



CURRICULUM VITAE

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NAME: Pietro Alberto Massignan
POSITION: Associate Professor at *Universitat Politècnica de Catalunya*
(promotion to Full Professor expected in Spring 2025)
& *ICREA Academia* awardee
BIRTH: born in Milano (Italia) on the 20 of December 1977
NATIONALITY: Italian

EDUCATION AND ACADEMIC DEGREES

- Bachelor and Master studies in *Theoretical Physics* at the *Università degli Studi* in Milano, 1996-2002.
- Master thesis developed at *LENS* in Florence, group of Prof. M. Inguscio, 2001-2002.
M.Sc. Thesis: “*One-dimensional model for the study of the expansion of elongated Bose Einstein condensates from optical lattices*”. Thesis defended in March 2002. Grade: 110/110 “cum laude”.
- Ph.D. studies in *Theoretical Quantum Physics* at the *Niels Bohr Institute* and *NORDITA* in Copenhagen, group of Profs. C. Pethick, H. Smith, and B. Mottelson, 2003-2006. Thesis defended in February 2006.
Ph.D. Thesis: “*Positive ions, collective modes and Anderson localization in ultracold gases*”. Grade: “Excellent”.

SCIENTIFIC CAREER

- PostDoc researcher at the *Institute for Theoretical Physics* in Utrecht, group of Prof. H. Stoof, 2006-2008.
- Joint PostDoc position at ICFO/UAB in Barcelona, groups of Profs. M. Lewenstein and A. Sanpera, 2008-2010.
- Research Fellow at ICFO in Barcelona, group of Prof. M. Lewenstein, 2011-2014.
- *Ramón y Cajal* Fellow at ICFO and UPC (tenure track grant), 2015-2019.
- *Associate Professor* at *Universitat Politècnica de Catalunya* (UPC), 2020-present.

AREAS OF RESEARCH AND INVESTIGATION

- ultracold quantum gases: quantum engineering (preparation, manipulation, and detection) of exotic states of matter, few- and many-body physics, pairing and superfluidity in unitary Fermi gases and quantum mixtures, synthetic gauge fields for ultracold neutral atoms, disordered interacting systems, open quantum systems
- emergence, characterization and detection of topological properties in photonic systems and ultracold atoms
- anomalous transport and self-organization in biological complexes and quantum stochastic systems
- machine-learning algorithms for classical and quantum systems

ORGANIZATION OF INTERNATIONAL CONFERENCES AND MEETINGS

- 2025: Winter School on *Ultracold Many-Body Systems*, Benasque (Spain)
- 2023: Conference on *Quantum coherent dynamics: turbulence, non-equilibrium and interactions*, Barcelona (Spain).
- 2023: *Barcelona Cold Atoms Meeting* (Spain).
- 2022: CAPS (*Cold Atoms Physics Spain*) School on *Ultracold Atoms*, Barcelona (Spain).
- 2021: Trimester (June to August) on *Interacting Topological Matter: Atomic, Molecular and Optical Systems* (KITP - Kavli Institute for Theoretical Physics - Santa Barbara, California, USA).
- 2019: Conference on *Dynamics and interactions in quantum gases*, Maó (Menorca, Spain).
- 2018: Meeting on *Ultracold Quantum Mixtures (UPC-LENS-Århus-MPQ-ICFO)*, Barcelona (Spain).
- 2017: Workshop *From few to many: exploring quantum systems one atom at a time*, Obergurgl (Austria).

SCIENTIFIC HONORS AND AWARDS

- 2023-24: Researcher with largest number of *Highly Cited Papers* (ESI-WoS) of the whole Physics Dep. at UPC
- 2021: *ICREA Academia Award* (for the period 2022-2026) by ICREA
- 2021: Award for “*special quality in teaching*” (for the period 2017-2021) by UPC
- 2021: Awarded three consecutive *Research sexennia* (2003-2020) and one *Teaching Quinquennium* (2017-2021)
- 2021: *Sant Jordi Award* for authoring the most downloaded new book in the UPC collection
- 2020: Granted *Tenure* at the Universitat Politècnica de Catalunya
- 2012: TOQATA prize
- *Outstanding Referee* of the *American Physical Society* (2019) and of the *Institute of Physics* (2016).
- **Habilitations:**
 - 2023: Catalan habilitation for *Full Professor* positions (*Acreditació de recerca avançada*)
 - 2019: Italian habilitation for *Professore Ordinario* (I Fascia - sett.02/B2)
 - 2018: Italian habilitation for *Professore Associato* (II Fascia - sett.02/B2)
 - 2013: Catalan habilitation for *Associate Professor* positions (*Acreditació de recerca*)
 - 2013: French habilitation as a *Maître de conférences*.

GUEST POSITIONS AND EXTENDED STAYS

- Visiting scientist at *Institut Henry Poincaré* and *ENS (LKB)* in Paris; one month stays in 2024, 2012, and 2007.
- Visiting scientist at *Kavli Institute for Theoretical Physics* in Santa Barbara (USA); three months in 2021 (as organizer of a *KITP* program), one month in 2016, and another month in 2010.
- Visiting scientist at *Center for Theoretical Physics* in Aspen (USA); three weeks stays in 2017, 2015, and 2011.
- Visiting scientist at *Institut d'Etudes Scientifiques* in Cargèse (France); one week in 2016.
- Visiting scientist at *Centro de Ciencias* in Benasque (Spain); one week in 2019, and one in 2016.
- Visiting scientist at *Institute for Nuclear Theory* in Seattle (USA); two weeks in 2014.
- Visiting scientist at *Aarhus Institute of Advanced Studies*; one week in 2014, and one in 2013.
- Visiting scientist at *BEC Center* in Trento (Italy); one week in 2013.
- Visiting scientist at *Nordita* in Stockholm; two weeks in 2013.
- Visiting scientist at *ITAMP - Harvard-Smithsonian Center for Astrophysics*, Cambridge (USA); two weeks in 2012.
- Visit at *TCM laboratory* in Cambridge (UK); one week in 2012, and one in 2011.
- Visit at *Institut d'Optique* in Palaiseau (Paris, France); one week in 2011.
- Visiting scientist at *BEC Center* in Trento (Italy), group of Profs. S. Stringari and L. Pitaevskii, 2008.
- Visiting Research Fellow at *NORDITA*, Copenhagen; two months in 2006.
- **Visiting PhD guest at École Normale Supérieure (LKB) in Paris; nine months in 2004-2005.**
- European grant for preDoctoral studies at *LENS*, Florence; eight months in 2002.

EXTERNAL FUNDING SECURED

- *Proyecto Nacional* awarded to our research group at UPC (with myself as a PI) in 2023 (315k€, including 1 PhD).
- *Catalunya Quantum Academy*: funding awarded to UPC (with myself as the UPC coordinator) for the period 2024-25 to support actions for attracting, training, and retaining talent within the quantum ecosystem in Catalunya (145k€).
- Three *Marie Skłodowska-Curie* grants for PostDoctoral researchers joining my group, awarded by the *European Commission* to Andrea Tononi (2024), Andrea Richaud (2022) and Giulia De Rosi (2018) (180k€ each, total: 540k€).
- *ICREA Academia Award*: a prestigious personal grant offered by ICREA (Catalan Institution for Research and Advanced Studies), which aims at supporting excellent research done by permanent Professors in the Catalan Universities, for the period 2022-2026 (200k€).
- *Ramón y Cajal Fellowship*: the most prestigious personal research grant in Spain, yielding funding for 5 years of independent research and designed to lead the researcher to a tenured position. Awarded to me by the *Spanish Ministry of Research*. I have been employed at ICFO and UPC under this grant from 2015 until 2019 (300k€).
- Grant for the organization of a Trimester on *Interacting Topological Matter* and associated Conference, awarded to us by the *Kavli Institute for Theoretical Physics* of Santa Barbara in California, USA (~300k€).
- Two consecutive *Proyectos Nacionales* awarded to my research group at UPC in 2017 and 2020 (170k€).
- EU FEDER project *QuantumCAT*: research network grant funding disruptive quantum technologies (1.8M€ in total, of which 330k€ to my node at UPC).
- EU FET Proactive Grant on *Quantum Insulators and Conductors* (2.4M€, of which 540k€ to my node at ICFO).
- *Beatriu de Pinós* grant for a PostDoctoral researcher to join my group, awarded to Arturo Camacho-Guardian by *AQU-Catalunya* in 2021 (144k€). [declined by the awardee, because already employed somewhere else at the moment of notification]
- *Della Riccia* research grant for a PostDoctoral researcher to join my group, awarded to Giulia De Rosi by the *Fondazione Della Riccia* in 2018 (15k€).
- Grant for the organization of the Obergurgl Conference/School “From few to Many”, awarded to me by the *ExtreMe Matter Institute EMMI* in 2017 (20k€).
- Travel grant to allow a foreign PhD student to visit my group, awarded by *EU COST - ATOMQT* in 2019 (0.9k€).
- Grants for the organization of Meetings on *Ultracold Quantum Mixtures (UPC-LENS-Århus-MPQ-ICFO)*, awarded by the *Universitat Politècnica de Catalunya* in 2018 (0.7k€) and 2020 (1.2k€).
- Grants for research stays at the Aspen Center for Theoretical Physics, Aspen (CO, USA), awarded to me by the *Simons Foundation* in 2011 and 2015 (2k€).
- Grant for a research stay at ITAMP - Harvard-Smithsonian Center for Astrophysics, Cambridge (MA, USA), awarded to me in 2012 (2k€).
- Grant for a research stay at the KITP - Kavli Institute for Theoretical Physics, Santa Barbara (CA, USA), awarded to me in 2010 (2k€) and 2016 (1.6k€).
- Research grant for PostDoctoral studies at ICFO, awarded to me by the *Cellex Foundation* in 2013 (35k€).
- Postdoctoral Fellowship at ICFO, granted within the EuroQuam-FerMix network, awarded by the *European Science Foundation* in 2008 (45k€).
- Full PhD Fellowship granted by the University of Copenhagen, awarded to me in 2003.
- Pre-Doctoral grant to pursue studies at LENS, awarded in 2002 by the *European Union*.

TALKS AT INTERNATIONAL CONFERENCES

- 2025 Workshop on *Unconventional Optical Lattices*, Vilnius (LT). [invited]
- 2024 Workshop on *Collective Phenomena and Out-of-Equilibrium Many-Body States*, Konstanz (DE). [invited]
- 2024 Workshop on *Non-Equilibrium Phenomena in Strongly-Correlated Ultracold Matter*, Erice (IT). [invited]
- 2024 Programme on *Quantum Many-Body Systems Out of Equilibrium*, IHP-Paris (FR). [invited]
- 2023 Conference on *Impurity Physics with Cold Atoms and Ions*, Aarhus Inst. for Advanced Studies (DK). [invited]
- 2022 Workshop on *Cold Atoms (CAW 2022)*, Madrid (ES). [invited]
- 2022 Workshop on *Quantum Bubble Physics*, online (organized by Hannover U.) [invited]
- 2022 Workshop on *Fermi polarons: from ultracold gases to 2D semiconductors (FermiPolar)*, online. [invited]
- 2021 Workshop on *Cold Atoms (CAW 2021)*, Granada (ES). [invited]
- 2021 Conference on *Bose Einstein Condensation (BEC 2021)*, Sant Feliu (ES). [invited]
- 2021 Workshop on *Correlations in Mesoscopic Fermi Systems*, Heidelberg (DE). [invited]
- 2021 joint Grenoble-Barcelona-Tsukuba Workshop on *Clustering and global challenges* (online). [invited]
- 2020 Workshop on *Mesoscopic cold atom systems in and out of equilibrium*, MPI-PKS Dresden (DE). [invited]
- 2020 Conference on *New frontiers in photonics*, Madrid (ES). [invited / rescheduled due to COVID]
- 2020 Conference on *New Challenges in Optics*, Samarkand (UZ). [invited / rescheduled due to COVID]
- 2020 Conference on *Quantum Simulation and Quantum Walks*, CIRM, Marseille (FR).
- 2018 Workshop on *Cold Atoms*, U. of the Basque Country, Bilbao (ES). [invited / cancelled for paternity leave]
- 2018 Workshop on *Quantum Simulations with Atoms and Light*, Aarhus Inst. for Advanced Studies (DK). [invited]
- 2018 Workshop on *Quantum Machine Learning and Biomimetic Quantum Technologies*, Bilbao (Spain).
- 2017 Workshop on *Synthetic dimensions in quantum engineered systems*, ETH, Zurich (Switzerland). [invited]
- 2017 Conference on *Quantum Simulation*, Ecole Normale Supérieure, Paris (France).
- 2017 Workshop on *Correlations and Entanglement in and out of Equilibrium*, Aspen (CO-USA).
- 2016 KITP program *Universality in Few-Body Systems*, Santa Barbara (CA-USA).
- 2016 Workshop on *Disorder in Condensed Matter and Ultracold Atoms*, Cargèse (France). [invited]
- 2015 Autumn Meeting on *Imbalanced Fermi-Fermi mixtures*, Maria Waldraut (Austria).
- 2015 Workshop on *Ultra-Cold Quantum Matter with Atoms and Molecules*, Aspen (CO-USA).
- 2015 Conference *UPoN: Unsolved Problems on Noise*, Barcelona (ES). [invited]
- 2015 POLATOM ESF Conference *Cold atoms, excitons and polaritons*, Bad Honnef (DE).
- 2014 Workshop *New Trends in Topological Insulators*, Berlin-Brandenburg Academy of Sciences, Berlin (Germany).
- 2014 AIAS Workshop *Cold atoms and beyond*, Aarhus Institute for Advanced Studies, Aarhus (Denmark). [invited]
- 2014 INT program *Universality in few-body systems*, Seattle (USA).
- 2013 Guest Lecture at AIAS (the Aarhus Institute of Advanced Studies, Denmark).
- 2013 Summer Programme on *Synthetic Gauge Fields for Photons and Atoms*, BEC Center in Trento (Italy).
- 2013 OIST workshop *Coherent Control of Complex Quantum Systems*, Okinawa (Japan).
- 2013 NORDITA workshop *Pushing the Boundaries with Cold Atoms*, Stockholm (Sweden).
- 2012 joint ICFO-Hamburg Meeting, Center for Optical Quantum Technologies, Hamburg (Germany).
- 2012 POLATOM ESF workshop *Cold atoms, excitons and polaritons*, Cambridge (UK).

- 2012 Workshop on *Advances in Quantum Technologies*, International Institute of Physics, Natal (Brasil).
- 2012 Workshop on *Research Frontiers in Ultra-Cold Atoms and Molecules*, ITAMP, Harvard (MA-USA). [invited]
- 2012 joint LENS-ICFO Meeting, Institute of Photonic Sciences, Castelldefels (Spain).
- 2012 Winter Meeting on *Imbalanced Fermi-Fermi mixtures*, Maria Waldrast (Austria).
- 2011 Summer Meeting on *Coherent quasiparticle spectroscopy in Fermi-Fermi mixtures*, Maria Waldrast (Austria).
- 2011 Workshop on *Few- and Many-Body Physics in cold quantum gases near resonances*, Aspen (CO-USA).
- 2011 *IFRAF-FerMix* meeting, Paris (France).
- 2011 Spring Meeting on *Strongly-imbalanced Fermi-Fermi mixtures*, Maria Waldrast (Austria).
- 2010 ICFO-MPQ Joint meeting *New trends in Quantum Information and Quantum Optics*, Sant Benet (Spain).
- 2010 KITP program *Beyond Standard Optical Lattices*, Santa Barbara (CA-USA).
- 2010 Symposium on *Cold Atoms and Condensed Matter*, Vedbaek (Denmark). [invited]
- 2010 Workshop on *Correlations in Quantum Gases*, Maò (Menorca-Spain). [invited]
- 2010 Workshop on *Theory of quantum gases and quantum coherence*, Nice (France). [invited]
- 2009 ITAMP Conference on *Efimov States in molecules and nuclei*, Roma (Italy). [invited]
- 2009 *FerMix* meeting, Trento (Italy).
- 2008 *Physics@FOM*, Veldhoven (The Netherlands).
- 2007 *International Trimester on Quantum Gases*, Institut Henry Poincaré, Paris (France).
- 2007 *Spring Meeting* of the Dutch Physical Society, Lunteren (The Netherlands).
- 2005 Conference *Ultracold Plasma and Rydberg Systems*, Gif-sur-Yvette, Paris (France).

EDITORIAL BOARD AND PEER-REVIEWING ACTIVITIES

- Referee of the *European Commission* (EIC, MSCA, FP7 and CoFund calls).
- Referee of the *European Association of National Metrology Institutes* (EURAMET).
- Referee of the Austrian *Wissenschaftsfonds* (FWF), of the French *Agence National de la Recherche* (ANR), of the *Dutch Research Council* (NWO), of the Polish *National Science Centre* (NCN), of the Italian *Ministero dell'Istruzione, dell'Università e della Ricerca* (MIUR), of the Spanish Funding Agency, and of the *Latvian Council of Science*.
- Member of the Editorial Board of PLOS ONE.
- Referee for: *Nature*, *Science*, *PRX*, *Nature Physics*, *PRL*, *EPL*, *Nature Comm.*, *NJP*, *SciPost*, *PRA*, *J. Stat. Mech.*, *Ann. Phys.*, *J. Phys. A*, *J. Phys. B*, *EPJB*, *Few-Body Syst.*, *Fortschritte der Physik*, *Photonics*, *Crystals*.

SCIENTIFIC ADMINISTRATION TRAINING AND EXPERIENCE

- Training program on “*Patent Engineering and Management*” at ICFO (Barcelona), 2012.
- Training program “*From Science to Business*” at ESADE international business school (Barcelona), 2012.
- Responsible of ICFO collaboration in the ESF *EuroQuam* network, and in a EC FP7 Training Network proposal.

OUTREACH ACTIVITIES

- Author of a general public review titled “*Quantum Technologies and Society*”, published by ICFO in the framework of the ICFO/CatalunyaCaixa “*Ignacio Cirac Program Chair*” in 2010.
- Guide to the exhibition “*Som’Hi*” organized at *Universitat Autònoma de Barcelona* by Prof. A. Sanpera in 2010, in collaboration with Prof. Tilman Pfau, Univ. of Stuttgart; in a single month, it attracted 5000 students, aged 5-18.
- Museum guide for the exhibition “*The electrical revolution*” at *la Triennale* in Milano; three months in 1999.

REFEREED PUBLICATIONS

My most important publications are marked with an asterisk (*)

For continuously updated information, see my webpage <http://www.fen.upc.edu/users/pietro/>

PAPERS

72	<p><i>Polarons in atomic gases and two-dimensional semiconductors</i> P. Massignan, R. Schmidt, G. E. Astrakharchik, A. Imamoglu, M. Zwierlein, J. Arlt and G. M. Bruun arXiv:2501.09618. [under review at <i>Rev. Mod. Phys.</i>]</p>
71	<p><i>Dynamical signature of vortex mass in Fermi superfluids</i> A. Richaud, M. Caldara, M. Capone, P. Massignan, and G. Wlazłowski arXiv:2410.12417.</p>
70	<p><i>Superfluid fraction of interacting bosonic gases</i> D. Pérez-Cruz, G. E. Astrakharchik, and P. Massignan <i>Letter in Phys. Rev. A</i> 111, L011302 (2025). [Covered by a <i>Commentary</i> by Thierry Giamarchi]</p>
69	<p><i>Suppression of the superfluid Kelvin-Helmholtz instability due to massive vortex cores, friction and confinement</i> M. Caldara, A. Richaud, M. Capone, and P. Massignan <i>SciPost Phys.</i> 17, 076 (2024).</p>
68	<p><i>Exact results for heavy unitary Bose polarons</i> N. Yegovtsev, G. E. Astrakharchik, P. Massignan, and V. Gurarie <i>Phys. Rev. A</i> 110, 023310 (2024).</p>
67	<p><i>Conformal maps and superfluid vortex dynamics on curved and bounded surfaces: the case of an elliptical boundary</i> M. Caldara, A. Richaud, P. Massignan, and A. L. Fetter <i>SciPost Phys.</i> 17, 039 (2024).</p>
66	<p>(*) <i>Mediated interactions between Fermi polarons and the role of impurity quantum statistics</i> C. Baroni, B. Huang, I. Fritsche, E. Dobler, G. Anich, E. Kirilov, R. Grimm, M. A. Bastarrachea-Magnani, P. Massignan, and G. Bruun <i>Nature Physics</i> 20, 68 (2024). [Covered by a <i>Research Briefing</i> in <i>Nature Physics</i>, by C. Baroni and P. Massignan]</p>
65	<p><i>Massive superfluid vortices and vortex necklaces on a planar annulus</i> M. Caldara, A. Richaud, M. Capone, and P. Massignan <i>SciPost Phys.</i> 15, 057 (2023).</p>
64	<p><i>Observation of $1/k^4$-tails after expansion of Bose-Einstein condensates with impurities</i> H. Cayla, P. Massignan, T. Giamarchi, A. Aspect, C. Westbrook, and D. Clément <i>Phys. Rev. Lett.</i> 130, 153401 (2023).</p>
63	<p><i>Ultra-long quantum walks via spin-orbit photonics</i> F. Di Colandrea, A. Babazadeh, A. Dauphin, P. Massignan, L. Marrucci, and F. Cardano <i>Optica</i> 10, 324 (2023).</p>
62	<p><i>Dynamics of a massive superfluid vortex in r^k confining potentials</i> A. Richaud, P. Massignan, V. Penna, and A. L. Fetter <i>Phys. Rev. A</i> 106, 063307 (2022).</p>
61	<p><i>Strongly interacting impurities in a dilute Bose condensate</i> N. Yegovtsev, P. Massignan, and V. Gurarie <i>Phys. Rev. A</i> 106, 033305 (2022).</p>
60	<p><i>Repulsive Fermi and Bose Polarons in Quantum Gases</i> F. Scazza, M. Zaccanti, P. Massignan, M. M. Parish, and J. Levinsen <i>Atoms</i> 10, 55 (2022).</p>

59	<i>Superfluid vortex dynamics on an ellipsoid and other surfaces of revolution</i> M.A. Caracanhas, P. Massignan, and A. L. Fetter Phys. Rev.A 105 , 023307 (2022).	
58	<i>Linking topological features of the Hofstadter model to optical diffraction figures</i> F. Di Colandrea, A. D'Errico, M. Maffei, H. Price, M. Lewenstein, L. Marrucci, F. Cardano, A. Dauphin, P. Massignan New J. Phys. 24 , 013028 (2022).	
57	<i>Renormalization-group study of Bose polarons</i> F. Isaule, I. Morera, P. Massignan, and B. Juliá-Díaz Phys. Rev.A 104 , 023317 (2021).	
56	<i>Stability and breakdown of Fermi polarons in a strongly interacting Fermi-Bose mixture</i> I. Fritsche, C. Baroni, E. Dobler, E. Kirilov, B. Huang, R. Grimm, G. M. Bruun, and P. Massignan Phys. Rev.A 103 , 053314 (2021).	[Editor's suggestion]
55	<i>Topological transport of mobile impurities</i> D. Pimenov, A. Camacho-Guardian, N. Goldman, P. Massignan, G. M. Bruun, and M. Goldstein Phys. Rev. B 103 , 245106 (2021).	
54	<i>Thermal instability, evaporation and thermodynamics of one-dimensional liquids in weakly-interacting Bose-Bose mixtures</i> G. De Rosi, G. E. Astrakharchik, and P. Massignan Phys. Rev.A 103 , 043316 (2021).	
53	<i>Bloch-Landau-Zener dynamics induced by a synthetic field in a photonic quantum walk</i> A. D'Errico, R. Barboza, R. Tudor, A. Dauphin, P. Massignan, L. Marrucci, and F. Cardano APL Photonics 6 , 020802 (2021).	[Featured Article]
52	<i>Universal aspects of a strongly interacting impurity in a dilute Bose condensate</i> P. Massignan, N. Yegovtsev, and V. Gurarie Phys. Rev. Lett. 126 , 123403 (2021).	[Editor's suggestion]
51	<i>Measuring topological invariants in a polaritonic analog of graphene</i> P. St-Jean, A. Dauphin, P. Massignan, B. Real, O. Jamadi, M. Milićević, A. Lemaître, A. Harouri, L. Le Gratiet, I. Sagnes, S. Ravets, J. Bloch, and A. Amo Phys. Rev. Lett. 126 , 127403 (2021).	[Editor's suggestion]
50	<i>Mobile impurity in a Bose-Einstein condensate and the orthogonality catastrophe</i> N.-E. Guenther, R. Schmidt, G. M. Bruun, V. Gurarie, and P. Massignan Phys. Rev.A 103 , 013317 (2021).	
49	<i>Detecting topology through dynamics in interacting fermionic wires</i> A. Haller, P. Massignan, and M. Rizzi Phys. Rev. Research 2 , 033200 (2020).	
48	<i>Bulk detection of time-dependent topological transitions in quenched chiral models</i> A. D'Errico, F. Di Colandrea, R. Barboza, A. Dauphin, M. Lewenstein, P. Massignan, L. Marrucci, and F. Cardano Phys. Rev. Research 2 , 023119 (2020).	
47	<i>Superfluid vortex dynamics on a torus and other toroidal surfaces of revolution</i> N.-E. Guenther, P. Massignan, and A. L. Fetter Phys. Rev.A 101 , 053606 (2020).	
46	<i>Two-dimensional topological quantum walks in the momentum space of structured light</i> A. D'Errico, F. Cardano, M. Maffei, A. Dauphin, R. Barboza, C. Esposito, B. Piccirillo, M. Lewenstein, P. Massignan, and L. Marrucci Optica 7 , 108 (2020).	
45	<i>Beyond-Luttinger-liquid thermodynamics of a one-dimensional Bose gas with repulsive contact interactions</i> G. De Rosi, P. Massignan, M. Lewenstein, and G. E. Astrakharchik Phys. Rev. Research 1 , 033083 (2019).	

44	<i>Superfluid Vortex Dynamics on Planar Sectors and Cones</i> P. Massignan and A. L. Fetter Phys. Rev. A 99 , 063602 (2019).	
43	<i>From Quantum Quasiparticles to a Classical Gas</i> P. Massignan Physics 12 , 25 (2019).	[Viewpoint on an MIT experiment]
42	<i>Dropping an impurity into a Chern insulator: a polaron view on topological matter</i> A. Camacho-Guardian, N. Goldman, P. Massignan, and G. M. Bruun Phys. Rev. B 99 , 081105(R) (2019).	[Rapid Communication]
41	(*) <i>Observation of the topological Anderson insulator in disordered atomic wires</i> E. J. Meier, F. A. An, A. Dauphin, M. Maffei, P. Massignan, T. L. Hughes, and B. Gadway Science 362 , 929 (2018).	[Highlighted in Nature Physics]
40	<i>Bose polarons at finite temperature and strong coupling</i> N.-E. Guenther, P. Massignan, M. Lewenstein, and G. M. Bruun Phys. Rev. Lett. 120 , 050405 (2018).	
39	<i>Topological characterization of chiral models through their long time dynamics</i> M. Maffei, A. Dauphin, F. Cardano, M. Lewenstein, and P. Massignan New J. Phys. 20 , 013023 (2018).	
38	<i>Quantized superfluid vortex dynamics on cylindrical surfaces and planar annuli</i> N.-E. Guenther, P. Massignan, and A. L. Fetter Phys. Rev. A 96 , 063608 (2017).	
37	<i>Measuring Chern numbers in Hofstadter strips</i> S. Muga, A. Dauphin, P. Massignan, L. Tarruell, M. Lewenstein, C. Lobo, and A. Celi SciPost Physics 3 , 012 (2017).	
36	(*) <i>Detection of Zak phases and topological invariants in a chiral quantum walk of twisted photons</i> F. Cardano, A. D'Errico, A. Dauphin, M. Maffei, B. Piccirillo, C. de Lisio, G. De Filippis, V. Cataudella, E. Santamato, L. Marrucci, M. Lewenstein, and P. Massignan Nature Comm. 8 , 15516 (2017).	
35	<i>Universality of the unitary Fermi gas: A few-body perspective</i> J. Levinsen, P. Massignan, S. Endo, and M. M. Parish J. Phys. B: At. Mol. Opt. Phys. 50 072001 (2017).	[Topical review]
34	<i>Repulsive Fermi Polarons in a Resonant Mixture of Ultracold 6Li Atoms</i> F. Scazza, G. Valtolina, P. Massignan, A. Recati, A. Amico, A. Burchianti, C. Fort, M. Inguscio, M. Zaccanti, and G. Roati Phys. Rev. Lett. 118 , 083602 (2017).	[Editor's suggestion]
33	<i>Vortex dynamics in coherently coupled Bose-Einstein condensates</i> L. Calderaro, A. L. Fetter, P. Massignan, and P. Wittek Phys. Rev. A 95 , 023605 (2017).	[Editor's suggestion]
32	<i>Lindblad Model of Quantum Brownian Motion</i> A. Lampo, S. H. Lim, J. Wehr, P. Massignan, and M. Lewenstein Phys. Rev. A 94 , 042123 (2016).	
31	<i>Topological bound states of a quantum walk with cold atoms</i> S. Muga, A. Celi, P. Massignan, J. K. Asbóth, M. Lewenstein, and C. Lobo Phys. Rev. A 94 , 023631 (2016).	
30	(*) <i>Magnetism in strongly interacting one-dimensional quantum mixtures</i> P. Massignan, J. Levinsen, and M. M. Parish Phys. Rev. Lett. 115 , 247202 (2015).	
29	<i>Crossover between few and many fermions in a harmonic trap</i> T. Grining, M. Tomza, M. Lesiuk, M. Przybytek, M. Musiał, R. Moszynski, M. Lewenstein, and P. Massignan Phys. Rev. A 92 , 061601(R) (2015) (2015).	

28	<i>Many interacting fermions in a one-dimensional harmonic trap: a quantum-chemical treatment</i> T. Grining, M. Tomza, M. Lesiuk, M. Przybytek, M. Musiał, P. Massignan, M. Lewenstein, and R. Moszynski New J. Phys. 17 , 115001 (2015).
27	(*) <i>Strong-coupling Ansatz for the one-dimensional Fermi gas in a harmonic potential</i> J. Levinsen, P. Massignan, G. M. Bruun, and M. M. Parish Science Advances 1 , e1500197 (2015).
26	<i>Quantum Brownian motion with inhomogeneous damping and diffusion</i> P. Massignan, A. Lampo, J. Wehr, and M. Lewenstein Phys. Rev. A 91 , 033627 (2015).
25	(*) <i>Weak ergodicity breaking of receptor motion in living cells stemming from random diffusivity</i> C. Manzo, J. A. Torreno-Pina, P. Massignan, G. J. Lapeyre Jr., M. Lewenstein, and M. F. Garcia Parajo Phys. Rev. X 5 , 011021 (2015).
24	<i>Efimov trimers under strong confinement</i> J. Levinsen, P. Massignan, and M. M. Parish Phys. Rev. X 4 , 031020 (2014).
23	(*) <i>Non-ergodic subdiffusion from Brownian motion in an inhomogeneous medium</i> P. Massignan, C. Manzo, J. A. Torreno-Pina, M. F. García-Parajo, M. Lewenstein, G. J. Lapeyre Jr Phys. Rev. Lett. 112 , 150603 (2014).
22	(*) <i>Polarons, Dressed Molecules, and Itinerant Ferromagnetism in ultracold Fermi gases</i> P. Massignan, M. Zaccanti, and G. M. Bruun Rep. Prog. Phys. 77 , 034401 (2014). [Long invited review paper]
21	(*) <i>Synthetic gauge fields in synthetic dimensions</i> A. Celi, P. Massignan, J. Ruseckas, N. Goldman, I. B. Spielman, G. Juzeliunas, and M. Lewenstein Phys. Rev. Lett. 112 , 043001 (2014). [Highlighted as an Editor's Choice in Science]
20	<i>Itinerant Ferromagnetism in a polarized two-component Fermi gas</i> P. Massignan, Z. Yu, G. M. Bruun Phys. Rev. Lett. 110 , 230401 (2013).
19	<i>p-Wave Polaron</i> J. Levinsen, P. Massignan, F. Chevy, and C. Lobo Phys. Rev. Lett. 109 , 075302 (2012).
18	(*) <i>Metastability and Coherence of Repulsive Polarons in a Strongly Interacting Fermi Mixture</i> C. Kohstall, M. Zaccanti, M. Jag, A. Trenkwalder, P. Massignan, G. M. Bruun, F. Schreck, and R. Grimm Nature 485 , 615 (2012). [Highlighted in Nature's News and Views]
17	<i>Polarons and dressed molecules near narrow Feshbach resonances</i> P. Massignan Europhysics Letters 98 , 10012 (2012).
16	<i>Glass to superfluid transition in dirty bosons on a lattice</i> J. Stasinska, P. Massignan, M. Bishop, J. Wehr, A. Sanpera, and M. Lewenstein New J. Phys. 14 , 043043 (2012).
15	(*) <i>Repulsive polarons and itinerant ferromagnetism in strongly polarized Fermi gases</i> P. Massignan and G. M. Bruun, Eur. Phys. J. D 65 , 83 (2011), topical issue on "Cold Quantum Matter".
14	<i>Metastability in spin polarised Fermi gases and quasiparticle decays</i> K. Sadeghzadeh, G. Bruun, C. Lobo, P. Massignan, and A. Recati New J. Phys. 13 , 055011 (2011).
13	<i>Atomic wave packet dynamics in finite time-dependent optical lattices</i> T. Lauber, P. Massignan, G. Birkel, and A. Sanpera J. Phys. B 44 , 065301 (2011).
12	<i>Topological superfluids on a lattice with non-Abelian gauge fields</i> A. Kubasiak, P. Massignan, and M. Lewenstein EuroPhysics Letters 92 , 46004 (2010).

11	<i>Decay of polarons and molecules in a strongly polarized Fermi gas</i> G. M. Bruun and P. Massignan Phys. Rev. Lett. 105 , 020403 (2010).
10	<i>Creating p-wave superfluids and topological excitations in optical lattices</i> P. Massignan, A. Sanpera, and M. Lewenstein Rapid Communication in Phys. Rev.A 81 , 031607(R) (2010).
9	<i>Strongly interacting Bose gas: Nozières and Schmitt-Rink theory and beyond</i> A. Koetsier, P. Massignan, R. A. Duine, and H. T. C. Stoof Phys. Rev.A 79 , 063609 (2009).
8	<i>Spin polarons and molecules in strongly-interacting atomic Fermi gases</i> P. Massignan, G. M. Bruun, and H. T. C. Stoof Rapid Comm. in Phys. Rev.A 78 , 031602(R) (2008).
7	<i>Efimov states near a Feshbach resonance</i> P. Massignan and H. T. C. Stoof Rapid Comm. in Phys. Rev.A 78 , 030701(R) (2008).
6	<i>Twin peaks in rf spectra of Fermi gases at unitarity</i> P. Massignan, G. M. Bruun, and H. T. C. Stoof Rapid Comm. in Phys. Rev.A 77 , 031601(R) (2008).
5	<i>Energy-dependent effective interactions for dilute many-body systems</i> A. Collin, P. Massignan, and C. J. Pethick Phys. Rev.A 75 , 013615 (2007).
4	(*) <i>Three-dimensional strong localization of matter waves by scattering from atoms in a lattice with a confinement-induced resonance</i> P. Massignan and Y. Castin Phys. Rev.A 74 , 013616 (2006).
3	(*) <i>Viscous relaxation and collective oscillations in a trapped Fermi gas near the unitarity limit</i> P. Massignan, G. M. Bruun, and H. Smith Phys. Rev.A 71 , 033607 (2005).
2	<i>Static properties of positive ions in atomic Bose-Einstein condensates</i> P. Massignan, C. J. Pethick, and H. Smith Phys. Rev.A 71 , 023606 (2005).
1	<i>One-dimensional model for the dynamics and expansion of elongated Bose-Einstein condensates</i> P. Massignan and M. Modugno Phys. Rev.A 67 , 023614 (2003).

PH.D. AND MASTER THESES

- *Positive ions, collective modes and Anderson localization in ultracold gases*
Written at Niels Bohr Institute & NORDITA in Copenhagen. Supervisors: Christopher Pethick and Henrik Smith.
- *Modello unidimensionale per lo studio dell'espansione di condensati di Bose-Einstein da reticoli ottici*
Developed at LENS in Florence. Supervisors: Michele Modugno and Massimo Inguscio.

PUBLIC OUTREACH PUBLICATIONS

- *Quantum technologies and society*
P. Massignan and A. Valencia
ICFO and CatalunyaCaixa-Ignacio Cirac Program Chair.

TEXTBOOKS

- *Quantum computing - problems and exercises*
S. Torres, P. Bruna and P. Massignan
IDP - UPC (2020).

Awarded with the *Sant Jordi Award 2022* for the most downloaded new book in the UPC collection.

CITATION METRICS (DECEMBER 2024)

SOURCE	CITATIONS	H-INDEX
Web of Science	4.284	32
Google Scholar (including citations to preprints)	5.977	38

Highly-cited papers (Essential Science Indicators - Web of Science): papers # 41, 40, 36, 34, 25, 23, 22, 21, 18

Most cited on Google Scholar: papers # 21 (701 cits.), 18 (578 cits.), 22 (501 cits.).

LANGUAGE SKILLS

Italian	mother tongue
English, French, and Spanish	fluent
German	advanced knowledge (five years of studies)
Catalan and Portuguese	advanced knowledge
Danish and Dutch	basic knowledge

TEACHING EXPERIENCE

- Lecturer within the *Master in Quantum Science and Technology (UB-UPC-UAB-ICFO)* in Barcelona:
 - ◆ *Condensed Matter* (coordinator; 6 ECTS core Master course, 2022-25).
- Lecturer within the *Master degree in Engineering Physics at UPC* in Barcelona:
 - ◆ *Atomic and Molecular Physics* (coordinator; 4 ECTS Master course, 2020-25).
- Lecturer within the degrees of *Aeronautical and Telecom Engineering at UPC* in Barcelona:
 - ◆ *Quantum Information and Technology* (6 ECTS course for 4th year students, 2017-22).
 - ◆ *Fluid Mechanics* (7.5 ECTS course for 2nd year students, 2018-25).
 - ◆ *Classical Mechanics* (6 ECTS course for 1st year students, 2021).
- Lecturer within the *Theory Lectures at ICFO* in Barcelona, 2015; course on *Many-Body Methods for Ultracold Gases* for Master and Ph.D students.
- Lecturer within the *Joint Master in Photonics at UPC-UB-UAB-ICFO* in Barcelona, 2009: course on *Atom Optics* for Physics majors.
- Teaching Assistant at the *Niels Bohr Institutet* in Copenhagen, 2004-2005: courses on *Electromagnetism and Solid State Physics* for Physics majors, and supervision of lab experiments.
- Tutor at the dept. of Physics, *Università degli Studi (Milan)*, 1998-2001: supervision of lab experiments.

(CO-)SUPERVISION OF PH.D, MASTER AND BACHELOR STUDIES

- Ph.D. students (completed studies):
 - Daniel Pérez-Cruz (on-going)
 - Nils Günther (2021)
 - Maria Maffei (2019)
 - Aniello Lampo (2018)
 - Samuel Muguel (2017)
 - Julia Stasinska (2012)
 - Anna Kubasiak (2011)
- Supervision of long-term visiting Ph.D students: Francesco Lorenzi (2023)
- Master students: Adrià Hernández Toledo (2025), Pau Fargas Reixats (2024), Ernest Granollers Colom (2024), Daniel Pérez (2023), Fredrik Akre (2023), Lucas Mascaró Burguera (2023), Laura Olivella Eritja (2020), Joel Pérez Díaz (2019), Luca Calderaro (2015), Iason Tsiamis (2014).
- Tutor of UPC students abroad: Victor Carballo Araruna (BSc, 2024), Anna Sallés Rius (MSc, 2022).
- Master internship: Matthieu Blanke (from *École Polytechnique-Palaiseau*, 2020; cancelled for COVID)
- Bachelor students (“Treballs de Final de Grau”): Bryan Leonardo Salto (2022), Claudia Martín Torres (2020), Alba Martín Muñoz (2018).

NETWORK OF COLLABORATIONS

In the course of my research career, I had the pleasure to interact and work with a number of renowned scientists.

I have been participating in several collaborations with the experimental groups studying ultracold quantum gases in:

- Amsterdam (F. Schreck)
- Barcelona (L. Tarruell)
- Berlin (G. Valtolina)
- Florence (M. Inguscio, G. Modugno, M. Zaccanti, L. Fallani)
- Hamburg (K. Sengstock)
- Heidelberg (S. Jochim)
- Innsbruck (R. Grimm, F. Ferlaino)
- JQI-NIST (I. Spielman)
- Paris (D. Clément, C. Westbrook, A. Aspect [*Nobel prize in Physics 2022*])
- Trieste (F. Scazza)
- Urbana-Illinois (B. Gadway).

On the theoretical side, I have been collaborating with physicists in:

- Aarhus (G. Bruun)
- Barcelona (M. Lewenstein and A. Sanpera)
- Beijing (Z. Yu)
- Berlin (A. Saenz)
- Birmingham (H. Price)
- Boulder (V. Gurarie)
- Bruxelles (N. Goldman)
- Budapest (J. Asbóth)
- Cambridge (A. Camacho-Guardian)
- Cologne (M. Rizzi)
- Copenhagen (C. Pethick, H. Smith)
- Darmstadt (G. Birkel)
- Genève (T. Giamarchi)
- Glasgow (F. Isaule)
- Luxembourg (A. Haller)
- Melbourne (J. Levinsen and M. Parish)
- Mexico City (A. Camacho-Guardian, M.A. Bastarrachea-Magnani)
- Munich (R. Schmidt)
- Paris (Y. Castin and F. Chevy [ENS], L. Sanchez-Palencia [École Polytechnique])
- São Paulo (M. Caracanhas)
- Southampton (C. Lobo)
- Stanford (A. Fetter)
- Trento (A. Recati)
- Trieste (M. Capone)
- Tucson (J. Wehr)
- Urbana-Illinois (T. Hughes)
- Utrecht (H. Stoof)
- Vilnius (G. Juzeliunas)
- Warsaw (R. Moszynski, G. Włazłowski).

Collaborations with experimental Photonics groups:

- Naples (L. Marrucci, F. Cardano) [studying topological properties of quantum walks with twisted photons]

Collaboration with experimental Single-Molecule Bio-photonics groups:

- Barcelona (M. García-Parajo) [investigating stochastic models of anomalous transport and self-organization]

Collaborations with experimental Exciton-Polariton groups:

- Paris (J. Bloch) and Lille (A. Amo) [studying topological properties of driven-dissipative exciton-polariton systems]