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. Rende, Italy
Researcher *2021–present*

· Research topics: quantum foundations, classical analogs of quantum mechanics, wave-particle interactions, active systems, fluid dynamics, physics education.

· Since 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

Brown Univ. and New Jersey Inst. of Technology. Providence (RI) and Newark (NJ), USA
Visit to the groups of Prof. Daniel M. Harris and Anand U. Oza. *2026*

· Research subject: wave-driven active particles.

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). *2026*

To visit ESPCI Paris, France.

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 'Foundations of Quantum Mechanics'. Univ. of Calabria, Italy
Bachelor students in Physics. *Fall 2023 – 2025*

· '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 and 2025*

· 'Excellence Program' (percorso di eccellenza) of the Department of Physics.

Teaching Assistant of 'Scientific Data Acquisition and Processing'. Univ. of Calabria, Italy
Developing experimental projects with master students in Physics. *Fall 2021 – 2023 and 2025*

Teaching Assistant of 'Lab. of Mechanics and Thermodynamics'. Univ. of Calabria, Italy
Developing experimental projects with bachelor students in Physics. *Spring 2022 – 2026*

Teaching Assistant of 'Physics of Fluids'. Univ. of Calabria, Italy
Developing experimental projects with 2nd-year bachelor students in Physics. *Fall 2024 and 2025*

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 'Mentoring Projects in Experimental Physics'. Univ. of Calabria, Italy
Bachelor students in Physics. *Spring 2024 – 2026*

· '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.

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 also in the context of the project entitled "Liceo Matematico". *Spring 2023 – 2026*

· 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

Lorenzo Romano CNR-Nanotec, Italy
Final internship and thesis. *Apr–Sep 2026*

· A modern pilot-wave model.
· Co-supervision with Prof. Giuseppe Alì, University of Calabria, Italy.

Francesco Casadonte CNR-Nanotec, Italy
Final internship and thesis. *July 2025 – Apr 2026*

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

Paolo Vittorio Mauro CNR-Nanotec, Italy
Final internship and thesis. *Apr–Oct 2025*

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

Francesco Antonio Greco CNR-Nanotec, Italy
Final internship and thesis. *Apr–Sep 2025*

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

Alessia Cirimele CNR-Nanotec, Italy
Final internship and thesis. *Apr–July 2022*

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

Pierluigi Bilotto University of Calabria, Italy
Final internship and thesis. *2014*

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

Giuseppe Di Nardo University of Calabria, Italy
Final internship and thesis. *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 CNR-Nanotec, Italy
Bachelor students in Physics, University of Calabria, Italy. *2023 – 2025*

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

Alessia Cirimele and Mariagabriella Marrella CNR-Nanotec, Italy
Master students in Physics, University of Calabria, Italy. *2023 - 2024*

· Skylight polarization.

Francesco Conidi, Andrea De Luca, Alessandra Mercuri and Davide Meringolo — CNR-Nanotec, Italy
Master students in Physics, University of Calabria, Italy. — *2022 – 2024*

· The spinning of an Euler disk.

Sara Careaga — CNR-Nanotec, Italy
Master students in Physics, University of Calabria, Italy. — *2022 – 2024*

· Detection of an acoustic source in two dimensions.

Levon Tabirian — CNR-Nanotec, Italy
Bachelor student in Physics from Princeton University, USA. — *June 2023*

· Building and testing a droplet generator.

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 — MIT, USA
Master student from Ecole Polytechnique. — *Spring 2017*

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

Crystal Owen, Andrew M. Fiore and Filip Twarowski — MIT, USA
Ph.D. and master students, for projects of the course Interfacial Phenomena. — *Spring 2016*

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

Benjamin Aubin — MIT, USA
Master student from Ecole Polytechnique. — *Apr.–July 2016*

· Refraction of walking droplets.

Clément Fontaine — University of Paris VII
Bachelor student. — *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 Doctoral Training Committee. Univ. of Calabria, Italy
Doctoral School in Physical, Chemical and Materials Sciences and Technologies. *Jun 2026–present*

Member of Ph.D. defence committee. Brown University, USA
Ph.D. thesis defended by Jack-William Barotta. *Apr. 2026*

· Title of the thesis: "Self-propulsion and collective motion of particles at a vibrating fluid interface."

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 and 2025*

· 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.

Wave-driven active systems at fluid interfaces Toulouse, France
Conf'luence Seminar Series, Institute for Fluid Mechanics of Toulouse. *May 2026*

Wave-driven active systems at fluid interfaces Newark (NJ), USA
Fluid Mechanics and Waves Seminar, New Jersey Institute of Technology. *Mar. 2026*

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 Wrocław, Poland
Institute for Theoretical Physics, Wrocław 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 Poitier, 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*

Walking droplets interacting with boundaries Lyon, France
Institute of Light and Matter, University Claude Bernard Lyon 1. *Oct. 2017*

Hydrodynamic analogs Boston (MA), USA
Department of Physics at the University of Massachusetts, Boston. *Apr. 2017*

Walking droplets interacting with submerged boundaries Rennes, France
Institute of Physics of Rennes, University of Rennes 1. *Dec. 2016*

Three experiments with drops and bubbles on fluid interfaces Rome, Italy
Marine Technology Research Institute (INSEAN). *May 2015*

Faraday instability in deformable domains Cambridge (MA), USA
Physical Mathematics group, Dept. of Mathematics, Massachusetts Institute of Technology. Feb. 2014

The Faraday instability in deformable domains Paris, France
Jean le Rond d'Alembert Institute, University Pierre et Marie Curie (UPMC). *Jan. 2012*

INVITED CONFERENCE PRESENTATIONS

Capillary surfers: wave-driven particles on a vibrating fluid interface L'Aquila, Italy
Bifurcations in Fluid Dynamics conference, Gran Sasso Science Institute. *Jul. 2026*

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

Three years of projects in experimental physics at the University of Calabria Bologna, Italy
Congress of the Italian Physical Society. *Sep. 2024*

Capillary disks: sliding friction, capillary attraction and wave-driven propulsion Paris, France
** Selected for long talk at Rencontre du Non-Linéaire (RNL), then meeting canceled.* *2020*

Spin lattices of walking droplets. Nice, France
Conference Waves Côte d'Azur. *Jun. 2019*

Diffraction and interference of walking droplets Sevilla, Spain
European Fluid Mechanics Conference. *Sep. 2016*

OTHER CONFERENCE PRESENTATIONS

Non-exhaustive list.

CoPhysics Firenze, Italy
Congress of the Italian Physical Society. *Sep. 2026*

Capillary surfers and spinners on a vibrating liquid bath. Nice, France
Conference on Fluids and Complexity IV. *Dec. 2025*

Single-particle diffraction with a hydrodynamic pilot-wave model. Bologna, Italy
Congress of the Italian Physical Society. *Sep. 2024*

Self-propulsion of drops floating on an immiscible liquid bath. Paris, France
International meeting in memory of Yves Couder. *Jun. 2024*

Learning through experience: on the introduction of Projects in Experimental Physics at the University of Calabria. Fisciano (SA), Italy
Congress of the Italian Physical Society. *Sep. 2023*

Wave-like behavior of wave-driven particles interacting with linear barriers. Milano, Italy
Joint Conference of the Italian and European Community of Condensed Matter Physics. *Sep. 2023*

Exploring diffraction of wave-driven particles. Milan, Italy
Meeting of the Italian Physical Society. *Sep. 2022*

Macroscopic quantum analogs Tropea, Italy
Fifteenth Biennial Quantum Structure 2022 Conference. *Jun. 2022*

Emergent order in hydrodynamic spin lattices (online)
**Selected for the workshop of the Institute of Nanotechnology of CNR.* *Nov. 2021*

Forces on capillary disks (online)
International Conference of Theoretical and Applied Mechanics *Aug. 2021*

Exploring diffraction with a pilot-wave model (online)
March Meeting of the American Physical Society. *Mar. 2021*

Capillary surfers: self-propelling particles at an oscillating fluid interface (online)
Meeting of the Italian Physical Society. *Sep. 2020*

Exploring diffraction with a pilot-wave model Chicago (IL), USA (online)
Meeting of the Division of Fluid Dynamics of the American Physical Society. *Nov. 2020*

Capillary surfers: Self-propelling particles at an oscillating fluid interface Seattle (WA)
Meeting of the Division of Fluid Dynamics of the American Physical Society. *Nov. 2019*

Friction on water sliders Vienna, Austria
European Fluid Mechanics Conference *Sep. 2018*

Spin lattices of walking droplets Grenoble, France
Condensed Matter Days, French Physical Society. *Aug. 2018*

Partial coalescence of a soap bubble with a soap film Los Angeles (CA), USA
March Meeting of the American Physical Society. *March 2018*

Droplets bouncing on a standing wave field Denver (CO), USA
Meeting of the Division of Fluid Dynamics of the American Physical Society. *Nov. 2017*

Walking drops interacting with submerged boundaries Mexico City, Mexico
Worskhop "Waves and particles, novel insights". *May 2017*

Diffraction and interference of walking droplets Portland (OR), USA
Meeting of the Division of Fluid Dynamics of the American Physical Society. *Nov. 2016*

Walking droplets interacting with planar boundaries Boston (MA), USA
Meeting of the Division of Fluid Dynamics of the American Physical Society. *Nov. 2015*

Faraday instability in deformable domains San Francisco (CA), USA
Meeting of the Division of Fluid Dynamics of the American Physical Society. *Nov. 2014*

Order reconstruction in turbulent nematics Ravenna, Italy
Meeting of the Italian Liquid Crystal Society. *2014*

Faraday instability in deformable domains Naples, Italy
Meeting of the Italian Physical Society. *2012*

Turbulence induces change of topology in calamitic nematics Rome, Italy
Meeting of the Italian Liquid Crystal Society. *2012*

Mutual adaptation of a Faraday instability pattern with its flexible boundaries Denmark
Fluid - DTU Summer School. *2011*

The interplay of an instability pattern with its flexible boundaries Agay, France
Conference "On growth and forms" in honour of Prof. Yves Couder. *2010*

Faraday instability in deformable domains Denmark
Fluid - DTU Summer School *2009*

Force measurements at nanoscale by an atomic force microscope Cortona, Italy
Summer course of Scuola Normale Superiore. *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, the Journal of Fluid Mechanics, 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.*

PUBLICATIONS

[1] S. Kuchly, W. Reino, K. McKee, S. Perrard, **G. Pucci**, and E. Eddi. Resonance of an object floating within a surface wavefield. *Accepted in APS Open Science* (2026).

[2] 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.

[3] 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.

[4] 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.

[5] **G. Pucci**, A. Bellaigue, A. Cirimele, G. Alì 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.

[6] **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.

[7] 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".

[8] 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.

[9] 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.

[10] **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.

[11] 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).

[12] 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).

[13] **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).

[14] L. Barnes, **G. Pucci**, and A. U. Oza. Resonant interactions in bouncing droplet chains. *Comptes Rendus Mécanique* **348** (6-7), 573-589 (2020).

[15] 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.

[16] **G. Pucci**, I. Ho and D. M. Harris. Friction on water sliders. *Sci. Rep.* **9**, 4095 (2019).

[17] **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).

[18] 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.

[19] **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).

[20] 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).

[21] 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.

[22] **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).

[23] **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).

[24] 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).

[25] **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.

[26] **G. Pucci**, D. M. Harris and J. W. M. Bush. Partial coalescence of soap bubbles. *Phys. Fluids.* **27**, 061704 (2015).

[27] **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).

[28] 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).

[29] **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).

[30] 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).

[31] **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).

[32] **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.

[33] **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).

[34] **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).