillary surfers and spinners on a vibrating liquid bath.** Viterbo, Italy
Ph.D. school of the Department of Economics, Engineering, Society and Business organization, Tuscia University. Mar. 2024
- Hydrodynamic spin lattices.** Stockholm, Sweden
Workshop 'Hydrodynamics at all scales' at the Nordic Institute for Theoretical Physics. Sep. 2023
- Capillary surfers and spinners on a vibrating liquid bath.** Orsay, France
FAST Laboratory, University Paris-Saclay. Apr. 2023
- Capillary surfers and spinners on a vibrating liquid bath.** Paris, France
PMMH Laboratory, ESPCI - Paris Sciences et Lettres University. Apr. 2023
- Wave-driven particles at a fluid interface** Rome, Italy
Department of Physics of La Sapienza and CNR - Institute for Complex Systems. Sep. 2021
- Wave-driven particles at a fluid interface** Padua, Italy
Department of Physics, University of Padua. Sep. 2021
- Capillary surfers** Paris, France (virtual)
Laboratoire Gulliver - ESPCI. May 2021
- Hydrodynamic spin lattices** Italy (virtual)
Joint GSSI - Sapienza Webinars on Statistical Mechanics. May 2021
- Water sliders, capillary attraction and capillary surfers** Paris, France (virtual)
Laboratoire Matière et Systèmes Complexes. Feb. 2021
- Capillary surfers: Self-propelling particles at an oscillating fluid interface** Providence (RI), USA (virtual)
Fluids at Brown and Fluids and Thermal Sciences Joint Seminar Series. Apr. 2020
- Hydrodynamic analogs on a vibrating bath** Poitiers, France
Pprime Institute. Feb. 2019
- Soap bubbles, walking drops and sliders at fluid interfaces** Marseille, France
Laboratories IRPHE and IUSTI, University of Aix-Marseille. Oct. 2018
- Drops, sliders and bubbles at the liquid surface** Rennes, France
Rennes School on Complex Systems. Oct. 2018
- Soap bubbles, walking drops and sliders at fluid interfaces** Orsay, France
Laboratories FAST and LIMSI, University of Paris-Sud. Sep. 2018
- Three experiments with drops and bubbles on fluid interfaces** Providence (RI), USA
School of Engineering at Brown University. Nov. 2017

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| Walking droplets interacting with boundaries <i>Institute of Light and Matter, University Claude Bernard Lyon 1.</i> | Lyon, France Oct. 2017 |
| Hydrodynamic analogs <i>Department of Physics at the University of Massachusetts, Boston.</i> | Boston (MA), USA Apr. 2017 |
| Walking droplets interacting with submerged boundaries <i>Institute of Physics of Rennes, University of Rennes 1.</i> | Rennes, France Dec. 2016 |
| Three experiments with drops and bubbles on fluid interfaces <i>Marine Technology Research Institute (INSEAN).</i> | Rome, Italy May 2015 |
| Faraday instability in deformable domains <i>Physical Mathematics group, Dept. of Mathematics, Massachusetts Institute of Technology.</i> | Cambridge (MA), USA Feb. 2014 |
| The Faraday instability in deformable domains <i>Jean le Rond d'Alembert Institute, University Pierre et Marie Curie (UPMC).</i> | Paris, France Jan. 2012 |

INVITED CONFERENCE PRESENTATIONS

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| Three years of projects in experimental physics at the University of Calabria <i>Congress of the Italian Physical Society.</i> | Bologna, Italy Sep. 2024 |
| Capillary disks: sliding friction, capillary attraction and wave-driven propulsion <i>* Selected for long talk at Rencontre du Non-Linéaire (RNL), then meeting canceled.</i> | Paris, France 2020 |
| Spin lattices of walking droplets. <i>Conference Waves Côte d'Azur.</i> | Nice, France Jun. 2019 |
| Diffraction and interference of walking droplets <i>European Fluid Mechanics Conference.</i> | Sevilla, Spain Sep. 2016 |

OTHER CONFERENCE PRESENTATIONS

Non-exhaustive list.

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| Single-particle diffraction with a hydrodynamic pilot-wave model <i>Congress of the Italian Physical Society.</i> | Bologna, Italy Sep. 2024 |
| Self-propulsion of drops floating on an immiscible liquid bath. <i>International meeting in memory of Yves Couder.</i> | Paris, France Jun. 2024 |
| Learning through experience: on the introduction of Projects in Experimental Physics at the University of Calabria. <i>Congress of the Italian Physical Society.</i> | Fisciano (SA), Italy Sep. 2023 |
| Wave-like behavior of wave-driven particles interacting with linear barriers. <i>Joint Conference of the Italian and European Community of Condensed Matter Physics.</i> | Milano, Italy Sep. 2023 |
| Exploring diffraction of wave-driven particles. <i>Meeting of the Italian Physical Society.</i> | Milan, Italy Sep. 2022 |
| Macroscopic quantum analogs <i>Fifteenth Biennial Quantum Structure 2022 Conference.</i> | Tropea, Italy Jun. 2022 |

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| Emergent order in hydrodynamic spin lattices | (online) |
| <i>*Selected for the workshop of the Institute of Nanotechnology of CNR.</i> | Nov. 2021 |
| Forces on capillary disks | (online) |
| <i>International Conference of Theoretical and Applied Mechanics</i> | Aug. 2021 |
| Exploring diffraction with a pilot-wave model | (online) |
| <i>March Meeting of the American Physical Society.</i> | Mar. 2021 |
| Capillary surfers: self-propelling particles at an oscillating fluid interface | (online) |
| <i>Meeting of the Italian Physical Society.</i> | Sep. 2020 |
| Exploring diffraction with a pilot-wave model | Chicago (IL), USA (online) |
| <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i> | Nov. 2020 |
| Capillary surfers: Self-propelling particles at an oscillating fluid interface | Seattle (WA) |
| <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i> | Nov. 2019 |
| Friction on water sliders | Vienna, Austria |
| <i>European Fluid Mechanics Conference</i> | Sep. 2018 |
| Spin lattices of walking droplets | Grenoble, France |
| <i>Condensed Matter Days, French Physical Society.</i> | Aug. 2018 |
| Partial coalescence of a soap bubble with a soap film | Los Angeles (CA), USA |
| <i>March Meeting of the American Physical Society.</i> | March 2018 |
| Droplets bouncing on a standing wave field | Denver (CO), USA |
| <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i> | Nov. 2017 |
| Walking drops interacting with submerged boundaries | Mexico City, Mexico |
| <i>Workshop "Waves and particles, novel insights".</i> | May 2017 |
| Diffraction and interference of walking droplets | Portland (OR), USA |
| <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i> | Nov. 2016 |
| Walking droplets interacting with planar boundaries | Boston (MA), USA |
| <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i> | Nov. 2015 |
| Faraday instability in deformable domains | San Francisco (CA), USA |
| <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i> | Nov. 2014 |
| Order reconstruction in turbulent nematics | Ravenna, Italy |
| <i>Meeting of the Italian Liquid Crystal Society.</i> | 2014 |
| Faraday instability in deformable domains | Naples, Italy |
| <i>Meeting of the Italian Physical Society.</i> | 2012 |
| Turbulence induces change of topology in calamitic nematics | Rome, Italy |
| <i>Meeting of the Italian Liquid Crystal Society.</i> | 2012 |
| Mutual adaptation of a Faraday instability pattern with its flexible boundaries | Denmark |
| <i>Fluid - DTU Summer School.</i> | 2011 |
| The interplay of an instability pattern with its flexible boundaries | Agay, France |
| <i>Conference "On growth and forms" in honour of Prof. Yves Couder.</i> | 2010 |

Faraday instability in deformable domains

Fluid - DTU Summer School

Denmark

2009

Force measurements at nanoscale by an atomic force microscope

Summer course of Scuola Normale Superiore.

Cortona, Italy

2006

ACTIVITY AS A REVIEWER

Reviewer of two projects for the French National Research Agency (ANR)

2024

Referee

2016–present

Across the years, I have been a referee for Physical Review Letters, Europhysics Letters, European Physical Journal E, Physics Letters A, Physical Review Fluids, European Journal of Physics, Physics of Fluids, Chaos.

LANGUAGES

Self-evaluation according to the criteria of the Common European Framework of Reference for Languages.

- Italian: *native tongue, C2.*
- English: *advanced proficient user, C1.*
- French: *advanced proficient user, C1.*

PUBLICATIONS

- [1] **G. Pucci**, C. Versace and R. C. Barberi. Topological transition to rest in the electrohydrodynamics of nematics. *Liq. Cryst.* 1–6 (2024). <https://doi.org/10.1080/02678292.2024.2386577>.
- [2] A. Hooshanginejad, J.-W. Barotta, V. Spradlin, **G. Pucci**, R. Hunt and D. M. Harris. Interactions and pattern formation in a macroscopic magnetocapillary SALR system of mermaid cereal. *Nat. Commun.* **15**, 5466 (2024). <https://doi.org/10.1038/s41467-024-49754-4>.
Editors' highlight of recent research in "Applied physics and mathematics".
- [3] A. U. Oza, **G. Pucci**, I. Ho and D. M. Harris. Theoretical modeling of capillary surfer interactions on a vibrating fluid bath. *Phys. Rev. Fluids* **8**, 114001 (2023).
Featured in Physics.
- [4] I. Ho*, **G. Pucci***, A. U. Oza and D. M. Harris. Capillary surfers: wave-driven particles at a vibrating fluid interface. *Phys. Rev. Fluids* **8**, L112001 (2023). *Co-first author.
Featured in Physics and Editors' suggestion.
- [5] **G. Pucci**. An introduction to hydrodynamic spin lattices. *Il Nuovo Cim.*, **45 C**, 73 (2022).
Invited to write a communication after presenting at the meeting of the Italian Physical Society.
- [6] B. Reichert, J.-B. Le Cam, A. Saint-Jalmes and **G. Pucci**. Self-propulsion of a volatile drop on the surface of an immiscible liquid bath. *Phys. Rev. Lett.* **127**, 144501 (2021).
- [7] P. J. Sáenz, **G. Pucci**, S. E. Turton, A. Goujon, R. R. Rosales, J. Dunkel and J. W. M. Bush. Emergent order in hydrodynamic spin lattices. *Nature* **596**, 58-62 (2021).
- [8] **G. Pucci**, I. Ho and D. M. Harris. Forces on capillary disks. *Proceedings of the 25th International Congress of Theoretical and Applied Mechanics (ICTAM 2020+1 virtual)*, 667-668 (2021).
- [9] L. Barnes, **G. Pucci**, and A. U. Oza. Resonant interactions in bouncing droplet chains. *Comptes Rendus Mécanique* **348** (6-7), 573-589 (2020).
- [10] I. Ho, **G. Pucci**, and D. M. Harris. Direct measurement of capillary attraction between floating disks. *Phys. Rev. Lett.* **123**, 254502 (2019).
Featured in Physics and Editors' suggestion.
- [11] **G. Pucci**, I. Ho and D. M. Harris. Friction on water sliders. *Sci. Rep.* **9**, 4095 (2019).
- [12] **G. Pucci**, F. Carbone, G. Lombardo, C. Versace, R. Barberi. Topologically non-equivalent textures generated by the nematic electrohydrodynamics. *Liq. Cryst.* **46** (4), 649-654 (2019).
- [13] P. J. Sáenz, **G. Pucci**, A. Gujon, T. Cristea-Platon, J. Dunkel and J. W. M. Bush. Spin lattices of walking droplets. *Phys. Rev. Fluids* **3**, 100508 (2018).
Winning entry to the Gallery of Fluid Motion of the American Physical Society.
- [14] **G. Pucci**, D.M. Harris, L. Faria and J. W. M. Bush. Walking droplets interacting with single and double slits. *J. Fluid Mech.* **835**, 1136-1156 (2018).
- [15] N. Sungar, L. Tambasco, **G. Pucci**, P. J. Saenz and J. W. M. Bush. Hydrodynamic analog of particle trapping with the Talbot effect. *Phys. Rev. Fluids* **2**, 103602 (2017).
- [16] D. M. Harris, **G. Pucci**, V. Prost, J. Quintela and J. W. M. Bush. The merger of a bubble and a soap film, *Phys. Rev. Fluids* **1** (5), 050505 (2016).
Milton Van Dyke Award of the Gallery of Fluid Motion of the American Physical Society.
- [17] **G. Pucci**, P. J. Saenz, L. M. Faria and J. W. M. Bush. Non-specular reflection of walking droplets, *J. Fluid Mech.* **804**, R3 (2016).

- [18] **G. Pucci**, D. Lysenko, C. Provenzano, Yu. Reznikov, G. Cipparrone and R. Barberi. Patterns of electro-convection in planar-periodic nematic cells. *Liq. Cryst.* **43** (2), 216-221 (2016).
- [19] M. Lombardo, N. Micali, V. Villari, S. Serrao, **G. Pucci**, R. Barberi, G. Lombardo. Ultraviolet A: Visible spectral absorbance of the human cornea after transepithelial soaking with dextran-enriched and dextran-free riboflavin 0.1% ophthalmic solutions. *J. Cataract Refract. Surg.* **41** (10), 2283 - 2290 (2015).
- [20] **G. Pucci**, M. Ben Amar and Y. Couder. Faraday instability in floating drops. *Phys. Fluids.* **27**, 091107 (2015).
Milton Van Dyke Award of the Gallery of Fluid Motion of the American Physical Society.
- [21] **G. Pucci**, D. M. Harris and J. W. M. Bush. Partial coalescence of soap bubbles. *Phys. Fluids.* **27**, 061704 (2015).
- [22] **G. Pucci**, F. Carbone, C. Vena, G. Lombardo, C. Versace and R. Barberi. DSM1-DSM2 Transition Threshold in Turbulent Nematic Mixtures. *Mol. Cryst. Liq. Cryst.* **614**(1), 100-105 (2015).
- [23] M. P. De Santo, G. Petriashvili, R. Gary, **G. Pucci**, R. Barberi. Anti-counterfeiting and identification solutions using soft matter. *Rend. Fis. Acc. Lincei* **26** (2), S255-S259 (2015).
- [24] **G. Pucci**. Faraday instability in floating drops out of equilibrium: motion and self-propulsion from wave radiation stress. *Int. J. Non Linear Mech.* **75**, 107-114 (2015).
- [25] M. Lombardo, **G. Pucci**, R. Barberi, G. Lombardo. Interaction of ultraviolet light with the cornea: Clinical implications for corneal crosslinking. *J. Cataract Refract. Surg.* **41**(2), 446-459 (2015).
- [26] **G. Pucci**, M. Ben Amar and Y. Couder. Faraday instability in floating liquid lenses: the spontaneous mutual adaptation due to radiation pressure. *J. Fluid Mech.* **725**, 402-427 (2013).
- [27] **G. Pucci**. Faraday instability in deformable domains. *Il Nuovo Cim.*, **36** C n.4, 61-70 (2013).
Invited to write a communication after presenting at the meeting of the Italian Physical Society.
- [28] **G. Pucci**, E. Fort, M. Ben Amar and Y. Couder. Mutual Adaptation of a Faraday Instability Pattern with its Flexible Boundaries in Floating Fluid Drops. *Phys. Rev. Lett.* **106**, 024503 (2011).
- [29] **G. Pucci**, M.P. De Santo, G. Carbone and R. Barberi. A novel method to prepare probes for atomic force spectroscopy. *Dig. J. Nanomater. Bios.* **1**(3), 99-103 (2006).