Personal information

Name: García Fernández, Pedro David (male)
Date and place of birth: 6th August, 1979. Palma (Mallorca), Spain.
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Summary of CV

I am interested in complexity and emergent phenomena in nanophotonic systems. My research background is primarily in disordered photonics, focusing on the role of fabrication disorder in photonic nanostructures where the components (scatterers) exhibit short- and long-range spatial correlations. Disorder, randomness, and broken symmetries are ubiquitous in nature, appearing across vastly different length scales, from atomic lattices to intergalactic dust. Entropy induces imperfection and disorder in various materials at scales comparable to the wavelength of different waves (light, mechanical, or electronic). This ultimately leads to multiple scattering and complex phenomena, resulting in thermal heat, electrical resistance, light diffusion, or light localization.

I have mostly explored "frozen" systems, where the structure and dynamics are fixed and linear, respectively. However, in these systems, it is still possible to observe intriguing phenomena when disorder and imperfections appear at length scales similar to visible and near-infrared electromagnetic wavelengths. While this may initially seem problematic, it can also be used to our advantage in technologies involving the emission or propagation of light, such as energy harvesting, imaging, lasing, quantum optics, or information generation and processing.

Recently, I have become increasingly interested in nonlinear dynamics and their interplay with fundamental light-matter coupling mechanisms from which interesting emergent phenomena arise. My primary scientific goal now is to exploit these phenomena for information processing. In December 2021, I was appointed tenured researcher (Científico Titular) at the Spanish National Research Council (CSIC). I am setting up a research line on complex optomechanics at the Material Science Institute in Madrid.

Qualification

Ph.D. Degree: Universidad Autónoma de Madrid, Spain. Thesis defense date: **27th March, 2009.** Title: From Photonic Crystals to Photonic Glasses though disorder. Summa cum laude.

M.Sc. Degree: Universidad Complutense de Madrid, Spain. Master in fundamental and solid-state physics. Graduation date: **28th Sept. 2004.**

Languages: Spanish and Catalan (native), English and Italian (proficiency), German and Danish (Basic).

I studied physics at the Complutense University of Madrid, Spain. I obtained my master in solid-state physics and fundamental physics. These studies were complemented by a one-year project at the physics department of the Technical University of Munich, Germany, where I worked with Prof. Oliver Zimmer as research assistant in cold-neutron scattering simulations. I carried out my research at the Materials Science Institute in Madrid leading to the degree of PhD under the supervision of Prof. Dr. Cefe López. I defended my PhD thesis in 2009 with the title: *From photonic crystals to photonic glasses through disorder* at the Autonoma University of Madrid. My PhD thesis was awarded the highest honors (summa cum laude) by unanimity of the members of the panel and it was selected as the best PhD thesis in the physics department in 2009.

Professional positions and experience in international research institutions

2022-now **Científico Titular – CSIC Research staff– Material Science Institute of Madrid, Spain.**

In December 2021, I was appointed tenured researcher (Científico Titular) at the Spanish National Research Council (CSIC). I am setting up a research line on complex optomechanics at the Material Science Institute in Madrid. My primary scientific goal is to study emergent phenomena from complex optomechanical neural networks and use them as a possible hardware implementation for artificial intelligence.

2017-2021 **Ramón & Cajal Researcher - Catalan Institute of Nanoscience and Nanotechnology, Spain**. From 2015 to 2017 as an individual Marie Skłodowska-Curie fellow.

At ICN2, I am focused on the study of how mechanical vibrations of matter in the few GHz-frequency range affect and are affected by complexity – structural imperfection – in different nanodevices. This rather fundamental research topic has important applications in many relevant fields such as energy harvesting, imaging, lasing, quantum optics or information processing. Understanding the role of fabrication disorder in nanostructures is the key to explore ways in order to minimize its effect. In this direction, I explored different topological phases by engineering the unit cell of periodic structures. Band inversion induced by purely engineering the topography of the dielectric structure is the key concept to explore. One of current goals is to explore analogues of topological insulators for bosonic systems. In this research line, I am the official thesis director and co-director of two PhD students, Mr. Guillermo Arregui and Mr. Omar Florez, whose research I supervise on a daily basis. In addition, I coordinate and supervise the work of two theoretical postdocs, Dr. Jordi Gomis-Bresco and Dr. Philippe Djorwe. As a result of my research in this period, I have published ten papers (two as last author) in journals like Nature Communications of Physical Review Letter and I coordinate an EU-funded project as the group principal investigator.

2012-2015 **Assistant Professor - Niels Bohr Institute, University of Copenhagen, Denmark.**

In 2012, I was funded by a prestigious three-year research program by the private foundation Villum Kann Ransmussen as principal investigator. In 2013, I was appointed as Assistant Professor at the University of Copenhagen to develop several teaching activities in close collaboration with Prof. Kim Splittorff, the deputy head for teaching at the Niels Bohr Institute. During this period, I focused my attention on the use of fabrication imperfection in nanophotonics structures to obtain efficient random lasing.

2009-2011 **Postdoc - Department of Photonics Engineering, Technical University of Denmark.**

In the group of Quantum Photonics led by Prof. Peter Lodahl, I focused my research activity on the study of the role of fabrication imperfections in state-of the art III-V semiconductor nanostructures for quantum optics. These structures are commonly used for quantum optics experiments: photonic-crystal waveguides and photonic crystals with quantum-light emitters. During this period, I became an expert on micro-photoluminescence under cryogenic conditions as well as in modelling tools of nanophotonic structures (plane wave expansion and finite-difference time-domain simulations).

09-12/2007 **Research internship - European Laboratory for Non-linear spectroscopy, Italy.**

During my PhD, I spent four months at the European Research Laboratory for Nonlinear Spectroscopy in the group of Prof. Diederik Wiersma within the frame of the European Network of Excellence PHOREMOST. During my short internship in Florence, I explored

the role of disorder in time-domain experiments of light transmission through nanophotonics structures which led to the publication of several joint articles in journals like Physical Review Letters and Nature Photonics.

2004-2009 **PhD - Instituto de Ciencia de Materiales de Madrid - CSIC, Spain**.

Under the supervision of Prof. Cefe López, I developed my PhD on the interplay between structural order and disorder on light propagation through complex dielectric nanostructures. During this period, I explored self-assembled techniques, material science and sample fabrication as well as diverse optical spectroscopy techniques. I obtained a strong background on colloidal self-assembly, atomic layer deposition and chemical vapor deposition fabrication methods as well as Fourier-transform infrared spectroscopy, ultra-fast time-of-flight and optical gating techniques. I studied the effect of structural disorder in ordered photonic structures by obtaining a method to control carefully the degree of disorder in self-assembled photonic crystals.

Research management

Competitive funding

Research grants as principal investigator

2023 - 2027. Adaptable bio-inspired polariton-polariton energy management (ADAPTATION)
Pathfinder – open research project. European Commission. **Grant number: 101129661**
294 k€ granted for the group (3 M€ total grant).
Principal Investigator.

2023 - 2027. Nano electro-optomechanical programmable integrated circuits (NEUROPIC)
Pathfinder – open research project. European Commission. **Grant number: 101098961**
589 k€ granted for the group (3 M€ total grant).
Principal Investigator and **coordinator** of the consortium.

2022 - 2025. Structured Photonic and Acoustic Materials (SPhAM)
Ministerio de Ciencia, Innovación y Universidades. **Grant number: PID2021-124814NB-C21 (SPHAM)**
300 k€ granted for the group.
Co-Principal Investigator.

2019 - 2022. Optomechanical devices based on active and self-assembled materials
Ministerio de Ciencia, Innovación y Universidades. **Grant number: RTI2018-093921-A-C44**
72 k€.
Principal Investigator.

2019 - 2024. Dissipationless topological channels for information transfer and quantum metrology.
FET- Proactive research project. European Commission. **Grant number: 824140**
466 k€ granted for the group (5 M€ total grant).
Principal investigator at the research group.

2013 - 2016. Controlling the conductor-insulator phase transition for light
Villum Young Investigator. Villum Foundation. **Grant number: VKR023116**
463 k€.
Principal Investigator.

Total amount funded as PI: 2.2 M€

Patents

1. Soren Stobbe; Sahand Mahmoodian; Peter Lodahl; Pedro David Garcia. **15164242.8-1903**. A slow-light generating optical device and a method of producing slow light with low losses. Denmark. 2015. University of Copenhagen.

2. Diederik Wiersma; Riccardo Sapienza; Ceferino Lopez; Stephano Gottardo; Pedro David Garcia; Alvaro Blanco. **ES2330714-A1**. Spectral control method used in emission of random laser in three-dimensional system, involves controlling wavelength of laser action by controlling diameter and refractive index of spherical scatterers Consejo Superior de Investigaciones Científicas.

Organization of scientific activities and meetings

2022. Co-organizer of a Workshop on Neuromorphic computing with complex systems. Braga (Portugal), Sept. 2024.
2022. Co-organizer of a Workshop on Artificial Intelligence (Artificial Intelligence Photonics). Donostia (Spain), Sept. 2023
2022. Co-organizer of a Workshop on Nanophotonics (The Phoremost Photonics). Erice (Sicily, Italy), Oct. 2022.
2021. Co-organizer of a Summer School on Topological Matter (TOCHA Topological Bosonics). Online, Sept. 2021.
2021. Co-organizer of a Conference on Topological Matter (TOCHA Topological Matter). Online, July. 2021.
2020 Co-organizer of a workshop within annual meeting GEFES 2020 dedicated to the New frontiers in photonics: from quantum and nano-optics to topology. Madrid, Spain.
2019. Co-organizer of a focused session on disordered photonics, *Progress in Electromagnetics Research Symposium* (PIERS), Rome, Italy. June 2019.
2019. Co-organizer of a focused session on nanomechanics and nanophononics, *International conference on Metamaterials, photonic crystals and plasmonics* (META), Lisbon, Portugal. July 2019.
2018. Organizer (sole) of a focused session on optomechanics, *Imagine Nano*, Bilbao, Spain. March 2018.
2015. Organizer (sole) of a focused session on disordered photonics, *Progress in Electromagnetics Research Symposium* (PIERS), Prague, Czech Republic. June 2015.
2014. Organizer (sole) of a focused session on disordered photonics, *Progress in Electromagnetics Research Symposium* (PIERS), Guangzhou, China. July 2014

Scientific collaborations

I have established different **national/international active collaborations**:

1. Dr. Daniel Lanzilotti-Kimura at CNRS / Paris Sud University (France) → Topological properties of 1D multilayer structure. Within this collaboration, we have already published two manuscripts in Phys. Rev. Lett. and in APL Photonics. The nanostructures fabricated by the group at CNRS represent the perfect platform to study high-frequency phonons.
2. Dr. Soren Stobbe at DTU (Denmark) → Fabrication of very high-quality shamrock-crystal nanostructures on silicon including out-couplers designed by the group at DTU to excite and collect light from free-space instead of standard evanescent coupling.

3. Dr. Daniel Torrent at UJI (Spain) → Modeling complex nanophononics structures with plate theories to explore the role of complexity in these systems. Exploration of elasticity as intrinsic nonlinearity for neuromorphic computing.
4. Prof. Silvia Vignolini, Cambridge University (UK) → Radiative cooling of Nanos cellulose. We have demonstrated the passive power cooling of nanocellulose without the need of energy.
5. Dr. Costanza Toninelli at CNR (Florence, Italy) → Phonon-control of molecular quantum light emitters for nanothermometry in cryo-conditions.
6. Dr. Matt Doty at Delaware University (USA) → Disorder-induced optical resonators in photonic-crystal waveguides in active materials (GaAs).
7. Eduardo Gil-Santos at IMM (Spain) → Fabrication and characterization of silicon optomechanical nanostructures.

Peer review and editor experience

Associate editor at Applied Optical Material - ACS

From June 2022, I am serving as associate editor on a new ACS journal: Applied Optical Materials. My tasks are to screen manuscripts, supervise the review process, promote the journal among colleagues and peers. This editorial job is a part time remunerated job funded by ACS.

I do manage 2 – 4 manuscript/week on these topics: photonic nanostructures, nonlinear optics, disordered photonics, sensors, quantum optics, metamaterials, radiative cooling materials, plasmonics, waveguides, photoluminescence and light-emitting materials.

Reviewer

Regular peer reviewer of different scientific journals (typically 5-10 manuscripts reviewed per year): Physical Review Letters (typically 10 papers per year), Nature Photonics Applied Physics Letters, Langmuir, Advanced Functional Materials, Journal of Physical Chemistry.

Reviewer of international research proposals

I have evaluated research proposals for the following research agencies:

1. Agence nationale de la recherche (France)
2. US Energy department (USA)
3. National Science Center (Poland)
4. National Research Council (Canada)
5. The Swiss National Science Foundation (Switzerland)

Scientific communication

I have been invited to **14** international conferences and research institutions to present my work and I have attended **10** international conferences as presenter of peer-reviewed talks.

Invited communications to international or national conferences

1. ***Garcia PD***
   Optomechanics as a source of complexity. Invited seminar.
   Sungkyunkwan University (Seoul, South Corea), May **2025**
2. ***Garcia PD***
   Optomechanics as a source of complexity. Invited seminar.
   Hanyang University (Seoul, South Corea), May **2025**
3. ***Garcia PD***
   Optomechanics as a source of complexity. Invited seminar.
   Yonsei University (Seoul, South Corea), May **2025**
4. ***Garcia PD***
   Dirty and Messy Optomechanics. Invited talk.
   META, Toyama, Japan, August **2024**
5. ***Garcia PD***
   Dirty and Messy Optomechanics. Invited talk.
   NanoSpain24, Tarragona, Spain, June **2024**.
6. ***Garcia PD***
   Dirty and Messy Optomechanics. Invited talk.
   Disomat23, Plankstetten, Bayern (Germany), July **2023**
7. ***Garcia PD***
   Dirty and Messy Optomechanics. Invited Seminar.
   Rutgers University, Newark, April **2023**
8. ***Garcia PD***
   Quantifying the robustness of topological slow light. Invited talk.
   Topological Matter Conference, San Sebastian, Jul. **2022**.
9. ***Garcia PD***
   Optomechanical interaction in complex dielectric media. Invited talk.
   EUROMECHS. March. **2022**
10. **Garcia PD**
    Quantifying the robustness of topological slow light. Invited talk.
    TOCHA Conference on Topological Matter Online conference. Jul. **2021**.
11. **Garcia PD**
    Quantifying the robustness of topological slow light. Invited talk.
    CEN. Online. Sept. **2021**.
12. **Garcia PD**
    Optomechanical interaction in complex dielectric media, invited seminar
    C2N – Université Paris-Saclay, Paris, France, **2019**.
13. **Garcia PD**
    Optomechanical interaction in complex dielectric media, invited seminar
    DIPC, San Sebastian, Spain, **2019**.
14. **Garcia PD**
    Optomechanical interaction in complex dielectric media, invited talk

PIERS, Toyama, Japan, **2018**.

15. **Garcia PD**
Optomechanical interaction in complex dielectric media, invited talk
DYNAMO, Iceland, **2017**.
16. Garcia PD
Light-matter interaction in disordered nanophotonics structures, invited seminar
Technical University of Berlin, Germany, **2016**.
17. **Garcia PD**
Disorder to enhance and tailor the light-matter interaction, invited talk
META, Torremolinos, Spain, **2016**.
18. **Garcia PD**
Quantum optics in disordered photonic nanostructures, invited talk
SPIE, Brussels, Belgium, **2016**.
19. **Garcia PD**
Anderson localization in low-dimensional structures for cavity quantum electrodynamics and random lasing, invited talk
Waves in random media, Paris, France, **2015**.
20. **Garcia PD**
Anderson localization in low-dimensional structures for cavity quantum electrodynamics and random lasing, invited talk
DYNAMO, Patagonia, Argentina, **2015**.
21. **Garcia PD**
Light-matter interaction in complex dielectric media, invited seminar
Cavendish Lab, University of Cambridge, UK, **2015**.
22. **Garcia PD**
Anderson localization to enhance light-matter interaction, invited seminar
Chemistry Department, University of Cambridge, UK, **2014**.
23. **Garcia PD**
Anderson localization in low-dimensional structures for cavity quantum electrodynamics and random lasing, invited talk
Frontiers in Optics, Florida, USA, **2013**.

Outreach communication:

2019. Participation in the documentary Complexity in Nature produced by French Connection Films for the French National TV channel TV5 filmed in Cambridge (UK).

2018. Talk about disorder and complexity in Nature at CSIC (Dilluns de Ciencia). Barcelona, October 2018: https://youtu.be/nebOMIihhiU

2013-2014: Organization of the open days of the Quantum Photonics Lab during the editions of the Kulturnatten at the Niels Bohr Institute

Teaching, student supervision and scientific coordination

I have been accredited as *profesor contratado doctor* by the national ANECA in 2019.

Courses

I have taught the following courses:

2015 Quantum mechanics II. Bachelor course on electron-spin resonance. **3.5 ECTS**
2014 Quantum mechanics II. Bachelor course on electron-spin resonance. **3.5 ECTS**
2014 Thermodynamics ad First year project. Bachelor course. **2.5 ECTS**
2013 Thermodynamics ad First year project. Bachelor course. **2.5 ECTS**
2012 Thermodynamics ad First year project. Bachelor course. **2.5 ECTS**
2012 Nanophotonics. Master course on light-matter interaction, cavity-QED. **2.5 ECTS**.
2011 Nanophotonics. Master course on light-matter interaction, cavity-QED. **2.5 ECTS**.

Total ECTS tought from 2011 to 2015: 19.5

Supervision of undergraduate students

I have directly co-supervised seven bachelor projects:

2019 Mr. Carlos Moya. *Automatization of an inelastic Brillouin light scattering setup to measure the mechanical eigenmodes of a silicon nanometric membrane*. Universidad Autónoma de Barcelona.
2016 Mr. Robert Bericat Vadell. *Acoplo evanescente con los modos de un cristal optomecánico*. Universidad Autónoma de Barcelona.
2014 Mr. Kasper Prindal Nielsen. *Propagation of light through chiral photonic-crystal waveguides*. Universidad de Copnehague.
2014 Mrs. Sandra Helena Øder Madsen. *Propagation of light through chiral photonic-crystal waveguides*. Universidad de Copnehague.
2014 Mrs. Line Tollund Juntilainen. *Light propagation in disordered photonic-crystal waveguides*. Universidad de Copnehague.
2014 Mrs. Ela Úgur. *Light propagation in disordered photonic-crystal waveguides*. Universidad de Copnehague.
2013 Mr. Samuel Stockholm Baxter. *Light propagation through photonic-crystal waveguides*. Universidad de Copnehague.

Direction and supervision of PhD students

2023/present Co-director of two PhD students at the Material Science Institute of Madrid (Marcos Menéndez and Ángel Mascarell).
2015-2021 Co-director of two PhD students at the Catalan institute of Nanoscience and Nanotechnology: Mr. Guillermo Arregui (PhD defended on Feb 26th 2021) and Dr. Omar Florez (PhD defended on November 24, 2022).
2009-2015 Supervision on a daily basis of two PhD students at the Technical University of Denmark (Dr. Stephan Smolka) and at the University of Copenhagen (Dr. Alisa Javadi).

Member of PhD commissions.

14/12/2017 Mrs. Olimpia D. Onelli. PhD tittle "Complex photonics in nature: from order to disorder". Chemistry Department of the University of Cambridge.
28/09/2023 Mr. Marc Martí Sabaté. PhD tittle "Trapping flexural waves in thin elastic plates by complex engineered surfaces". Universitat Jaume I. Castelló de la Plana (Spain).

Complete Publication list in peer-review journals

I have published **43** articles in journals such as Science, Nature Photonics, Nature Nanotechnology, Advanced Materials and Physical Review Letters with a total of **2060** citations (**67** citations/paper). I have an h-index **23** and I hold **2** patents (researcher ID **D-3775-2014**). The symbol (*) indicates corresponding authorship.

Research highlights

1. Observation of the full phononic gap at room temperature in the GHz frequency range. Published in **Nature Nanotechnology.** 2022
2. Observation of dynamical chaos in optomechanical systems. Published in **Nature Communications**. 2017.
3. Observation of ultra-stable random lasing in the Anderson-localization regime. Published in **Nature Nanotechnology.** 2014.
4. Observation of non-universal intensity correlations in a random medium. Published in **Physical Review Letters**. 2012.
5. Demonstration of coupling between a single quantum emitter and a single Anderson localised mode. Published in **Science.** 2010.
6. Demonstration of spectral tunability of a random laser. Published in **Nature Photonics.** 2008.
7. Observation of resonant multiple scattering. Published in **Physical Review Letters.** 2007.
8. Realization of a resonant disordered material named *Photonic Glass*. Published in **Advanced Materials.** 2006.

Full publication list

Publications in peer-reviewed journals

1. P Moronta, P Tartaj, A Consoli, **P David García**, L Martín Moreno, C López
   Controlling the spectral persistence of a random laser
   Optica 11 (7), 919 (2024).

2. S Edelstein, J Gomis-Bresco, G Arregui, P Koval, ND Lanzillotti-Kimura, (...) **PD Garcia**.
   Optomechanical Coupling Optimization in Engineered Nanocavities
   Annalen der Physik, 2300417 (2024).

3. V. Esteso, R. Duquennoy, R.C. Ng, M. Colautti, P. Lombardi, G. Arregui, E. Chavez-Angel, C.M. Sotomayor-Torres, **P.D. Garcia**, M. Hilke, and C. Toninelli
   Quantum Thermometry with Single Molecules in Nanoprobes
   ACS Photonics (2023).

4. A Consoli, **PD García**, C López.
   Tuning the emission properties of electrically pumped semiconductor random lasers via controlled pulsed laser ablation
   Optics Express 31 (25), 42439-42448 (2024).

5. Granchi N, Intonti F, Florescu M, **García PD**, Gurioli M, Arregui G.

Q-Factor Optimization of Modes in Ordered and Disordered Photonic Systems Using Non-Hermitian Perturbation Theory
ACS Photonics (2023).

6. AO Krushynska, et al.
Emerging topics in nanophononics and elastic, acoustic, and mechanical metamaterials: an overview
Nanophotonics 12 (4), 659 (2023)

7. G. Madiot, R. C Ng, G. Arregui, O. Florez, M. Albrechtsen, S. Stobbe, **García PD** *, Sotomayor-Torres CM.
Optomechanical generation of coherent GHz vibrations in a phononic waveguide
Physical Review Letters 130 (10), 106903 (2023)

8. Arregui G, Ng RC, Albrechtsen M, Stobbe S, Sotomayor Torres CM, **García PD***.
Cavity optomechanics with Anderson-localized optical modes
Physical Review Letters 130 (4), 043802 (2023).

9. Carfagno HS, **García PD**, Doty MF
An image analysis method for quantifying precision and disorder in nanofabricated photonic structures
Nanotechnology **34** (6), 065303 (2022).

10. Florez O, Arregui G, Albrechtsen M, Ng RC, Gomis-Bresco J, Stobbe S, Sotomayor-Torres CM, **García PD***
Engineering nanoscale hypersonic phonon transport
Nature Nanotechnology **17**, 947–951 (2022).

11. Patil CM, Arregui G, Mechlenborg M, Zhou X, Alaeian H, **García PD**, Stobbe S
Observation of slow light in glide-symmetric photonic-crystal waveguides
Optics Express **30** (8), 12565-12575 (2022).

12. Jaramillo-Fernandez J, Yang H, Schertel L, Whitworth GL, **García PD** *, Vignolini S*, Sotomayor-Torres CM.
Highly-Scattering Cellulose-Based Films for Radiative Cooling
Advanced Science **9**, 2104758 (2022).

13. Whitworth G. L., Jaramillo-Fernandez J, Pariente J. A., **García PD**, Blanco A, Lopez C, and Sotomayor-Torres CM.
Simulations of micro-sphere/shell 2D silica photonic crystals for radiative cooling
Optics Express **29** (11), 16857-16866 (2021).

14. Arregui G, Gomis-Bresco J, Sotomayor-Torres CM, **Garcia PD***
Quantifying the robustness of topological slow light
Physical Review Letters **126** (2), 027403 (2021).

15. Jaramillo-Fernandez J, Whitworth Guy L, Pariente JA, Blanco A, **Garcia PD**, Lopez C, Sotomayor-Torres CM

A Self-Assembled 2D Thermofunctional Material for Radiative Cooling.
Small **15**, 1905290 (2019).

16. Arregui G, Ortiz O, Esmann M, Sotomayor-Torres CM, Gomez-Carbonell C, Mauguin O, Perrin B, Lemaître A, **García PD***, Lanzillotti-Kimura ND
Coherent generation and detection of acoustic phonons in topological nanocavities
APL Photonics **4**, 030805 (2019).

17. Arregui G, Lanzillotti-Kimura ND, Sotomayor-Torres CM, **Garcia PD***,
Anderson Photon-Phonon Colocalization in Certain Random Superlattices.
Physical Review Letters **122**, (2019).

18. Arregui G, Navarro-Urrios D, Kehagias N, Torres CMS, **Garcia PD***,
All-optical radio-frequency modulation of Anderson-localized modes.
Physical Review B **98**, 6 (2018).

19. **Garcia PD***, Kirsanske G, Javadi A, Stobbe S, Lodahl P,
Two mechanisms of disorder-induced localization in photonic-crystal waveguides.
Physical Review B **96**, 144201 (2017).

20. **Garcia PD***, Lodahl P,
Physics of Quantum Light Emitters in Disordered Photonic Nanostructures.
Annalen Der Physik **529**, 1600351 (2017).

21. Navarro-Urrios D, Capuj NE, Colombano MF, **Garcia PD**, Sledzinska M, Alzina F, et al,
Nonlinear dynamics and chaos in an optomechanical beam.
Nature Communications **8**, 14965 (2017).

22. **Garcia PD***, Bericat-Vadell R, Arregui G, Navarro-Urrios D, Colombano M, Alzina F, et al,
Optomechanical coupling in the Anderson-localization regime.
Physical Review B **95**, 115129 (2017).

23. Navarro-Urrios D, Gomis-Bresco J, Alzina F, Capuj NE, **Garcia PD**, Colombano MF, et al,
Self-sustained coherent phonon generation in optomechanical cavities.
Journal of Optics **18**, 094006 (2016).

24. Mann N, Javadi A, **Garcia PD**, Lodahl P, Hughes S,
Theory and experiments of disorder-induced resonance shifts and mode-edge broadening in deliberately disordered photonic crystal waveguides.
Physical Review A **92**, 023849 (2015).

25. Javadi A, Maibom S, Sapienza L, Thyrrestrup H, **Garcia PD**, Lodahl P,
Statistical measurements of quantum emitters coupled to Anderson-localized modes in disordered photonic-crystal waveguides.
Optics Express **22**, 30992 (2014).

26. Liu J, **Garcia PD**, Ek S, Gregersen N, Suhr T, Schubert M, et al,
Random nanolasing in the Anderson localized regime.
Nature Nanotechnology **9**, 285 (2014).

27. **Garcia PD***, Javadi A, Thyrrestrup H, Lodahl P,
Quantifying the intrinsic amount of fabrication disorder in photonic-crystal waveguides from optical far-field intensity measurements.
Applied Physics Letters **102**, 031101 (2013).

28. **Garcia PD***, Lopez C,
From Bloch to random lasing in ZnO self-assembled nanostructures.
Journal of Materials Chemistry C **1**, 7357 (2013).

29. **Garcia PD***, Stobbe S, Sollner I, Lodahl P,
Nonuniversal Intensity Correlations in a Two-Dimensional Anderson-Localizing Random Medium.
Physical Review Letters **109**, 253902 (2012).

30. **Garcia PD**, Sapienza R, Toninelli C, Lopez C, Wiersma DS. Wiersma,
Photonic crystals with controlled disorder.
Physical Review A **84**, 023813 (2011).

31. Smolka S, Thyrrestrup H, Sapienza L, Lehmann TB, Rix KR, Froufe-Perez LS, **Garcia PD**, Lodahl P,
Probing the statistical properties of Anderson localization with quantum emitters.
New Journal of Physics **13**, 13 (2011).

32. **Garcia PD***, Smolka S, Stobbe S, Lodahl P,
Density of states controls Anderson localization in disordered photonic crystal waveguides.
Physical Review B **82**, 5 (2010).

33. Sapienza L, Thyrrestrup H, Stobbe S, **Garcia PD**, Smolka S, Lodahl P,
Cavity Quantum Electrodynamics with Anderson-Localized Modes.
Science **327**, 1352 (2010).

34. **Garcia PD**, Sapienza R, Lopez C,
Photonic Glasses: A Step Beyond White Paint.
Advanced Materials **22**, 12 (2010).

35. **Garcia PD**, Ibisate M, Sapienza R, Wiersma DS, Lopez C,
Mie resonances to tailor random lasers.
Physical Review A **80**, 6 (2009).

36. **Garcia PD**, Sapienza R, Froufe-Perez LS, Lopez C,
Strong dispersive effects in the light-scattering mean free path in photonic gaps.
Physical Review B **79**, 4 (2009).

37. **Garcia PD**, Sapienza R, Bertolotti J, Martin MD, Blanco A, Altube A, et al,
Resonant light transport through Mie modes in photonic glasses.
Physical Review A **78**, 11 (2008).

38. Gottardo S, Sapienza R, **Garcia PD**, Blanco A, Wiersma DS, Lopez C,
Resonance-driven random lasing.
Nature Photonics **2**, 429 (2008).

39. Sapienza R, **Garcia PD**, Bertolotti J, Martin MD, Blanco A, Vina L, et al,

Observation of resonant behavior in the energy velocity of diffused light.
Physical Review Letters **99**, 4 (2007).

40. **Garcia PD**, Sapienza R, Blanco A, Lopez C,
Photonic glass: A novel random material for light.
Advanced Materials **19**, 2597 (2007).

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