

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 aims at contributing to the fields of fundamental **fluid dynamics**, *active complex systems*, and **quantum foundations**, the latter by developing classical *analogs of quantum phenomena*.

My research occasionally touches on *physics teaching*, soft matter, and applied physics.

My research approach 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.
Researcher

Rende, Italy
2021–present

- Research topics: quantum foundations, 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.
Researcher funded by the program CNRS-Momentum.

Rennes, France
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

Univ. of North Carolina and Brown University. Chapel Hill (NC) and Providence (RI), USA
Visit to the groups of Prof. Pedro J. Sáenz and Daniel M. Harris. 2025

- Research subjects: hydrodynamic quantum analogs and wave-driven particles.

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

- Instructor of ‘Dimensional Analysis and Scaling’.** Univ. of Calabria, Italy
Bachelor students in Physics. Spring 2025
- ‘Excellence Program’ (percorso di eccellenza) of the Department of Physics.
- 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 – 2025
- 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 – 2025

- Experiments on fluid statics, optics and diffraction with water and light waves.

TEACHING QUALIFICATIONS

French Qualification for Assistant Professor.

France

Maître de conférences.

2017

Italian Qualification for teaching in high schools.

Italy

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

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

Institute of Physics of Rennes, France

Post-doc within the program CNRS-Momentum.

2018–2020

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

PhD students

Wilson Reino

CNR-Nanotec, Italy

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

Jan. 2022 - Dec. 2024

- Capillary surfers.

Master students

Samuel Carneiro

CNR-Nanotec, Italy

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

Mar–July 2023

- Setups for the demonstration of experiments in fluid dynamics .

Capucine Eudes

CNR-Nanotec, Italy

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

Mar–July 2022

- Wave field of capillary surfers.

Antoine Bellaigue

Institute of Physics of Rennes, France

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

May–July 2020

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

Jérémy Archer

Institute of Physics of Rennes, France

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

May–July 2020

- Surface reconstruction of Faraday instability patterns.

Paul Remigereau

Institute of Physics of Rennes, France

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

May–July 2019

- Faraday instability in a rotating fluid.

Bachelor students

Francesco Casadonte

Final internship.

CNR-Nanotec, Italy

July–Dec 2025

- Capillary surfers interacting with boundaries.
- Co-supervision with Prof. Carlo C. Versace, University of Calabria, Italy.

Paolo Vittorio Mauro

Final internship.

CNR-Nanotec, Italy

Apr.–Oct. 2025

- Coupling of Brownian clocks with wave-mediated interaction.
- Co-supervision with Prof. Leonardo Primavera, University of Calabria, Italy.

Francesco Antonio Greco

Final internship.

CNR-Nanotec, Italy

Apr.–Sep. 2025

- Pilot-wave theories and quantum mechanics.
- Co-supervision with Prof. Roberto Beneduci, University of Calabria, Italy.

Alessia Cirimele

Final internship.

CNR-Nanotec, Italy

Apr–July 2022

- Edge diffraction with a pilot-wave model.
- Co-supervision with Prof. Giuseppe Ali, University of Calabria, Italy.

Pierluigi Bilotto

Final internship.

University of Calabria, Italy

2014

- Walking droplets interacting with a single slit.
- Co-supervision with Prof. Riccardo C. Barberi, University of Calabria, Italy.

Giuseppe Di Nardo

Final internship.

University of Calabria, Italy

2014

- Analogies between the De Broglie-Bohm pilot-wave theory and walking droplets.
- Co-supervision with Prof. Roberto Beneduci, University of Calabria, Italy.

MENTORING

Giuseppe Accurso, Francesco Greco, Gian Marco Rizzo

Bachelor students in Physics, University of Calabria, Italy.

CNR-Nanotec, Italy

Sep. 2023 – present

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

Levon Tabirian

Bachelor student in Physics from Princeton University, USA.

CNR-Nanotec, Italy

June. 2023

- Building and testing a droplet generator.

Alessia Cirimele and Mariagabriella Marrella

Master students in Physics, University of Calabria, Italy.

CNR-Nanotec, Italy

Mar. 2023 – present

- Skylight polarization.

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

Master students in Physics, University of Calabria, Italy.

CNR-Nanotec, Italy
Feb. 2022 – present

- The spinning of an Euler disk.

Sara Careaga

Master students in Physics, University of Calabria, Italy.

CNR-Nanotec, Italy
Feb. 2022 – present

- Detection of an acoustic source in two dimensions.

Paul Massiot

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

Institute of Physics of Rennes, France
Sep. 2019 – Jan. 2020

- Technique for the reconstruction of a perturbed fluid surface.

Ian Ho

Bachelor student.

Brown University, USA
Jan.–July 2018

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

Roy Glavanitz

Bachelor student from Munich University of the Federal Armed Force.

Brown University, USA
May–July 2018

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

Alexis Goujon

Master student from Ecole Polytechnique.

MIT, USA
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 Federico 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’.

European Night of Researchers, with CNR-Nanotec.

Univ. of Calabria, Italy

Sep. 2024 and 2025

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

Seminar at Liceo ‘A. Volta’ (high school).

For the 100th anniversary of the National Research Council of Italy (CNR).

Reggio Calabria, Italy

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).

Invited by Prof. Sergio Polito to a one-day visit to the high school.

Palmi, Italy

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.

Stand of the Soft Matter Department of the Institute of Physics of Rennes.

Rennes, France

Oct. 2020

Guide of high school students during the Science Week.

One-day visit of students from Lycée Charles de Foucault of Paris.

University of Paris VII, France

Oct. 2010

Guide of University students.

One-day visit of the Physics Students Association of Perugia, Italy.

University of Paris VII, France

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

Department of Physics at the University of Calabria.

Rende, Italy

Joint seminar with D. Meringolo, F. Greco and G. M. Rizzo.

Oct. 2024

Hydrodynamic Quantum Analogs with focus on diffraction

Institute for Theoretical Physics, Wrocław University of Science and Technology

Wrocław, Poland

May 2024

Capillary surfers and spinners on a vibrating liquid bath.

Ph.D. school of the Department of Economics, Engineering, Society and Business organization, Tuscia University.

Viterbo, Italy

Mar. 2024

Hydrodynamic spin lattices.

Workshop ‘Hydrodynamics at all scales’ at the Nordic Institute for Theoretical Physics.

Stockholm, Sweden

Sep. 2023

Capillary surfers and spinners on a vibrating liquid bath.

FAST Laboratory, University Paris-Saclay.

Orsay, France

Apr. 2023

Capillary surfers and spinners on a vibrating liquid bath. <i>PMMH Laboratory, ESPCI - Paris Sciences et Lettres University.</i>	Paris, France <i>Apr. 2023</i>
Wave-driven particles at a fluid interface <i>Department of Physics of La Sapienza and CNR - Institute for Complex Systems.</i>	Rome, Italy <i>Sep. 2021</i>
Wave-driven particles at a fluid interface <i>Department of Physics, University of Padua.</i>	Padua, Italy <i>Sep. 2021</i>
Capillary surfers <i>Laboratoire Gulliver - ESPCI.</i>	Paris, France (virtual) <i>May 2021</i>
Hydrodynamic spin lattices <i>Joint GSSI - Sapienza Webinars on Statistical Mechanics.</i>	Italy (virtual) <i>May 2021</i>
Water sliders, capillary attraction and capillary surfers <i>Laboratoire Matière et Systèmes Complexes.</i>	Paris, France (virtual) <i>Feb. 2021</i>
Capillary surfers: Self-propelling particles at an oscillating fluid interface <i>Fluids at Brown and Fluids and Thermal Sciences Joint Seminar Series.</i>	Providence (RI), USA (virtual) <i>Apr. 2020</i>
Hydrodynamic analogs on a vibrating bath <i>Pprime Institute.</i>	Poitier, France <i>Feb. 2019</i>
Soap bubbles, walking drops and sliders at fluid interfaces <i>Laboratories IRPHE and IUSTI, University of Aix-Marseille.</i>	Marseille, France <i>Oct. 2018</i>
Drops, sliders and bubbles at the liquid surface <i>Rennes School on Complex Systems.</i>	Rennes, France <i>Oct. 2018</i>
Soap bubbles, walking drops and sliders at fluid interfaces <i>Laboratories FAST and LIMSI, University of Paris-Sud.</i>	Orsay, France <i>Sep. 2018</i>
Three experiments with drops and bubbles on fluid interfaces <i>School of Engineering at Brown University.</i>	Providence (RI), USA <i>Nov. 2017</i>
Walking droplets interacting with boundaries <i>Institute of Light and Matter, University Claude Bernard Lyon 1.</i>	Lyon, France <i>Oct. 2017</i>
Hydrodynamic analogs <i>Department of Physics at the University of Massachusetts, Boston.</i>	Boston (MA), USA <i>Apr. 2017</i>
Walking droplets interacting with submerged boundaries <i>Institute of Physics of Rennes, University of Rennes 1.</i>	Rennes, France <i>Dec. 2016</i>
Three experiments with drops and bubbles on fluid interfaces <i>Marine Technology Research Institute (INSEAN).</i>	Rome, Italy <i>May 2015</i>
Faraday instability in deformable domains <i>Physical Mathematics group, Dept. of Mathematics, Massachusetts Institute of Technology.</i>	Cambridge (MA), USA <i>Feb. 2014</i>
The Faraday instability in deformable domains <i>Jean le Rond d'Alembert Institute, University Pierre et Marie Curie (UPMC).</i>	Paris, France <i>Jan. 2012</i>

INVITED CONFERENCE PRESENTATIONS

Capillary surfers at a vibrating fluid interface <i>Euromech Colloquium 651, on Films, bubbles, droplets and phase change.</i>	Metz, France Aug. 2025
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.

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
Emergent order in hydrodynamic spin lattices <i>*Selected for the workshop of the Institute of Nanotechnology of CNR.</i>	(online) Nov. 2021
Forces on capillary disks <i>International Conference of Theoretical and Applied Mechanics</i>	(online) Aug. 2021
Exploring diffraction with a pilot-wave model <i>March Meeting of the American Physical Society.</i>	(online) Mar. 2021
Capillary surfers: self-propelling particles at an oscillating fluid interface <i>Meeting of the Italian Physical Society.</i>	(online) Sep. 2020
Exploring diffraction with a pilot-wave model <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i>	Chicago (IL), USA (online) Nov. 2020

Capillary surfers: Self-propelling particles at an oscillating fluid interface <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i>	Seattle (WA) Nov. 2019
Friction on water sliders <i>European Fluid Mechanics Conference</i>	Vienna, Austria Sep. 2018
Spin lattices of walking droplets <i>Condensed Matter Days, French Physical Society.</i>	Grenoble, France Aug. 2018
Partial coalescence of a soap bubble with a soap film <i>March Meeting of the American Physical Society.</i>	Los Angeles (CA), USA March 2018
Droplets bouncing on a standing wave field <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i>	Denver (CO), USA Nov. 2017
Walking drops interacting with submerged boundaries <i>Workshop "Waves and particles, novel insights".</i>	Mexico City, Mexico May 2017
Diffraction and interference of walking droplets <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i>	Portland (OR), USA Nov. 2016
Walking droplets interacting with planar boundaries <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i>	Boston (MA), USA Nov. 2015
Faraday instability in deformable domains <i>Meeting of the Division of Fluid Dynamics of the American Physical Society.</i>	San Francisco (CA), USA Nov. 2014
Order reconstruction in turbulent nematics <i>Meeting of the Italian Liquid Crystal Society.</i>	Ravenna, Italy 2014
Faraday instability in deformable domains <i>Meeting of the Italian Physical Society.</i>	Naples, Italy 2012
Turbulence induces change of topology in calamitic nematics <i>Meeting of the Italian Liquid Crystal Society.</i>	Rome, Italy 2012
Mutual adaptation of a Faraday instability pattern with its flexible boundaries <i>Fluid - DTU Summer School.</i>	Denmark 2011
The interplay of an instability pattern with its flexible boundaries <i>Conference "On growth and forms" in honour of Prof. Yves Couder.</i>	Agay, France 2010
Faraday instability in deformable domains <i>Fluid - DTU Summer School</i>	Denmark 2009
Force measurements at nanoscale by an atomic force microscope <i>Summer course of Scuola Normale Superiore.</i>	Cortona, Italy 2006

ACTIVITY AS A REVIEWER

Reviewer of three projects for the French National Research Agency (ANR) 2024, 2025

Referee 2016–present
Across the years, I have been a referee for Physical Review Letters, Physical Review Fluids, Physical Review Research, Europhysics Letters, European Physical Journal E, Physics Letters A, 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.*

- [1] D.-D. Meringolo, F. Conidi, A. Mercuri, M. Sposato, R. C. Barberi and **G. Pucci**. On the analogy between spinning disks coming to rest and merging black holes. *Am. J. Phys.* 93, 551-556 (2025). <https://doi.org/10.1119/5.0208307>.
Mentioned in Scilight 2025, 251106 (2025). <https://doi.org/10.1063/10.0037041>.
- [2] J.-W. Barotta, **G. Pucci**, E. Silver, A. Hooshanginejad and D. M. Harris. Synchronization of wave-propelled capillary spinners. *Phys. Rev. E* 111, 035105 (2025). <https://doi.org/10.1103/PhysRevE.111.035105>.
- [3] F. A. Greco*, G. M. Rizzo*, G. Accurso, M. Frontera, C. Versace and **G. Pucci**. Exploring the motion of rigid bodies down an inclined plane from a point mass perspective. *Eur. J. Phys.* 46 035001 (2025). *Co-first authors. <https://iopscience.iop.org/article/10.1088/1361-6404/adbd0b/meta>.
- [4] **G. Pucci**, A. Bellaigue, A. Cirimele, G. Ali and A. U. Oza. Single-particle diffraction with a hydrodynamic pilot-wave model. *Phys. Rev. E* 111, L033101 (2025). Letter. <https://doi.org/10.1103/PhysRevE.111.L033101>.
- [5] **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>.
- [6] 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".
- [7] 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.
- [8] 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.
Letter, Featured in Physics and Editors' suggestion.
- [9] **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.
- [10] 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).
- [11] 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).
- [12] **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).
- [13] L. Barnes, **G. Pucci**, and A. U. Oza. Resonant interactions in bouncing droplet chains. *Comptes Rendus Mécanique* **348** (6-7), 573-589 (2020).
- [14] I. Ho, **G. Pucci**, and D. M. Harris. Direct measurement of capillary attraction between floating disks. *Phys. Rev. Lett.* **123**, 254502 (2019).
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- [15] **G. Pucci**, I. Ho and D. M. Harris. Friction on water sliders. *Sci. Rep.* **9**, 4095 (2019).
- [16] **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).

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Winning entry to the Gallery of Fluid Motion of the American Physical Society.
- [18] **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).
- [19] 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).
- [20] 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).
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- [21] **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).
- [22] **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).
- [23] 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).
- [24] **G. Pucci**, M. Ben Amar and Y. Couder. Faraday instability in floating drops. *Phys. Fluids.* **27**, 091107 (2015).
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- [25] **G. Pucci**, D. M. Harris and J. W. M. Bush. Partial coalescence of soap bubbles. *Phys. Fluids.* **27**, 061704 (2015).
- [26] **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).
- [27] 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).
- [28] **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).
- [29] 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).
- [30] **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).
- [31] **G. Pucci**. Faraday instability in deformable domains. *Il Nuovo Cim.*, **36** C n.4, 61-70 (2013).
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- [33] **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).