

SANCHEZ-PALENCIA, Laurent

Research Director at the National Center for Scientific Research (CNRS)
Professor of Quantum Physics at Ecole Polytechnique
Head of the *Quantum Matter* research group at CPHT
Director of the *ICFP Quantum Master* at Ecole Normale Supérieure
Deputy Director of the *Quantum-Saclay Center*



Center for Theoretical Physics (CPHT, UMR 7644)
Ecole Polytechnique, CNRS, Institut Polytechnique de Paris
F-91128 Palaiseau, France
tel: (33) 1 69 33 42 13 - email: lsp@cpht.polytechnique.fr
web sites: <https://www.cpht.polytechnique.fr/cpht/uquantmat/> (group page)
<https://www.cpht.polytechnique.fr/cpht/uquantmat/lsp.html> (personal page)

Born on 19 December 1975 - married, two children

▷ Google scholar: [link to personal page](#)
▷ name to use in *Web of Science* "sanchez-palencia, l"

MAIN POSITIONS

- 2023 - :** Full professor of Quantum Physics at Ecole Polytechnique (Palaiseau, France)
- 2016 - :** Research Director at CNRS, Center for Theoretical Physics of Ecole Polytechnique (Palaiseau, France); Head of the *Quantum Matter* group
- 2012-2023:** Associate professor at Ecole Polytechnique (Palaiseau, France)
- 2012-2016:** Researcher at CNRS, Laboratoire Charles Fabry (Palaiseau, France); Co-head (with C. Westbrook) of the *Atom Optics* group
- 2004-2012:** Researcher at CNRS, Laboratoire Charles Fabry (Palaiseau, France); group of A. Aspect; Founder of the *Ultracold Quantum Gases Theory* team (2006)
- 2003-2004:** Post-doctoral researcher at the Institut für Theoretische Physik (University of Hannover, Germany); group of M. Lewenstein
- 2000-2003:** Ph-D thesis at Laboratoire Kastler-Brossel (Ecole Normale Supérieure, Paris, France); group of G. Grynberg
- 1999:** Research internship at the Center for Ultrafast Optical Science (University of Michigan, Ann Arbor, Michigan, USA); group of T. Norris

EDUCATION

- 2010-2011:** **Research Habilitation (HDR)**, *Disordered, ultracold quantum gases: Theoretical studies and experimental perspectives* (Université Paris-sud, France); Committee: A. Aspect, J. Dalibard (pres.), T. Giamarchi, M. Inguscio, M. Lewenstein, P. Zoller
- 2000-2003:** **PhD thesis in Quantum Physics** at Laboratoire Kastler-Brossel (Ecole Normale Supérieure, Paris, France). Advisor: G. Grynberg; Committee: A. Aspect, J.-Y. Courtois, J. Dalibard, R. Kaiser, A. Kastberg, P. Pillet (pres.); Diploma from Ecole Polytechnique; *Mention très honorable avec les félicitations écrites du jury (highest); PhD prize in physics*
- 1999-2000:** **Master of Science in Quantum Physics** (M2, former DEA), headed by J. Dalibard (Ecole Normale Supérieure, Paris, France)
- 1996-1999:** **Ecole Polytechnique** (Palaiseau, France)
- 1993-1996:** **Lycée Saint-Louis** (Paris, France); University-level preparation for the competitive entrance exams to French engineering and scientific schools.

GRANTS AND AWARDS

- 2012:** Leconte prize of the French Academy of Sciences
- 2010:** ERC Starting grant (European Research Council; ERC-StG)
- 2010:** ANR Young Researcher grant (Agence Nationale de la Recherche; declined after ERC-StG)
- 2004:** Prize of Ecole Polytechnique for an outstanding Ph-D thesis in physics
- 2003-2004:** Postdoctoral individual fellowship from the von Humboldt foundation (Germany)
- 2003:** Individual Marie Curie postdoctoral fellowship from the European Union Commission (declined)
- 2000-2003:** PhD research grant (AMX) from the French Ministry of Education and Research

TEACHING ACTIVITIES

Annual courses

- 2021 - : **Master course of Physics of Quantum Information** at the Master Quantum, Light, Materials, and Nano sciences (M2 QLMN) at University Paris-Saclay (with A. Browaeys)
- 2019 - : **Physics courses at Ecole Polytechnique**
- **Quantum Optics** (M1, with A. Aspect)
 - **Quantum Information and Computing** (M1, with T. Debris)
 - Thermodynamics and Statistical Physics (BSc3; 2019-2024)
- 2014-2019: Master course on *Ultracold Atoms and Quantum Simulators* at University Paris-Saclay (with M. Cheneau)
- 2012-2021: Physics classes at Ecole Polytechnique (Palaiseau, Paris)
- *Relativity and Variational Principles* (2014-2019)
 - *Quantum Optics* (2014-2021)
 - *Quantum and Statistical Physics* (2012-2014)
- 2010-2016: Master course of *Statistical Physics* at University Paris-Saclay (M1, with J.-J. Greffet)
- 2008-2014: Master course of *Statistical Quantum Physics* at University Paris-Saclay (M2, with A. Browaeys)
- 2007-2012: Exercice classes in *Quantum Physics and Statistical Physics* at Ecole Normale Supérieure de Cachan and Université Pierre et Marie Curie (Paris; with A. Sinatra)
- 2006-2010: Lectures on *Atomic Physics* at Ecole Normale Supérieure de Cachan (préparation à l'agrégation de physique; with A. Browaeys)
- 2000-2003: Exercice classes for first year *Physics* at University Pierre et Marie Curie (Paris)

Summer schools

- 2024: Series of lectures on *Many-Body Physics in the Era of Quantum Simulation* at the Quarmen International School "Quantum Science and Technologies" (Erice, Italy)
- 2023: Series of lectures on *Quantum Many-Body Systems* at the Quarmen International School "Quantum Science and Technologies" (Trieste, Italy)
- 2019: Series of lectures on *Open Quantum Systems* at the IQUPS Quantum Engineering programme (University Paris-Saclay, France):
- 2019: Series of lectures on *Open Quantum Systems* at the International School "Dynamics and Disorder in Quantum Many Body Systems Far From Equilibrium" (Les Houches, France)
- 2018: Series of lectures on *Disordered Quantum Gases* at the International School "Quantum Gases" (Chlef, Algeria)
- 2012: Series of lectures on *Ultracold Atoms in Disordered Potentials* at the Summer School "Quantum Many-body Physics of Ultracold Atoms and Molecules" (ICTP, Trieste, Italy)
- 2012: Series of lectures on *Anderson Localization in Optical Disorder* at the Summer School "Low-Dimensional Quantum Many-Body Systems" (Trier, Germany)
- 2004: Series of lectures on *Strongly Correlated Quantum Gases* at the University of Hannover

ADMINISTRATIVE RESPONSIBILITIES

- 2023 - : **Director of the ICFP Master 2 of Quantum Physics** at Ecole Normale Supérieure (with J. Beugnon)
- 2022 - : **Deputy director of Quantum-Saclay** (Research center for quantum science and technologies, University Paris-Saclay and Institut Polytechnique de Paris)
- 2022 - : **Member of the steering committee** of the DIM *Quantum Technologies in Paris Region* (QuanTiP)
- 2021 - : **Head of the track Quantum Sciences and Technologies** (Ecole Polytechnique)
- 2020-2023: President of the PhD track *Quantum Sciences and Technologies* (Institut Polytechnique de Paris)
- 2017 - : **Member of the laboratory council** of the Center for Theoretical Physics of Ecole Polytechnique
- 2017-2020: Member of council of the Doctoral School Waves and Matter (EDOM) at University Paris-Saclay
- 2014-2017: Member of the steering committee of the Institute of Advanced Physics Blaise Pascal at University Paris-Saclay
- 2014-2018: Member of the steering committee of the Department of Physics of Waves and Matter at University Paris-Saclay
- 2013-2016: Member of the scientific committee of the massive computing center of University Paris-Sud

- 2012-2016:** Co-head of the Atom Optics group (with C. Westbrook) at Laboratoire Charles Fabry
2011-2015: Member of the steering committee of the RTRA *Triangle de la Physique*
2010-2016: Member of the council of group and team leaders at Laboratoire Charles Fabry

ORGANIZATION OF CONFERENCES

- 2025:** International summer school *Quantum Simulation in Condensed Matter and AMO Physics* (Cargèse, France; with T. Giamarchi and G. Roati)
2023: QuanTiP international conference *Quantum Simulation* (Palaiseau, France; with J. Beugnon)
2021: International workshop *Quantum Simulation in Condensed Matter and AMO physics* (Cargèse, France; with T. Giamarchi and G. Roati)
2019: International summer school *Dynamics and Disorder in Interacting Quantum Many-Body Systems far from Equilibrium* (Les Houches, France; with D. Abanin and M. Schiro)
2017: International workshop *Recent Advances in Quantum Computing* (CEA-Saclay, France; with P. Bertet, T. Chanelière, and H. Pothier)
2017: Symposium *The N-Body Problem, from the Quark-Gluon Plasma to Cold-Atom Gases* of the General Meeting of the French Physical Society (Orsay, France; with C. Pépin and D. Verney)
2017: Series of lectures program on *Quantum Engineering at University Paris-Saclay* (Saclay, France; with H. Pothier)
2016: International summer school *Disorder in Condensed Matter and Ultracold Atoms* (Cargèse, France; with T. Giamarchi and G. Roati)
2013: International conference *Disorder in Condensed Matter and Ultracold Gases* (Varenna, Italy; with T. Giamarchi and G. Roati)
2011: International summer school *Disordered Systems: From Condensed-Matter Physics to Ultracold Atomic Gases* (Cargèse, France; with T. Giamarchi and G. Roati)
2011: International workshop *Quantum Simulators with Ultracold Atoms* (Palaiseau, France)
2004: International conference *Disordered Quantum Gases* (Hannover, Germany; with M. Lewenstein, K. Eckert, and A. Kantian)

ADVISING

Post-doc researchers

- 2022-2024:** Dean Johnstone (United Kingdom)
2019-2021: Steven Thomson (United Kingdom)
2014-2015: Christian Trefzger (Italy and Germany)
2012-2014: Lih-King Lim (Malaysia)
2011-2015: Giuseppe Carleo (Italy)
2009-2011: Tung-Lam Dao (Vietnam)
2007-2011: Luca Pezzé (Italy)

Ph-D students

- 2024 - :** Danilo Nascimento-Guimaraes (Brazil)
2024 - : Xiaoxu Zhou (China)
2023 - : Shengjie Yu (China)
2020-2023: Zhaoxuan Zhu (China)
2019-2022: Jan Schneider (Germany)
2018-2021: Louis Villa
2017-2020: Hepeng Yao (China)
2016-2019: Julien Despres
2014-2017: Cécile Crosnier de Bellaistre
2013-2016: Lorenzo Cevolani (Italy)
2012-2015: Guilhem Boéris
2011-2014: Samuel Lellouch
2009-2012: Marie Piraud
2005-2009: Pierre Lugan (co-advised with P. Bouyer)

Master students

- 2024-2025:** Yifei Wang (Ecole Polytechnique, X22)
2024: Shanya Mishra (BSc, Institut Polytechnique de Paris)
2023: Shengjie Yu (Master 2 of *Quantum Physics*)

2022 - : Xiaoxu Zhou (PhD track, Institut Polytechnique de Paris)
2020-2021: Kim Vallée (PhD track, Institut Polytechnique de Paris)
2019-2020: Ronan Gautier (Master 2 of *Physics*, Cambridge University, United Kingdom)
2019: Marco Biroli (BSc, Institut Polytechnique de Paris)
2019: Alessandro Pocco (BSc, Institut Polytechnique de Paris)
2019: Jan Schneider (Master 2, Heidelberg university, Germany)
2018: Hakim Khoudli (Master 1 at *Ecole Polytechnique*)
2018: Louis Villa (Master 2 of *Theoretical Physics*)
2017-2018: Léa Bresque (Master 1 of *Physics*)
2016-2017: Hepeng Yao (Master 1 and 2 of *Physics*)
2014: Cécile Crosnier de Bellaistre (Master 2 of *Quantum Physics*)
2012: Gilhem Boeris (Master 2 of *Quantum Physics*)
2011: Samuel Lellouch (Master 2 of *Quantum Physics*)
2010: Thomas Koffel (Master 1, ENS-Cachan)
2009: Marie Piraud (Master 2 of *Quantum Physics*)
2007-2009: Ben Hambrecht (co-advised with A. Aspect)
2006: Mehdi Ayouz (Master 2 of *Condensed-matter Physics*)

LIST OF PUBLICATIONS OF LAURENT SANCHEZ-PALENCIA

- ▷ Researcher ID (ISI-publications/citations): <http://www.researcherid.com/rid/C-5586-2012>
- ▷ name to use in *Web of Science* "sanchez-palencia, l"

Publications in refereed journals

- [1] A.B. Ruffin, J. Decker, L. Sanchez-Palencia, L. Le Hors, J.F. Whitaker, T.B. Norris and J.V. Rudd, *Time Reversal and object reconstruction with single-cycle pulses*, Optics Letters **26**, 681-683 (2001)
- [2] F.-R. Carminati, M. Schiavoni, L. Sanchez-Palencia, F. Renzoni and G. Grynberg, *Temperature and spatial diffusion of atoms cooled in a 3d lin_⊥lin bright optical lattice*, European Physical Journal D **17**, 249-254 (2001)
- [3] L. Sanchez-Palencia, P. Horak and G. Grynberg, *Spatial diffusion in a periodic optical lattice: revisiting the Sisyphus effect*, European Physical Journal D **18**, 353-364 (2002)
- [4] L. Sanchez-Palencia, F.-R. Carminati, M. Schiavoni, F. Renzoni and G. Grynberg, *Brillouin propagation modes in optical lattices: interpretation in terms of nonconventional stochastic resonance*, Physical Review Letters **88**, 133903 (2002)
- [5] A.B. Ruffin, J. Van Rudd, J. Decker, L. Sanchez-Palencia, L. Le Hors, J.F. Whitaker and T.B. Norris, *Time-reversal terahertz imaging*, IEEE Journal of Quantum Electronics **38**, 1110-1119 (2002)
- [6] M. Schiavoni, F.-R. Carminati, L. Sanchez-Palencia, F. Renzoni and G. Grynberg, *Stochastic resonance in periodic potentials: realization in a dissipative optical lattice*, Europhysics Letters **59**, 493-499 (2002)
- [7] M. Schiavoni, L. Sanchez-Palencia, F.-R. Carminati, F. Renzoni and G. Grynberg, *Dark propagation modes in optical lattices*, Physical Review A **66**, 053821 (2002)
- [8] F.-R. Carminati, L. Sanchez-Palencia, M. Schiavoni, F. Renzoni and G. Grynberg, *Rayleigh scattering and atomic dynamics in dissipative optical lattices*, Physical Review Letters **90**, 043901 (2003)
- [9] J. Jersblad, H. Ellmann, L. Sanchez-Palencia and A. Kastberg, *Anisotropic velocity distributions in 3D dissipative optical lattices*, European Physical Journal D **22**, 333-339 (2003)
- [10] M. Schiavoni, L. Sanchez-Palencia, F. Renzoni and G. Grynberg, *Phase-control of directed diffusion in a symmetric optical lattice*, Physical Review Letters **90**, 094101 (2003)
- [11] L. Sanchez-Palencia, M. Schiavoni, F.-R. Carminati, F. Renzoni and G. Grynberg, *Damping rates of the atomic velocity in Sisyphus cooling*, Journal of the Optical Society of America B **20**, 925-930 (2003)
- [12] L. Sanchez-Palencia and G. Grynberg, *Synchronization of Hamiltonian motion and dissipative effects in optical lattices: evidence for a stochastic resonance*, Physical Review A **68**, 023404 (2003)
- [13] J. Jersblad, H. Ellmann, K. Stochkel, A. Kastberg, L. Sanchez-Palencia and R. Kaiser, *Non-gaussian velocity distributions in optical lattices*, Physical Review A **69**, 013410 (2004)
- [14] L. Sanchez-Palencia, *Directed transport of Brownian particles in a double symmetric potential*, Physical Review E **70**, 011102 (2004)
- [15] A. Sanpera, A. Kantian, L. Sanchez-Palencia, J. Zakrzewski and M. Lewenstein, *Atomic Fermi-Bose mixtures in inhomogeneous and random optical lattices: from Fermi glass to quantum spin glass and quantum percolation*, Physical Review Letters **93**, 040401 (2004)
- [16] L. Sanchez-Palencia and L. Santos, *Bose-Einstein condensates in optical quasicrystal lattices*, Physical Review A **72**, 053607 (2005)
- [17] D. Clement, A.F. Varon, M. Hugbart, J.A. Retter, P. Bouyer, L. Sanchez-Palencia, D.M. Gangardt, G.V. Shlyapnikov and A. Aspect, *Suppression of transport of an interacting elongated Bose-Einstein condensate in a random potential*, Physical Review Letters **95**, 170409 (2005)

- [18] V. Ahufinger, L. Sanchez-Palencia, A. Kantian, A. Sanpera and M. Lewenstein, *Disordered ultracold atomic gases in optical lattices: a case study of Fermi-Bose mixtures*, Physical Review A **72**, 063616 (2005)
- [19] P. Sjolund, S. Petra, C. Dion, S. Jonsell, M. Nysten, L. Sanchez-Palencia and A. Kastberg, *Demonstration of a controllable three-dimensional Brownian motor in symmetric potentials*, Physical Review Letters **96**, 190602 (2006)
- [20] T. Schulte, S. Drenkelforth, J. Kruse, W. Ertmer, J. Arlt, A. Kantian, L. Sanchez-Palencia, L. Santos, A. Sanpera, K. Sacha, P. Zoller, M. Lewenstein and J. Zakrzewski, *Cold atom gases in optical lattices with disorder*, Acta Physica Polonica A **109**, 89 (2006)
- [21] L. Sanchez-Palencia, V. Ahufinger, A. Kantian, J. Zakrzewski, A. Sanpera and M. Lewenstein, *Strongly correlated Fermi-Bose mixtures in random optical lattices*, Journal of Physics B: Atomic Molecular and Optical Physics **39**, S121-S134 (2006)
- [22] D. Clement, A.F. Varon, J.A. Retter, L. Sanchez-Palencia, A. Aspect and P. Bouyer, *Experimental study of the transport of coherent interacting matter-waves in a 1D random potential induced by laser speckle*, New Journal of Physics **8**, 165 (2006)
- [23] D. Clement, A.F. Varon, M. Hugbart, J. Retter, P. Bouyer, L. Sanchez-Palencia, D.M. Gangardt, G.V. Shlyapnikov and A. Aspect, *Inhibition du transport d'un condensat de Bose-Einstein dans un potentiel aleatoire 1D*, Journal de Physique IV (France) **135**, 145 (2006)
- [24] J. Wehr, A. Niederberger, L. Sanchez-Palencia and M. Lewenstein, *Disorder versus the Mermin-Wagner-Hohenberg effect: from classical spin systems to ultracold atomic gases*, Physical Review B **74**, 224448 (2006)
- [25] L. Sanchez-Palencia, *Smoothing effect and delocalization of interacting Bose-Einstein condensates in random potentials*, Physical Review A **74**, 053625 (2006)
- [26] P. Lugan, D. Clement, P. Bouyer, A. Aspect, M. Lewenstein and L. Sanchez-Palencia, *Ultracold Bose gases in 1D disorder: from Lifshits glass to Bose-Einstein condensate*, Physical Review Letters **98**, 170403 (2007)
- [27] L. Sanchez-Palencia, D. Clement, P. Lugan, P. Bouyer, G.V. Shlyapnikov and A. Aspect, *Anderson localization of expanding Bose-Einstein condensates in random potentials*, Physical Review Letters **98**, 210401 (2007)
- [28] P. Lugan, D. Clement, P. Bouyer, A. Aspect and L. Sanchez-Palencia, *Anderson localization of Bogolyubov quasiparticles in interacting Bose-Einstein condensates*, Physical Review Letters **99**, 180402 (2007)
- [29] A. Niederberger, T. Schulte, J. Wehr, M. Lewenstein, L. Sanchez-Palencia and K. Sacha, *Disorder-induced order in two-component Bose-Einstein condensates*, Physical Review Letters **100**, 030403 (2008)
- [30] D. Clement, P. Bouyer, A. Aspect and L. Sanchez-Palencia, *Density modulations in an elongated Bose-Einstein condensate released from a disordered potential*, Physical Review A **77**, 033631 (2008)
- [31] C. Dion, P. Sjolund, S. Petra, S. Jonsell, M. Nysten, L. Sanchez-Palencia and A. Kastberg, *Controllable 3D atomic Brownian motor in an optical lattice*, European Physical Journal Special Topics **159**, 11 (2008)
- [32] L. Sanchez-Palencia, D. Clement, P. Lugan, P. Bouyer and A. Aspect, *Disorder-induced trapping versus Anderson localization in Bose-Einstein condensates expanding in disordered potentials*, New Journal of Physics **10**, 045019 (2008)
- [33] J. Billy, V. Josse, Z. Zuo, A. Bernard, B. Hambrecht, P. Lugan, D. Clement, L. Sanchez-Palencia, P. Bouyer and A. Aspect, *Direct observation of Anderson localization of matter-waves in a controlled disorder*, Nature (London) **453**, 891 (2008)
- [34] L. Pezze, B. Hambrecht and L. Sanchez-Palencia, *Dipole oscillations of a Fermi gas in a disordered trap: Damping and localization*, Europhysics Letters **88**, 30009 (2009)

- [35] P. Lugan, A. Aspect, L. Sanchez-Palencia, D. Delande, B. Gremaud, C.A. Mueller and C. Miniatura, *One-dimensional Anderson localization in certain correlated random potentials*, Physical Review A **80**, 023605 (2009)
- [36] L. Sanchez-Palencia and M. Lewenstein, *Disordered quantum gases under control*, Nature Physics **6**, 87-95 (2010)
- [37] M. Robert-de-Saint-Vincent, J.-P. Brantut, B. Allard, T. Plisson, L. Pezze, L. Sanchez-Palencia, A. Aspect, T. Bourdel and P. Bouyer, *Anisotropic 2D diffusive expansion of ultra-cold atoms in a disordered potential*, Physical Review Letters **104**, 220602 (2010)
- [38] L. Sanchez-Palencia, *News and Views: Joint forces against disorder*, Nature Physics **6**, 328-329 (2010)
- [39] L. Pezze and L. Sanchez-Palencia, *Localized and extended states in a disordered trap*, Physical Review Letters **106**, 040601 (2011)
- [40] M. Piraud, P. Lugan, P. Bouyer, A. Aspect and L. Sanchez-Palencia, *Localization of a matter wave packet in a disordered potential*, Physical Review A **83**, 031603(R) (2011)
- [41] L. Pezze, M. Robert-de-Saint-Vincent, T. Bourdel, J.-P. Brantut, B. Allard, T. Plisson, A. Aspect, P. Bouyer and L. Sanchez-Palencia, *Transport regimes of cold gases in a two-dimensional anisotropic disorder*, New Journal of Physics **13**, 095015 (2011)
- [42] P. Lugan and L. Sanchez-Palencia, *Localization of Bogoliubov quasiparticles in interacting Bose gases with correlated disorder*, Physical Review A **84**, 013612 (2011)
- [43] F. Jendrzejewski, A. Bernard, K. Mueller, P. Cheinet, V. Josse, M. Piraud, L. Pezze, L. Sanchez-Palencia, A. Aspect and P. Bouyer, *Three-dimensional localization of ultracold atoms in an optical disordered potential*, Nature Physics **8**, 398-403 (2012)
- [44] M. Piraud, L. Pezze and L. Sanchez-Palencia, *Matter wave transport and Anderson localization in anisotropic 3D disorder*, Europhysics Letters **99**, 50003 (2012)
- [45] M. Piraud, A. Aspect and L. Sanchez-Palencia, *Anderson localization of matter waves in tailored disordered potentials*, Physical Review A **85**, 063611 (2012)
- [46] M. Piraud and L. Sanchez-Palencia, *Tailoring Anderson localization by disorder correlations in 1D speckle potentials*, European Physical Journal Special Topics **217**, 91-102 (2013)
- [47] M. Piraud, L. Pezze and L. Sanchez-Palencia, *Quantum transport of atomic matter waves in anisotropic two-dimensional and three-dimensional disorder*, New Journal of Physics **15**, 075007 (2013)
- [48] G. Carleo, G. Boeris, M. Holzmann and L. Sanchez-Palencia, *Universal superfluid transition and transport properties of two-dimensional dirty bosons*, Physical Review Letters **111**, 050406 (2013)
- [49] S. Lellouch, T.-L. Dao, T. Koffel and L. Sanchez-Palencia, *Two-component Bose gases with one-body and two-body couplings*, Physical Review A **88**, 063646 (2013)
- [50] G. Carleo, F. Becca, L. Sanchez-Palencia, S. Sorella and M. Fabrizio, *Light-cone effect and supersonic correlations in one- and two-dimensional bosonic superfluids*, Physical Review A **89**, 031602(R) (2014)
- [51] S. Lellouch and L. Sanchez-Palencia, *Localization transition in weakly-interacting Bose superfluids in one-dimensional quasiperiodic lattices*, Physical Review A **90**, 061602(R) (2014)
- [52] M. Piraud, L. Sanchez-Palencia and B. van Tiggelen, *Anderson localization of matter waves in 3D anisotropic disordered potentials*, Physical Review A **90**, 063639 (2014)
- [53] L. Sanchez-Palencia, *News and Views: At the edge of mobility*, Nature Physics **11**, 525-526 (2015)
- [54] S. Lellouch, L.-K. Lim and L. Sanchez-Palencia, *Propagation of collective pair excitations in disordered Bose superfluids*, Physical Review A **92**, 043611 (2015)

- [55] L. Cevolani, G. Carleo and L. Sanchez-Palencia, *Protected quasi-locality in quantum systems with long-range interactions*, Physical Review A **92**, 041603(R) (2015)
- [56] G. Boeris, L. Gori, M.D. Hoogerland, A. Kumar, E. Lucioni, L. Tanzi, M. Inguscio, T. Giamarchi, C. D’Errico, G. Carleo, G. Modugno and L. Sanchez-Palencia, *Mott transition for strongly-interacting one-dimensional bosons in a shallow periodic potential*, Physical Review A **93**, 011601(R) (2016)
- [57] L. Cevolani, G. Carleo and L. Sanchez-Palencia, *Spreading of correlations in exactly-solvable quantum models with long-range interactions in arbitrary dimensions*, New Journal of Physics **18**, 093002 (2016)
- [58] C. Crosnier de Bellaistre, A. Aspect, A. Georges and L. Sanchez-Palencia, *Effect of a bias field on disordered wave guides: Universal scaling of conductance and application to ultracold atoms*, Physical Review B **95**, 140201(R) (2017)
- [59] G. Carleo, L. Cevolani, L. Sanchez-Palencia and M. Holzmann, *Unitary dynamics of strongly-interacting Bose gases with time-dependent variational Monte Carlo in continuous space*, Physical Review X **7**, 031026 (2017)
- [60] C. Crosnier de Bellaistre, C. Trefzger, A. Aspect, A. Georges and L. Sanchez-Palencia, *Expansion of a matter wave packet in a one-dimensional disordered potential in the presence of a uniform bias force*, Physical Review A **97**, 013613 (2018)
- [61] L. Cevolani, J. Despres, G. Carleo, L. Tagliacozzo and L. Sanchez-Palencia, *Universal scaling laws for correlation spreading in quantum systems with short- and long-range interactions*, Physical Review B **98**, 024302 (2018)
- [62] H. Yao, D. Clement, A. Minguzzi, P. Vignolo and L. Sanchez-Palencia, *Tan’s contact for trapped Lieb-Liniger bosons at finite temperature*, Physical Review Letters **121**, 220402 (2018)
- [63] L. Sanchez-Palencia, *Quantum simulation: From basic principles to applications*, Comptes Rendus de l’Académie des Sciences (Physique) **19**, 357-364 (2018)
- [64] L. Tarruell and L. Sanchez-Palencia, *Quantum simulation of the Hubbard model with ultracold fermions in optical lattices*, Comptes Rendus de l’Académie des Sciences (Physique) **19**, 365-393 (2018)
- [65] J. Richard, L.-K. Lim, V. Denechard, V.V Volchkov, B. Lecoutre, M. Musawwadah, F. Jendrzejewski, A. Aspect, A. Signoles, L. Sanchez-Palencia and V. Josse, *Elastic scattering time of matter waves in disordered potentials*, Physical Review Letters **122**, 100403 (2019)
- [66] J. Despres, L. Villa and L. Sanchez-Palencia, *Twofold correlation spreading in a strongly correlated lattice Bose gas*, Scientific Reports **9**, 4135 (2019)
- [67] H. Yao, H. Kholdi, L. Bresque and L. Sanchez-Palencia, *Critical behavior and fractality in shallow one-dimensional quasi-periodic potentials*, Physical Review Letters **123**, 070405 (2019)
- [68] A. Signoles, B. Lecoutre, J. Richard, L.-K. Lim, V. Denechard, V.V Volchkov, V. Angelopoulou, F. Jendrzejewski, A. Aspect, L. Sanchez-Palencia and V. Josse, *Ultracold atoms in disordered potentials: Elastic scattering time in the strong scattering regime*, New Journal of Physics **21**, 105002 (2019)
- [69] L. Villa, J. Despres and L. Sanchez-Palencia, *Unraveling the excitation spectrum of many-body systems from quantum quenches*, Physical Review A **100**, 063632 (2019)
- [70] H. Yao, T. Giamarchi and L. Sanchez-Palencia, *Lieb-Liniger bosons in a shallow quasiperiodic potential: Bose glass phase and fractal Mott Lobes*, Physical Review Letters **125**, 060401 (2020)
- [71] L. Villa, J. Despres, S. J. Thomson and L. Sanchez-Palencia, *Local quench spectroscopy of many-body quantum systems*, Physical Review A **102**, 033337 (2020)
- [72] R. Gautier, H. Yao and L. Sanchez-Palencia, *Strongly-interacting bosons in a two-dimensional quasicrystal lattice*, Physical Review Letters **126**, 110401 (2021)

- [73] J. T. Schneider, J. Despres, S. J. Thomson, L. Tagliacozzo and L. Sanchez-Palencia, *Spreading of correlations and entanglement in the long-range transverse Ising chain*, Physical Review Research **3**, L012022 (2021)
- [74] L. Villa, S. J. Thomson and L. Sanchez-Palencia, *Quench spectroscopy of a disordered quantum system*, Physical Review A **104**, L021301 (2021)
- [75] L. Villa, S. J. Thomson and L. Sanchez-Palencia, *Finding the phase diagram of strongly-correlated disordered bosons using quantum quenches*, Physical Review A **104**, 023323 (2021)
- [76] T. Liu, X. Xia, S. Longhi and L. Sanchez-Palencia, *Anomalous mobility edges in one-dimensional quasiperiodic models*, SciPost Physics **12**, 27 (2022)
- [77] J. T. Schneider, S. J. Thomson and L. Sanchez-Palencia, *Entanglement spectrum and quantum phase diagram of the long-range XXZ chain*, Physical Review B **106**, 014306 (2022)
- [78] Z. Zhu, H. Yao and L. Sanchez-Palencia, *Thermodynamic phase diagram of two-dimensional bosons in a quasicrystal potential*, Physical Review Letters **130**, 220402 (2023)
- [79] Z. Zhu, S. Yu, D. Johnstone and L. Sanchez-Palencia, *Localization and spectral structure in two-dimensional quasicrystal potentials*, Physical Review A **109**, 013314 (2024)
- [80] H. Yao, L. Tanzi, L. Sanchez-Palencia, T. Giamarchi, G. Modugno and C. D’Errico, *Mott transition for a Lieb-Liniger gas in a shallow quasiperiodic potential: Delocalization induced by disorder*, Physical Review Letters **133**, 123401 (2024)
- [81] D. Johnstone, S. Mishra, Z. Zhu, H. Yao and L. Sanchez-Palencia, *Weak superfluidity in twisted optical potentials*, submitted (2024)

Publications in broad audience journals

- [1] D. Delande, J.-C. Garreau, L. Sanchez-Palencia and B. van Tiggelen, *La localisation forte d’Anderson*, Images de la Physique **13**, 70 (2009)
- [2] A. Aspect, P. Bouyer, V. Josse and L. Sanchez-Palencia, *Localisation d’Anderson d’atomes ultrafroids dans des potentiels optiques: Vers des simulateurs quantiques*, Images de la Physique **13**, 87 (2009)
- [3] F. Chévy, X. Leyronas and L. Sanchez-Palencia, *Cold atoms and solid state physics*, Revue de l’Electricité et de l’Electronique **4-2012**, 71 (2012)
- [4] L. Sanchez-Palencia, *Viewpoint: Constructing field theories using quantum simulators*, Physics **13**, 10 (2020)
- [5] M. Cheneau and L. Sanchez-Palencia, *Viewpoint: A speed test for ripples in a quantum system*, Physics **13**, 109 (2020)
- [6] with I. Dumé, *How to prepare for the acceleration of quantum technologies*, Polytechnique Insights , June 6th (2023)

Conferences and Invitations

- [1] A.B. Ruffin, L. Sanchez-Palencia, L. Le Hors, J. Van Rudd, J.F. Whitaker and T.B. Norris, *Time Reversal and object reconstruction using single-cycle terahertz pulses*, OSA annual meeting and exhibit 2000, OSA (Providence, Rhode Island, USA, oct. 2000) ; **with proceeding**
- [2] A.B. Ruffin, J.F. Whitaker, T.B. Norris, J. Decker, L. Sanchez-Palencia, L. Le Hors and J. Van Rudd, *Time reversal and object reconstruction*, 13th annual meeting LEOS 2000, IEEE (Rio Grande, Puerto Rico, nov. 2000) ; **with proceeding**
- [3] L. Sanchez-Palencia and G. Grynberg, *Cooling and diffusion of atoms in optical lattices* (oral), Quantum Structures (Munich, Germany, nov. 2000)

- [4] A.B. Ruffin, J. Decker, L. Sanchez-Palencia, L. Le Hors, J.F. Whitaker, J. Van Rudd and T.B. Norris, *Terahertz imaging via time reversal using single-cycle pulses*, OSA Ultrafast Electronics and Optoelectronics (Lake Tahoe, Nevada, USA, jan. 2001) ; **with proceeding**
- [5] A.B. Ruffin, J. Decker, L. Sanchez-Palencia, L. Le Hors, J.F. Whitaker, T.B. Norris and J. Van Rudd, *Time reversed image synthesis of dielectric objects*, CLEO 2001, OSA (Baltimore, Maryland, USA, may 2001) ; **with proceeding**
- [6] M. Schiavoni, F.-R. Carminati, L. Sanchez-Palencia, F. Renzoni and G. Grynberg, *Propagation modes and stochastic resonance in a lattice of cold atoms*, 5e Rencontre du Non Linéaire (Institut Henri Poincaré, Paris, France, mar. 2002) ; **with proceeding**
- [7] L. Sanchez-Palencia, F.-R. Carminati, M. Schiavoni, F. Renzoni and G. Grynberg, *Observing stochastic resonance in dissipative optical lattices (invited)*, Cooling2002 (Visby, Sweden, june 2002) ; **with proceeding**
- [8] L. Sanchez-Palencia, M. Schiavoni, F. Renzoni and G. Grynberg, *Directed diffusion of cold atoms in a symmetric optical lattice* (oral), 6e Rencontre du Non Linéaire (Institut Henri Poincaré, Paris, France, mar. 2003) ; **with proceeding**
- [9] L. Sanchez-Palencia, M. Schiavoni, F. Renzoni and G. Grynberg, *Directed diffusion in optical lattices* (poster), EuroSummer school on Quantum Gases in Low Dimensions (Les Houches, France, apr. 2003)
- [10] L. Sanchez-Palencia, M. Schiavoni, F. Renzoni and G. Grynberg, *Directed diffusion in a 1D symmetric optical lattice* (oral), European Quantum Electronics conference CLEO/EQEC-2003 (Munich, Germany, june 2003)
- [11] L. Sanchez-Palencia, A. Kantian, J. Zakrewski, A. Sanpera and M. Lewenstein, *Fermi glass, quantum spin glass and quantum percolation phases of Fermi-Bose mixtures in inhomogeneous optical lattices* (poster), Quantum limited atom optics (Hannover, Germany, mar. 2004)
- [12] L. Sanchez-Palencia, A. Kantian, J. Zakrewski, A. Sanpera and M. Lewenstein, *Fermi-Bose mixtures in inhomogeneous optical lattices* (poster), Frontiers in quantum gases (Santa Barbara, United States, may 2004)
- [13] L. Sanchez-Palencia and L. Santos, *Bose-Einstein condensate in a quasiperiodic optical lattice: A quantum gas at the edge between order and disorder* (poster), Mesoscopic Phenomena in Ultracold Matter: From Single Atoms to Coherent Ensembles (Dresden, Germany, oct. 2004)
- [14] P. Sjölund, S. Petra, L. Sanchez-Palencia, M. Nylén, C. Dion, S. Jonsell and A. Kastberg, *Realization of a 3D Brownian motor in a double symmetric potential* (poster), International conference on Laser Spectroscopy (Cairngorms National Park, Scotland, United Kingdom, june 2005)
- [15] J. Retter, A.F. Varon, D. Clément, M. Hugbart, L. Sanchez-Palencia, P. Bouyer, A. Aspect, D.M. Gangardt and G.V. Shlyapnikov, *Inhibition of transport of a Bose-Einstein condensate in a random potential*, Conference on Optics and Laser Spectroscopy (ICOLS2005) (Scotland, UK, june 2005) ; **with proceeding** : Laser Spectroscopy: Proceedings of the XVII International Conference, World Scientific, Singapore , 248 (2005)
- [16] L. Sanchez-Palencia and L. Santos, *Bose-Einstein condensate in a optical quasicrystals* (poster), School on quantum phase transitions and non-equilibrium phenomena in cold atomic gases (Trieste, Italy, july 2005)
- [17] D. Clément, A.F. Varon, M. Hugbart, J. Retter, P. Bouyer, L. Sanchez-Palencia, D.M. Gangardt, G.V. Shlyapnikov and A. Aspect, *Suppression of transport of an interacting elongated Bose-Einstein condensate in a random potential* (poster), School on quantum phase transitions and non-equilibrium phenomena in cold atomic gases (Trieste, Italy, july 2005)
- [18] V. Ahufinger, L. Sanchez-Palencia, A. Kantian, B. Damski, A. Sanpera and M. Lewenstein, *Atomic Fermi-Bose mixtures in inhomogeneous and random optical lattices* (poster), School on quantum phase transitions and non-equilibrium phenomena in cold atomic gases (Trieste, Italy, july 2005)

- [19] D. Clément, A.F. Varon, M. Hugbart, J. Retter, P. Bouyer, L. Sanchez-Palencia, D.M. Gangardt, G.V. Shlyapnikov and A. Aspect, *Inhibition du transport d'un condensat de Bose-Einstein dans un potentiel aléatoire 1D*, 9ème Colloque sur les Lasers et l'Optique Quantique (Dijon, France, sept. 2005) ; **with proceeding**
- [20] L. Sanchez-Palencia, V. Ahufinger, A. Kantian, J. Zakrewski, A. Sanpera and M. Lewenstein, *Strongly correlated Fermi-Bose mixtures in random optical lattices (invited)*, 3rd workshop on Theory of quantum gases and quantum coherence (Cortona, Italy, oct. 2005)
- [21] L. Sanchez-Palencia, D.M. Gangardt, P. Bouyer, G.V. Shlyapnikov and A. Aspect, *Interacting Bose-Einstein condensates in random potentials* (poster), workshop of the Institut Francilien de Recherche sur les Atomes Froids (IFRAF) (Paris, France, may 2006)
- [22] L. Sanchez-Palencia, *Quantum phase diagram of an interacting ultracold Bose gas in a 1D random potential (invited)*, Disorder in cold atoms (Barcelona, Spain, jan. 2007)
- [23] D. Clément, P. Lugan, L. Sanchez-Palencia, P. Bouyer, G.V. Shlyapnikov and A. Aspect, *Localization of interacting Bose-Einstein condensates in 1D random potentials* (poster), Disorder in cold atoms (Barcelona, Spain, jan. 2007)
- [24] P. Lugan, D. Clément, P. Bouyer, A. Aspect, M. Lewenstein and L. Sanchez-Palencia, *Quantum states of ultracold, interacting Bose gases in 1D random potentials* (poster), Disorder in cold atoms (Barcelona, Spain, jan. 2007)
- [25] A. Niederberger, J. Wehr, A. Cojuhovski, K. Sacha, L. Sanchez-Palencia and M. Lewenstein, *Random-field-induced order in systems with continuous symmetry* (poster), Disorder in cold atoms (Barcelona, Spain, jan. 2007)
- [26] L. Sanchez-Palencia, D. Clément, P. Lugan, P. Bouyer, G.V. Shlyapnikov and A. Aspect, *Localization of interacting Bose-Einstein condensates expanding in a 1D random potential created by laser speckle (invited)*, APS March meeting (Denver, USA, mar. 2007)
- [27] L. Sanchez-Palencia, *Localization in disordered, interacting ultracold Bose gases (invited)*, Workshop on quantum gases (Paris, France, june 2007)
- [28] P. Lugan, D. Clément, P. Bouyer, M. Lewenstein, A. Aspect and L. Sanchez-Palencia, *Quantum states of interacting Bose gases in 1D random potentials* (poster), Recent progress in studies of quantum gases: theory and experiments (Paris, France, june 2007)
- [29] P. Lugan, D. Clément, P. Bouyer, A. Aspect and L. Sanchez-Palencia, *Anderson localization of the Bogolyubov modes of interacting Bose-Einstein condensates in correlated random potentials* (poster), Recent progress in studies of quantum gases: theory and experiments (Paris, France, june 2007)
- [30] L. Sanchez-Palencia, *Localization of Bose-Einstein condensates in disordered potentials (invited)*, General conference of the French Physical Society (Grenoble, France, july 2007)
- [31] L. Sanchez-Palencia, *Strong localization in interacting Bose gases: meanfield and beyond (invited)*, Workshop on Bose-Einstein Condensates and Coherent Backscattering (Thurnau, Germany, sept. 2007)
- [32] L. Sanchez-Palencia, *Ultracold Bose gases in 1D optical disorder (invited)*, Joint conference on Control of Quantum Correlations in Tailored Matter (Reisensburg, Germany, oct. 2007)
- [33] L. Sanchez-Palencia, *Anderson localization in interacting Bose gases (invited)*, 38th Winter workshop on the Physics of Quantum Electronics (Snowbird, USA, jan. 2008)
- [34] L. Sanchez-Palencia and V. Josse, *Direct observation of Anderson localization of matter-waves in a controlled disorder (invited)*, workshop of the Institut Francilien de Recherche sur les Atomes Froids (IFRAF) (Paris, France, may 2008)

- [35] L. Sanchez-Palencia, *Towards many-body Anderson localization: the case of Bogolyubov quasi-particles (invited)*, Symposium on disorder in cold atomic quantum gases (Ecole Polytechnique, Palaiseau, France, june 2008)
- [36] L. Sanchez-Palencia, *Anderson localization with ultracold atoms (invited)*, EGC Workshop (Gif-sur-Yvette, France, july 2008)
- [37] P. Bouyer, J. Billy, V. Josse, Z. Zuo, A. Bernard, B. Hambrecht, P. Lugan, D. Clément, L. Sanchez-Palencia and A. Aspect, *Anderson localization of matter-waves*, International conference on atomic physics (ICAP2008) (Storrs, USA, july 2008) ; **with proceeding**
- [38] L. Sanchez-Palencia, J. Billy, V. Josse, Z. Zuo, A. Bernard, B. Hambrecht, P. Lugan, D. Clément, P. Bouyer and A. Aspect, *Direct observation of Anderson localization in atomic Bose-Einstein condensates (invited)*, 22nd General conference of the Condensed Matter Division of the European Physical Society (Roma, Italy, aug. 2008)
- [39] L. Sanchez-Palencia, *Anderson localization in interacting Bose-Einstein condensates (invited)*, Strong correlations in multiflavor ultracold quantum gases (Munich, Germany, oct. 2008)
- [40] L. Sanchez-Palencia, *Towards many-body Anderson localization in interacting Bose-Einstein condensates (invited)*, Workshop on Anderson localization in nonlinear and many-body systems (Dresden, Germany, mar. 2009)
- [41] L. Sanchez-Palencia, J. Billy, V. Josse, Z. Zuo, A. Bernard, B. Hambrecht, P. Lugan, D. Clément, P. Bouyer and A. Aspect, *Investigating Anderson localization with gaseous Bose-Einstein condensates (invited)*, DPG March meeting (Dresden, Germany, mar. 2009)
- [42] L. Sanchez-Palencia, *Anderson localization of atomic matter-waves in optical speckle potentials (invited)*, 40th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics (DAMOP 2009) (Charlottesville, Virginia, USA, may 2009)
- [43] A. Aspect, J. Billy, V. Josse, Z. Zuo, A. Bernard, P. Cheinet, P. Lugan, D. Clément, L. Sanchez-Palencia and P. Bouyer, *Anderson localization of matter-waves in a controlled disorder: a quantum simulator ?*, Conference on Optics and Laser Spectroscopy (ICOLS2009) (Kussharo, Japan, june 2009) ; **with proceeding**
- [44] L. Sanchez-Palencia, *Anderson localization of matterwaves in optical speckle (invited)*, Conference on Lasers and Electro-Optics and European Quantum Electronics Conference (CLEO-EQEC 2009) (Munich, Germany, june 2009)
- [45] A. Aspect and L. Sanchez-Palencia, *Anderson localization of ultracold atoms in 1D optical speckles: surprises in a simple problem (invited)*, Conference BEC2009 - Frontiers in Quantum Gases (San Feliu, Spain, sept. 2009)
- [46] L. Sanchez-Palencia, *From single-particle to many-body Anderson localization in interacting Bose gases (invited)*, Conference New Perspectives in Quantum Statistics and Correlations (Heidelberg, Germany, mar. 2010)
- [47] L. Sanchez-Palencia, *Localized and extended states in a disordered trap (invited)*, Plenary Conference of the GdR Physique Quantique Mésooscopique (Aussois, France, sept. 2010)
- [48] L. Sanchez-Palencia, *Coexistence of localized and extended states in a disordered trap (poster)*, Conference Frontiers of Ultracold Atoms and Molecules (Santa Barbara, USA, oct. 2010)
- [49] L. Sanchez-Palencia, *Disordered quantum under control (invited)*, Workshop on Theory of Condensed Matter in Ile-de-France (Paris, France, nov. 2010)
- [50] L. Sanchez-Palencia, *Ultracold atoms in disordered potentials (invited)*, Conference New Trends in Quantum Information and Quantum Optics (Sant Benet (Barcelona), Spain, dec. 2010)
- [51] L. Sanchez-Palencia, *Anderson localization of matter waves in tailored disordered potentials (invited)*, Workshop of the LuMat federation (Orsay, France, june 2011)

- [52] L. Sanchez-Palencia, *Anderson localization of matter waves in disordered potentials with tailored correlations (invited)*, Conference on Waves in Correlated Disorder (Paris, France, nov. 2011)
- [53] L. Sanchez-Palencia, *Ultracold atoms in three-dimensional disorder: Recent advances and perspectives (invited)*, Conference on Strong Correlations and Disorder in Cold Atoms (Lyon, France, dec. 2011)
- [54] L. Sanchez-Palencia, *Anderson localization of matter waves in tailored three-dimensional disorder (invited)*, Workshop on Disordered Quantum Systems (Paris, France, may 2012)
- [55] L. Sanchez-Palencia, *Coexistence of localized and extended states in a disordered trap (invited)*, 43rd Annual Meeting of the Division of Atomic, Molecular, and Optical Physics (DAMOP 2012) (Anaheim, California, USA, june 2012)
- [56] L. Sanchez-Palencia, *Disordered ultracold atoms I: Anderson localization in one dimension (invited)*, Summer School Quantum Many-Body Physics of Ultra-Cold Atoms and Molecules (ICTP-Trieste, Italy, july 2012)
- [57] L. Sanchez-Palencia, *Disordered ultracold atoms II: Quantum transport and Anderson localization in dimension higher than one (invited)*, Summer School Quantum Many-Body Physics of Ultra-Cold Atoms and Molecules (ICTP-Trieste, Italy, july 2012)
- [58] L. Sanchez-Palencia, *Ultracold atoms in controlled disorder I: Speckle disorder, incommensurate lattices, and Anderson localization in one dimension (invited)*, Summer School Low-Dimensional Quantum Many-Body Systems (Trier, Germany, aug. 2012)
- [59] L. Sanchez-Palencia, *Ultracold atoms in controlled disorder II: Anderson localization in two- and three-dimensional anisotropic disorder (invited)*, Summer School Low-Dimensional Quantum Many-Body Systems (Trier, Germany, aug. 2012)
- [60] L. Sanchez-Palencia, *Ultracold atoms in controlled disorder III: Disorder and interactions in quantum gases (invited)*, Summer School Low-Dimensional Quantum Many-Body Systems (Trier, Germany, aug. 2012)
- [61] L. Sanchez-Palencia, *Localization and superfluidity of interacting Bose gases in the presence of disorder (invited)*, Conference Quo Vadis Bose-Einstein Condensation IV (Bad Honnef, Germany, aug. 2012)
- [62] L. Sanchez-Palencia, *Localization and superfluidity of interacting Bose gases in the presence of disorder (invited)*, Conférence Complex Quantum Systems: Non-Ergodicity, Glassiness and Localization (ICTP-Trieste, Italy, aug. 2012)
- [63] L. Sanchez-Palencia, *Many-body Anderson localization disordered Bose gases (invited)*, Conference on Scattering Systems with Complex Dynamics (Regensburg, Germany, sept. 2012)
- [64] L. Sanchez-Palencia, *Many-body Anderson localization disordered Bose gases (invited)*, CEMPI Inaugural Conference (Lille, France, sept. 2012)
- [65] L. Sanchez-Palencia, *Many-body Anderson localization disordered Bose gases (invited)*, Conference Recent Developments in Wave Propagation and Imaging in Complex Media (Paris (IHP), France, nov. 2012)
- [66] L. Sanchez-Palencia, *Superfluid transition and transport properties in two-dimensional, Disordered Bose Fluids (invited)*, Conference Universal Themes of Bose-Einstein Condensation (Leiden, Netherlands, mar. 2013)
- [67] L. Sanchez-Palencia, *Many-body Anderson localization in weakly-interacting Bose fluids (invited)*, Conference Laser Physics (Prague, Czech Republic, july 2013)
- [68] L. Sanchez-Palencia, *Ultracold atoms in controlled Disorder: From one-body to many-body Anderson localization (invited)*, Conference Photonica (Belgrade, Serbia, aug. 2013)
- [69] L. Sanchez-Palencia, *Universal superfluid transition and transport properties of two-dimensional dirty bosons (oral)*, Conference Transport in Interacting Disordered Systems (TIDS15) (San Feliu (Barcelona), Spain, sept. 2013)

- [70] L. Sanchez-Palencia, *Universal superfluid transition and transport properties of two-dimensional dirty bosons* (oral), Conference Quantum Technologies IV (Warsaw, Poland, sept. 2013)
- [71] L. Sanchez-Palencia, *Disordered Bose superfluids (invited)*, Conference Disordered Quantum Systems, from Electrons to Cold Atoms (Orsay, France, may 2014)
- [72] L. Sanchez-Palencia, *Out-of-equilibrium dynamics in many-body quantum systems* (oral), Conference Condensed Matter in Paris (Paris, France, aug. 2014)
- [73] L. Sanchez-Palencia, *Anderson localization in disordered and quasi-periodic Bose superfluids (invited)*, Conference From Photonics to Polaritonics (Bad Honnef, Germany, apr. 2015)
- [74] L. Sanchez-Palencia, *Spreading of quantum correlations in long-range interacting systems* (poster), Conference Bose-Einstein Condensation 2015 (Sant Feliu, Spain, sept. 2015)
- [75] L. Sanchez-Palencia, *Spreading of quantum correlations in short- and long-range interacting systems (invited)*, FINESS-2015: Finite-Temperature Non-Equilibrium Superfluid Systems (Sopot, Poland, sept. 2015)
- [76] L. Sanchez-Palencia, *Localization transitions in disordered and quasiperiodic interacting Bose superfluids (invited)*, Conference Geometry and Dynamics of Quasiperiodic Structures (Paris (IHP), France, nov. 2015)
- [77] L. Sanchez-Palencia, *Mott transition for strongly-interacting one-dimensional bosons in a shallow periodic potential (invited)*, Conference Equations of State in Many-Body Quantum Systems (Trento, Italy, may 2016)
- [78] L. Sanchez-Palencia, *Mott transition for strongly-interacting one-dimensional bosons in a shallow periodic potential* (oral), Conference Dynamics and Transport in Quantum Gases (Cergy-Pontoise, France, june 2016)
- [79] L. Sanchez-Palencia, *Localization transitions in disordered and quasiperiodic interacting Bose superfluids (invited)*, Days of Condensed Matter (Bordeaux, France, aug. 2016)
- [80] L. Sanchez-Palencia, *Anderson localization in interacting, disordered or quasiperiodic, Bose superfluids* (oral), Conference Transport in Interacting Disordered Systems (TIDS16) (Granada, Spain, aug. 2016)
- [81] L. Sanchez-Palencia, *Spreading of quantum correlations in short- and long-range interacting systems (invited)*, Colloquium of the Research Network on Quantum Engineering (IQFA) (Paris, France, nov. 2016)
- [82] L. Sanchez-Palencia, *Out-of-equilibrium dynamics of quantum systems with short- and long-range interactions* (oral), Paris-Saclay Quantum Engineering Network Kick-Off Meeting (Saclay, France, jan. 2017)
- [83] L. Sanchez-Palencia, *Quantum phase transitions in low-dimensional systems: Theory and quantum simulation (invited)*, FET QUIC meeting (Florence, Italy, apr. 2017)
- [84] L. Sanchez-Palencia, *Localization of correlations in interacting Bose superfluids after a quantum quench in the presence of disorder (invited)*, Conference on Many-Body Localization: Advances in the theory and experiments (Trieste, Italy, july 2017)
- [85] L. Sanchez-Palencia, *Superfluid-insulator transition for strongly-interacting one-dimensional bosons in a shallow periodic potential* (poster), Conference Bose-Einstein Condensation 2017 (Sant Feliu, Spain, sept. 2017)
- [86] L. Sanchez-Palencia, *Spreading of information in out-of-equilibrium quantum systems with variable-range interactions (invited)*, PSI2 Workshop of Université Paris-Saclay (Orsay, France, sept. 2017)
- [87] L. Sanchez-Palencia, *Quantum simulation (invited)*, Workshop on Quantum Technologies (CEA, Bruyère-le-Chatel, France, sept. 2017)
- [88] L. Sanchez-Palencia, *Simulation of quantum transport in periodic and disordered systems with ultracold atoms (invited)*, SIRTEQ Kick-Off Meeting (Palaiseau, France, oct. 2017)
- [89] L. Sanchez-Palencia, *Universal scaling laws for correlation spreading in quantum systems with variable-range interactions (invited)*, Conference Entangled Interacting Quantum Matter (Lille, France, nov. 2017)

- [90] L. Sanchez-Palencia, *Universal scaling laws for correlation spreading in quantum systems with variable-range interactions (invited)*, Conference Quantum Many-Body Systems Far from Equilibrium (Stellenbosch, South Africa, mar. 2018)
- [91] L. Sanchez-Palencia, *Correlation spreading in out-of-equilibrium quantum systems with long-range interactions (invited)*, Conference Quantum Transport with Cold Atoms (Ascona, Switzerland, july 2018)
- [92] L. Sanchez-Palencia, *Strongly-correlated ultracold bosons in one dimension (invited)*, Condensed Matter Days (Grenoble, France, aug. 2018)
- [93] L. Sanchez-Palencia, *Disordered quantum gases I: Controlled disorder in ultracold quantum gases (invited)*, International School on Quantum Gases (Chlef, Algeria, nov. 2018)
- [94] L. Sanchez-Palencia, *Disordered quantum gases II: Anderson localization of 1D matter waves (invited)*, International School on Quantum Gases (Chlef, Algeria, nov. 2018)
- [95] L. Sanchez-Palencia, *Disordered quantum gases III: Anderson localization of 3D matter waves (invited)*, International School on Quantum Gases (Chlef, Algeria, nov. 2018)
- [96] L. Sanchez-Palencia, *Disordered quantum gases IV: Disorder in correlated ultracold gases (invited)*, International School on Quantum Gases (Chlef, Algeria, nov. 2018)
- [97] L. Sanchez-Palencia, *Out-of-equilibrium dynamics in some correlated quantum systems (invited)*, Conference Entangled Interacting Quantum Matter (Lyon, France, nov. 2018)
- [98] L. Sanchez-Palencia, *Universal scaling laws for correlation spreading in long-range quantum systems (invited)*, Conference Research Frontiers in Ultracold Quantum Gases (Bad Honnef, Germany, dec. 2018)
- [99] L. Sanchez-Palencia, *Introduction to open quantum systems I (invited)*, Summer School Dynamics and Disorder in Quantum Many Body Systems Far From Equilibrium (Les Houches, France, july 2019)
- [100] L. Sanchez-Palencia, *Introduction to open quantum systems II (invited)*, Summer School Dynamics and Disorder in Quantum Many Body Systems Far From Equilibrium (Les Houches, France, july 2019)
- [101] L. Sanchez-Palencia, *What can a duck swim teach us about the dynamics of a correlated quantum system? (invited)*, Workshop Dynamics and Interactions in Quantum Gases (Menorca, Spain, sept. 2019)
- [102] L. Sanchez-Palencia, *What can a duck swim teach us about the dynamics of a correlated quantum system? (invited)*, Workshop on Long-Range Interactions in Quantum Systems (Gif-sur-Yvette, France, sept. 2019)
- [103] L. Sanchez-Palencia, *Introduction to open quantum systems I (invited)*, IQUPS Quantum Engineering Lecture Series (session V) (University Paris-Saclay, France, nov. 2019)
- [104] L. Sanchez-Palencia, *Introduction to open quantum systems II (invited)*, IQUPS Quantum Engineering Lecture Series (session V) (University Paris-Saclay, France, nov. 2019)
- [105] L. Sanchez-Palencia, *Introduction to open quantum systems III (invited)*, IQUPS Quantum Engineering Lecture Series (session V) (University Paris-Saclay, France, nov. 2019)
- [106] L. Sanchez-Palencia, *Introduction to open quantum systems IV (invited)*, IQUPS Quantum Engineering Lecture Series (session V) (University Paris-Saclay, France, nov. 2019)
- [107] L. Sanchez-Palencia, *Quantum simulation with ultracold atoms (invited)*, Quantum meeting @X (Palaiseau, France, aug. 2020)
- [108] L. Sanchez-Palencia, *Strongly-correlated bosons in optical quasicrystals (poster)*, Conference Bose-Einstein Condensation 2021 (Sant Feliu, Spain, sept. 2021)
- [109] L. Sanchez-Palencia, *Strongly-correlated bosons in optical quasicrystals (invited)*, IPP-NTU conference (Palaiseau, France, june 2022)

- [110] L. Sanchez-Palencia, *Localization in ultracold-atom quasiperiodic models (invited)*, Conference Theory of Wave Scattering in Complex and Random Media (Cambridge, United Kingdom, mar. 2023)
- [111] L. Sanchez-Palencia, *Quantum many-body physics I: Introduction (invited)*, International School on Quantum Science and Technology (Trieste, Italy, may 2023)
- [112] L. Sanchez-Palencia, *Quantum many-body physics II: Models and methods (invited)*, International School on Quantum Science and Technology (Trieste, Italy, may 2023)
- [113] L. Sanchez-Palencia, *Quantum many-body physics III: Quantum simulation of disordered and quasiperiodic models (invited)*, International School on Quantum Science and Technology (Trieste, Italy, may 2023)
- [114] L. Sanchez-Palencia, *Strongly-interacting bosons in a two-dimensional quasicrystal optical potential (invited)*, Humboldt Kolleg on Synthetic Quantum Matter (Vilnius, Lithuania, july 2023)
- [115] L. Sanchez-Palencia, *Strongly-correlated bosons in optical quasicrystals* (poster), Conference Bose-Einstein Condensation 2023 (Sant Feliu, Spain, sept. 2023)
- [116] L. Sanchez-Palencia, *Strongly-correlated bosons in optical quasicrystals: Localization, fractality, and Bose-glass physics (invited)*, Conference Quantum Simulators 2024 (Paris, France, feb. 2024)
- [117] L. Sanchez-Palencia, *Quantum simulation of quasicrystals with ultracold atoms (invited)*, Conference CAFQA 2024 (Ottawa, Canada, may 2024)
- [118] L. Sanchez-Palencia, *Many-body physics in the era of quantum simulation I (invited)*, International School on Quantum Science and Technology (Erice, Italy, june 2024)
- [119] L. Sanchez-Palencia, *Many-body physics in the era of quantum simulation II (invited)*, International School on Quantum Science and Technology (Erice, Italy, june 2024)
- [120] L. Sanchez-Palencia, *Many-body physics in the era of quantum simulation III (invited)*, International School on Quantum Science and Technology (Erice, Italy, june 2024)

Seminars

- [1] L. Sanchez-Palencia and T.B. Norris, *Object reconstruction using terahertz laser pulses*, Laboratory seminar of the Center for Ultrafast Optical Science (Ann Arbor, Michigan, USA, june 1999)
- [2] L. Sanchez-Palencia, *Doppler and Sisyphus cooling, introduction to optical lattices (invited)*, talk given for the tutors' formation at the Université Pierre et Marie Curie (Paris VI) (Paris, France, may 2001)
- [3] L. Sanchez-Palencia and G. Grynberg, *Spatial diffusion in a periodic optical lattice: Sisyphus effect from jumping to oscillating regime (invited)*, group seminar of the Ultracold Atoms Group of the Laboratoire Kastler-Brossel (Paris, France, june 2001)
- [4] L. Sanchez-Palencia and G. Grynberg, *Transport in dissipative optical lattices: from Brillouin propagation modes to stochastic resonance (invited)*, group seminar of the Laser Cooling and Trapping Group at Stockholm University (Stockholm, Sweden, mar. 2002)
- [5] L. Sanchez-Palencia, *The benefits of noise in microscopic physics: application to dissipative optical lattices (invited)*, Ph-D students seminar of the Laboratoire Kastler-Brossel (Paris, France, mar. 2002)
- [6] L. Sanchez-Palencia, *Stochastic resonance, a new paradigm for noisy physical systems (invited)*, talk given for the Ph-D students formation at the Ecole Polytechnique (Palaiseau, France, may 2002)
- [7] L. Sanchez-Palencia, *Nonlinear dynamics of cold atoms in dissipative optical lattices (invited)*, seminar of the laboratoire de Physique des Lasers, Atomes et Molécules (Lille, France, nov. 2003)

- [8] L. Sanchez-Palencia, *The role of dissipation in optical lattices : atomic transport and related phenomena (talk given in the memory of Professor Gilbert Grynberg)* (**invited**), SFB 407 Kolloquium (Hannover, Germany, nov. 2003)
- [9] L. Sanchez-Palencia, *Ultracold quantum gases in ordered and disordered optical lattices, part I: quasiperiodic lattices*, group seminar of the atom optics group, Institut d'Optique, University Paris-Sud (Orsay, France, jan. 2005)
- [10] L. Sanchez-Palencia, *Ultracold quantum gases in ordered and disordered optical lattices, part II: Fermi-Bose mixtures in disordered optical lattices*, group seminar of the atom optics group, Institut d'Optique, University Paris-Sud (Orsay, France, feb. 2005)
- [11] L. Sanchez-Palencia, *Bose-Einstein condensates: a few challenges related to recent experiments* (**invited**), Alain Bouyssy colloquium, University Paris-Sud (Orsay, France, feb. 2005)
- [12] L. Sanchez-Palencia, *Ultracold quantum gases in periodic and disordered optical lattices* (**invited**), general seminar of the Institut Non Linéaire de Nice (Nice, France, apr. 2005)
- [13] L. Sanchez-Palencia, *Disordered quantum systems: a new challenge for ultracold atomic gases* (**invited**), general seminar of the physics department of the University of Umea (Umea, Sweden, mar. 2006)
- [14] L. Sanchez-Palencia, *Recipes to observe Anderson localization in the expansion of an interacting Bose-Einstein condensate* (**invited**), seminar of the Laboratoire de Physique Théorique et Modèles Statistiques (Orsay, France, sept. 2006)
- [15] L. Sanchez-Palencia, *Ultracold gases as laboratories for mesoscopic physics: the example of disordered quantum systems* (**invited**), seminar of the theoretical physics group at the University of Bayreuth (Bayreuth, Germany, may 2007)
- [16] L. Sanchez-Palencia, *Ultracold quantum gases in disordered potentials* (**invited**), seminar of the Institut Francilien de Recherche sur les Atomes Froids (Palaiseau, France, nov. 2007)
- [17] L. Sanchez-Palencia, *Ultracold Bose gases in controlled disorder : from single-particle to many-body Anderson localization* (**invited**), symposium on vortex lattices and quantum Hall effect (Palaiseau, France, nov. 2008)
- [18] L. Sanchez-Palencia, *Ultracold Bose gases in controlled disorder : from single-particle to many-body Anderson localization* (**invited**), colloquium of the Institute for Condensed Matter Theory (Karlsruhe, Germany, dec. 2008)
- [19] L. Sanchez-Palencia, *Anderson localization in ultracold atomic gases* (**invited**), Seminar of theoretical physics at Ecole Normale Supérieure de Lyon (Lyon, France, feb. 2009)
- [20] L. Sanchez-Palencia, *Coherent matter-waves in disordered potentials* (**invited**), Seminar of the Applied Mathematics Center at Ecole Polytechnique (Palaiseau, France, mar. 2009)
- [21] L. Sanchez-Palencia, *Anderson localization of matterwaves in speckle potentials* (**invited**), Seminar of Laboratoire de Physique et Modélisation des Milieux Condensés (Grenoble, France, sept. 2009)
- [22] L. Sanchez-Palencia, *Coexistence of localized and extended states in a disordered trap*, Seminar of the Atom Optics group of Institut d'Optique (Palaiseau, France, june 2010)
- [23] L. Sanchez-Palencia, *Anderson localization of ultracold atoms in speckle potentials: New aspects of a old problem* (**invited**), Seminar of condensed-matter theory network of Plateau de Saclay (Orsay, France, sept. 2010)
- [24] L. Sanchez-Palencia, *Ultracold atoms in disordered potentials: Anderson localization and related topics* (**invited**), Seminar of Statistical Physics of CEA-Saclay (Saclay, France, mar. 2011)
- [25] L. Sanchez-Palencia, *Anderson localization of ultracold atoms in speckle potentials* (**invited**), Seminar of the Laboratoire de Physique Statistique de l'Ecole Normale Supérieure (Paris, France, mar. 2011)

- [26] L. Sanchez-Palencia, *Anderson localization of ultracold atoms in anisotropic three-dimensional disorder (invited)*, Seminar of the Institut de Ciències Fotoniques (Barcelona, Spain, July 2011)
- [27] L. Sanchez-Palencia, *Anderson localization of matter waves in correlated disorder (invited)*, Theory seminar of the Institut für Theoretische Physik (Hannover, Germany, Dec. 2012)
- [28] L. Sanchez-Palencia, *Disordered Bose superfluids (invited)*, Seminar of the European Laboratory for Non-Linear Spectroscopy (Florence, Italy, Feb. 2014)
- [29] L. Sanchez-Palencia, *Disordered Bose superfluids (invited)*, Seminar of the Laboratory of Condensed Matter Physics of CEA (Saclay, France, Mar. 2014)
- [30] L. Sanchez-Palencia, *Spreading of quantum correlations in short- and long-range interacting systems (invited)*, Seminar of Laboratoire de Physique et Modélisation des Milieux Condensés (Grenoble, France, Apr. 2015)
- [31] L. Sanchez-Palencia, *Spreading of quantum correlations in short- and long-range interacting systems (invited)*, Seminar of the Institut de Ciències Fotoniques (Barcelona, Spain, June 2015)
- [32] L. Sanchez-Palencia, *Quantum simulation with ultracold atoms: A theoretical perspective (invited)*, Colloquium of the Center for Theoretical Physics of Ecole Polytechnique (Palaiseau, France, Oct. 2016)
- [33] L. Sanchez-Palencia, *Spreading of quantum correlations in short- and long-range interacting systems (invited)*, Seminar of the Strathclyde University (Glasgow, United Kingdom, Apr. 2017)
- [34] L. Sanchez-Palencia, *Spreading of information in out-of-equilibrium particle and spin systems with long-range interactions (invited)*, Colloquium du Russian Quantum Center (Moscow, Russia, Sept. 2017)
- [35] L. Sanchez-Palencia, *How do correlations and entanglement spread out in long-range quantum systems? (invited)*, Seminar of the Physics Department of the Kaiserslautern University (Kaiserslautern, Germany, Apr. 2019)
- [36] L. Sanchez-Palencia, *Quantum Technologies: Dreams and reality (invited)*, Broad audience conference at lycée Jean Jaurès (Argenteuil, France, Dec. 2019)
- [37] L. Sanchez-Palencia, *Quasicrystals : From solid-state crystallography to correlated quantum fluids (invited)*, Colloquium du réseau Quantum Materials ((en ligne) Portugal, June 2021)
- [38] L. Sanchez-Palencia, *Quantum: From physics to technologies (invited)*, Webinaire Digital Intelligence of Institut Mines-Telecom (France, Jan. 2022)
- [39] L. Sanchez-Palencia, *Quantum simulation of correlated quantum systems (invited)*, Seminar of the INRIA-QUACS group (ENS Paris-Saclay, France, May 2023)
- [40] L. Sanchez-Palencia, *All is quantum (invited)*, Broad audience conference at Ecole Polytechnique (Palaiseau, France, Oct. 2023)
- [41] L. Sanchez-Palencia, *Quasicrystals : From solid-state crystallography to correlated quantum fluids (invited)*, Seminar at Técnico Lisboa (Portugal, Dec. 2023)
- [42] L. Sanchez-Palencia, *Light at the heart of quantum science and technologies (invited)*, IPParis research day (Palaiseau, Sept. 2024)