

## Curriculum Vitae of Roberto Passante

Doctoral Degree in Physics, University of Palermo (Italy), February 1983.

Researcher of the National Research Council, Palermo, from February 1984 to December 2004.

Appointment of Temporary Professorship, University of Palermo, in the Academic Years 1994/95, 1995/96, 2000/01, 2001/02, 2002/03, 2003/04.

Associate Professor, University of Palermo, Department of Physics and Chemistry, from 30 December 2004 (**current position**).

Member of the European Academy of Sciences.

Visiting Professor, Department of Physical Science, Osaka Prefecture University, Japan (October 2009).

Visiting Professor, Osaka Prefecture University, Japan (July/August 2011).

Deputy Vice-President of the Physics Courses Council, University of Palermo (from May 2007 to March 2010).

Deputy Vice-Coordinator of the Physics Courses Council, University of Palermo (from November 2013).

Referee of the following journals: Physical Review Letters, Physical Review A, B, D and E, Nature Scientific Reports, Journal of Physics A, B, Physics Letters A, Europhysics Letters, Annals of Physics, J. Stat. Phys., Found. of Physics, Europ. Phys. J. Plus., Optics Comm.

Research subjects: Casimir and Casimir-Polder forces, Quantum Optics and Quantum Electrodynamics, Nonequilibrium Statistical Physics, Quantum Field Theory, Quantum Field Theory in Curved Spacetime and Unruh effect.

Author of about 75 papers on refereed ISI journals in physics, one monograph for Cambridge University Press, one book edited for Springer.

About 15 invited talks at international conferences.

Current international collaborations: Center for Complex Quantum Systems, The University of Texas at Austin, USA; Physikalisches Institut, Albert-Ludwigs University of Freiburg, Germany; Centre for Quantum Information and Communication, Ecole Polytechnique, Université Libre de Bruxelles, Belgium; Institut für Physik, Universität Potsdam, Germany; Department of Physical Science, Osaka Prefecture University, Japan; National Institute for Nuclear Physics (INFN), Legnaro National Laboratory, Padova, Italy; Centre de Physique Théorique, Université Marseille, France; Charles Coulomb Laboratoire, Université Montpellier, France.

## *Publication list of Roberto Passante*

### *Books (monographs)*

- G. Compagno, R. Passante, F. Persico, *Atom-Field Interactions and Dressed Atoms*, Cambridge University Press (Cambridge, 1995)

### *Books (edited)*

- Fabio Bagarello, Roberto Passante, Camillo Trapani (editors), *Non-Hermitian Hamiltonians in Quantum Physics: Selected Contributions from the 15th International Conference on Non-Hermitian Hamiltonians in Quantum Physics, Palermo, Italy, 18-23 May 2015* (Springer Proceedings in Physics vol. 184), Springer (2016)

### *Articles*

1. G. Compagno, R. Passante, F. Persico, *The role of the cloud of virtual photons in the shift of the ground state energy of a hydrogen atom*, Phys. Lett. A **98**, 253 (1983)
2. R. Passante, G. Compagno, F. Persico, *Cloud of virtual photons in the ground state of the hydrogen atom*, Phys. Rev. A **31**, 2827 (1985)
3. G. Compagno, F. Persico, R. Passante, *Interference in the virtual photon clouds of two hydrogen atoms*, Phys. Lett. A **112**, 215 (1985)
4. F. Persico, G. Compagno, R. Passante, *Ground state photons dressing atoms and molecules*, in *Quantum Optics IV*, J.D. Harvey and D.F. Walls eds., Springer Verlag, Berlin 1986, p. 172 (invited paper)
5. R. Passante, E.A. Power, *Electromagnetic-energy-density distribution around a ground-state hydrogen atom and connection with van der Waals forces*, Phys. Rev. A **35**, 188 (1987)
6. G. Compagno, R. Passante, F. Persico, *Shell structure of the electromagnetic energy density in the presence of a ground-state hydrogen atom*, Phys. Lett. A **121**, 19 (1987)
7. R. Passante, E.A. Power, *The Lamb shift in non-relativistic quantum electrodynamics*, Phys. Lett. A **122**, 14 (1987)
8. G. Compagno, R. Passante, F. Persico, *Theory of the detection of the field surrounding half-dressed sources*, Phys. Rev. A **38**, 600 (1988)
9. G. Compagno, R. Passante, F. Persico, *Dressed and half-dressed neutral sources in nonrelativistic QED*, PhysicaScripta **T21**, 33 (1988) (invited paper)
10. G. Compagno, R. Passante, F. Persico, *Detection of half-dressed sources in nonrelativistic QED*, PhysicaScripta **T21**, 40 (1988) (invited paper)
11. G. Compagno, R. Passante, F. Persico, *Virtual field and internal structure of half-dressed extended particles*, Europhys. Lett. **7**, 399 (1988)
12. G. Compagno, G.M. Palma, R. Passante, F. Persico, *Virtual field, causal photon absorption and photodetectors*, Europhys. Lett. **9**, 215 (1989)
13. G. Compagno, L. Lo Cascio, R. Passante, F. Persico, *Atomic dynamics preceding clusterization of neutral ultracold gases*, Phys. Lett. A **143** (1990)
14. G. Compagno, G.M. Palma, R. Passante, F. Persico, *QED of a two-level atom and photodetection*, in *Coherence and Quantum Optics VI*, J.H. Eberly, L. Mandel and E. Wolf eds., Plenum Press, New York 1990, p. 191

15. A.K. Biswas, G. Compagno, G.M. Palma, R. Passante, F. Persico, *Virtual photons and causality in the dynamics of a pair of two-level atoms*, Phys. Rev. A **42**, 4291 (1990) (erratum: Phys. Rev. A **44**, 798 (1991))
16. G. Compagno, G.M. Palma, R. Passante, F. Persico, *Virtual clouds in quantum optics*, in *New Frontiers in Quantum Electrodynamics and Quantum Optics*, A.O. Barut ed., Plenum Press, New York 1990, p. 129 (invited paper)
17. G. Compagno, R. Passante, F. Persico, *Dressed atoms and the quantum theory of measurement*, Europhys. Lett. **12**, 301 (1990)
18. G. Compagno, R. Passante, F. Persico, *Virtual photons, causality and atomic dynamics in spontaneous emission*, J. Mod Opt. **37**, 1377 (1990)
19. G. Compagno, R. Passante, F. Persico, *Bare bound states and the quantum theory of measurement*, Phys. Rev. A **44**, 1956 (1991)
20. G. Compagno, L. Lo Cascio, R. Passante, F. Persico, *The physical nature of dressed atoms in QED and in quantum optics*, in *Structure: from Physics to General Systems*, M. Marinaro and G. Scarpetta eds., World Scientific, Singapore 1992, p. 399
21. R. Passante, T. Petrosky, I Prigogine, *Virtual transitions, self-dressing and indirect spectroscopy*, Opt. Comm. **99**, 55 (1993)
22. G. Compagno, R. Passante, F. Persico, *Partially dressed states and Van Hove theory of quantum fields*, NuovoCimento D **15**, 355 (1993)
23. G. Compagno, R. Passante, F. Persico, G.M. Salamone, *Cloud of virtual photons surrounding a nonrelativistic electron*, Acta Phys. Pol. A **85**, 667 (1994)
24. G. Compagno, G.M. Palma, R. Passante, F. Persico, *Atoms dressed and partially dressed by the zero-point fluctuations of the electromagnetic field*, J. Phys. B **28**, 1105 (1995) (invited review paper)
25. R. Passante, F. Persico, *Structure of the eigenvalue spectrum in the one-excitation subspace of the Lee-Friedrichs Hamiltonian*, Phys. Lett. A **200**, 87 (1995)
26. G. Compagno, G.M. Palma, R. Passante, F. Persico, *Relativistic causality and quantum-mechanical states in the Fermi Problem*, Chem. Phys. **198**, 19 (1995)
27. R. Passante, T. Petrosky, I Prigogine, *Long-time behaviour of self-dressing and indirect spectroscopy*, Physica A, **218**, 437 (1995)
28. A. La Barbera, R. Passante, *Causality and spatial correlations of the relativistic scalar field in the presence of a static source*, Phys. Lett. A **206**, 1 (1995)
29. G. Compagno, L. Lo Cascio, R. Passante, F. Persico, *Quantum measurement on dressed atoms*, Acta Physica Slovaca **45**, 231 (1995)
30. G. Compagno, G.M. Palma, R. Passante, F. Persico, *Causality and Atomic Dynamics in the Fermi Problem*, in: *Coherence and Quantum Optics VII*, J.H. Eberly, L. Mandel and E. Wolf eds., Plenum Press, New York 1996, p. 649
31. M. Cirone, R. Passante, *Vacuum field correlations and the three body Casimir-Polder potential*, J. Phys. B **29**, 1871 (1996)
32. R. Passante, N. Vinci, *Divergence-free evolution of partially dressed sources in quantum electrodynamics*, Phys. Lett. A **213**, 119 (1996)
33. G. Compagno, R. Passante, F. Persico, *Fully and partially dressed states in quantum field theory and in solid state physics*, in: "From Quantum Mechanics to Technology", Z. Petru, J. Przystawa, K. Rapcewicz, Springer-verlag 1996, p. 299
34. G. Compagno, R. Passante, F. Persico, *Dressed states in atoms and in excitons*, in: "Quantum Optics and the Spectroscopy of Solids", T. Hakioglu and A.S. Shumovsky eds., Kluwer Academic Publishers (1997), p. 99
35. M. Cirone, R. Passante, *Dressed zero-point field correlations and the non-additive three-body van der Waals potential*, J. Phys. B **30**, 5579 (1997)
36. R. Passante, *Radiative level shifts of an accelerated hydrogen atom and the Unruh effect in quantum electrodynamics*, Phys. Rev. A **57**, 1590 (1998)

37. R. Passante, E.A. Power, T. Thirunamachandran, *Radiation-molecule coupling using dynamic polarizabilities: Application to many-body forces*, Phys. Lett. A **249**, 77 (1998)
38. R. Passante and F. Persico, *Virtual photons and three-body forces*, J. Phys. B **32**, 19 (1999)
39. M. Cirone, R. Passante, *Non-additive Casimir-Polder forces*, in: *The Casimir Effect Fifty Years Later*, M. Bordag ed., World Scientific, Singapore (1999), p. 74
40. R. Passante, F. Persico, L. Rizzuto, *The bound state in the spectrum of the Lee-Friedrichshamiltonian*, Phys. Lett. A **274**, 10 (2000)
41. Markus A. Cirone, Jan Mostowski, Roberto Passante, Kazimierz Rzazewski, *The concept of vacuum in nonrelativistic QED*, in: *Recent Revelopment in Physics*, Transworld Research Network **2**, 131 (2001) (invited review paper)
42. G. Compagno, G.M. Palma, R. Passante, F. Persico, *Nonlocality and causality in quantum electrodynamics*, in: *The Physics of Communication: Proceedings of the XXII Solvay Conference on Physics*, I. Antoniou, V.A. Sadovnichy, H. Walter eds, World Scientific, Singapore (2003), p. 389 (invited paper)
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44. R. Passante, F. Persico, *Time-dependent Casimir-Polder forces and partially dressed states*, Phys. Lett. A **312**, 319 (2003)
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47. L. Rizzuto, R. Passante, F. Persico, *Dynamical Casimir-Polder energy between an excited- and a ground-state atom*, Phys. Rev. A **70**, 012107 (2004)
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49. F. Ciccarello, E. Karpov, R. Passante, *An exactly solvable model of two three-dimensional harmonic oscillators interacting with the quantum electromagnetic field: the far zone Casimir-Polder potential*, Phys. Rev. A **72**, 052106 (2005)
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51. R. Passante, F. Persico, L. Rizzuto, *Causality, non-locality and three-body Casimir-Polder energy between three ground-state atoms*, J. Phys. B **39**, S685 (2006)
52. S. Spagnolo, R. Passante, L. Rizzuto, *Field fluctuations near a conducting plate and Casimir-Polder forces in the presence of boundary conditions*, Phys. Rev. A **73**, 062117 (2006)
53. G. Compagno, R. Passante, F. Persico, *Edwin Power and the birth of dressed atoms*, Contemp. Phys., **47**, 269 (2006)
54. M.A. Cirone, G. Compagno, G.M. Palma, R. Passante, F. Persico, *Casimir-Polder potentials as entanglement probe*, Europhys. Lett. **78**, 30003 (2007)
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56. R. Messina, R. Passante, *Casimir-Polder force density between an atom and a conducting plate*, Phys. Rev. A **75**, 042113 (2007)
57. L. Rizzuto, R. Passante, F. Persico, *Nonlocal properties of dynamical three-body Casimir-Polder forces*, Phys. Rev. Lett. **98**, 240404 (2007)
58. R. Messina, R. Passante, *Fluctuations of the Casimir-Polder force between an atom and a conducting wall*, Phys. Rev. A **76**, 032107 (2007)

59. R. Passante, S. Spagnolo, *Casimir-Polder interatomic potential between two atoms at finite temperature and in the presence of boundary conditions*, Phys. Rev. A **76**, 042112 (2007)
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61. R. Vasile, R. Passante, *Dynamical Casimir-Polder force between an atom and a conducting wall*, Phys. Rev. A **78**, 032108 (2008)
62. Ruggero Vasile, Riccardo Messina, Roberto Passante, *Time-dependent Maxwell field operators and field energy density for an atom near a conducting wall*, Phys. Rev. A **79**, 062106 (2009)
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64. Jamir Marino, Roberto Passante, *Casimir-Polder force between two accelerating atoms and the Unruh effect*, in: *Quantum Field Theory Under the Influence of External Conditions (QFEXT09)*, K.A. Milton and M. Bordag eds., World Scientific, 2010, p. 328
65. Riccardo Messina, Ruggero Vasile, Roberto Passante, *Dynamical Casimir-Polder force on a partially dressed atom near a conducting wall*, Phys. Rev. A **82**, 062501 (2010)
66. Roberto Passante, Lucia Rizzuto, Salvatore Spagnolo, Satoshi Tanaka, Tomio Y. Petrosky, *Harmonic oscillator model for the atom-surface Casimir-Polder interaction energy*, Phys. Rev. A **85**, 062109 (2012)
67. Nicola Bartolo, Roberto Passante, *Electromagnetic-field fluctuations near a dielectric-vacuum boundary and surface divergences in the ideal conductor limit*, Phys. Rev. A **86**, 012122 (2012)
68. Roberto Passante, Lucia Rizzuto, Salvatore Spagnolo, *Vacuum local and global self-energies for a point-like and an extended field source*, Eur. Phys. J. C **73**, 2419 (2013)
69. Antonio Noto, Roberto Passante, *van der Waals interaction energy between two atoms moving with uniform acceleration*, Phys. Rev. D **88**, 025041 (2013)
70. Salvatore Butera, Roberto Passante, *Field fluctuations in a one-dimensional cavity with a mobile wall*, Phys. Rev. Lett. **111**, 060403 (2013)
71. Satoshi Tanaka, Roberto Passante, Taku Fukuta, Tomio Petrosky, *Nonperturbative approach for the electronic Casimir-Polder effect in a one-dimensional semiconductor*, Phys. Rev. A **88**, 022518 (2013)
72. Harald Haakh, Carsten Henkel, Salvatore Spagnolo, Lucia Rizzuto, Roberto Passante, *Dynamical Casimir-Polder interaction between an atom and surface plasmons*, Phys. Rev. A **89**, 022509 (2014)
73. Jamir Marino, Antonio Noto, Roberto Passante, Lucia Rizzuto, Salvatore Spagnolo, *Effects of a uniform acceleration on atom-field interactions*, Phys. Scr. **T160**, 014031 (2014).
74. Riccardo Messina, Roberto Passante, Lucia Rizzuto, Salvatore Spagnolo, Ruggero Vasile, *Dynamical Casimir-Polder potentials in non-adiabatic conditions*, Phys. Scr. **T160**, 014032 (2014)
75. Roberta Incardone, Taku Fukuta, Satoshi Tanaka, Tomio Petrosky, Lucia Rizzuto, Roberto Passante, *Enhanced resonant force between two entangled identical atoms in a photonic crystal*, Phys. Rev. A **89**, 062117 (2014)
76. Jamir Marino, Antonio Noto, Roberto Passante, *Thermal and non-thermal signatures of the Unruh effect in Casimir-Polder forces*, Phys. Rev. Lett. **113**, 020403 (2014)
77. Mauro Antezza, Caterina Braggio, Giovanni Carugno, Antonio Noto, Roberto Passante, Lucia Rizzuto, Giuseppe Ruoso, Salvatore Spagnolo, *Optomechanical Rydberg-atom excitation via dynamic Casimir-Polder coupling*, Phys. Rev. Lett. **113**, 023601 (2014)
78. Federico Armata, Roberto Passante, *Vacuum energy densities of a field in a cavity with a mobile boundary*, Phys. Rev. D **91**, 025012 (2015)
79. Nicola Bartolo, Salvatore Butera, Margherita Lattuca, Roberto Passante, Lucia Rizzuto, Salvatore Spagnolo, *Vacuum Casimir energy densities and field divergences at boundaries*,

- J. Phys: Condensed Matter **27**, 214015 (2015) (invited paper, Special issue on *Casimir Forces*)
80. Pablo Barcellona, Roberto Passante, *A microscopic approach to Casimir and Casimir-Polder forces between metallic bodies*, Ann. Phys. **355**, 282 (2015)
  81. Fabio Bagarello, Margherita Lattuca, Roberto Passante, Lucia Rizzuto, Salvatore Spagnolo, *Non-Hermitian Hamiltonian for a modulated Jaynes-Cummings model with PT symmetry*, Phys. Rev. A **91**, 042134 (2015)
  82. Pablo Barcellona, Roberto Passante, Lucia Rizzuto, Stefan Yoshi Buhmann, *Dynamical Casimir-Polder interaction between a chiral molecule and a surface*, Phys. Rev. A **93**, 032508 (2016)
  83. Fabio Bagarello, Francesco Gargano, Margherita Lattuca, Roberto Passante, Lucia Rizzuto, Salvatore Spagnolo, *Exceptional points in a non-Hermitian extension of the Jaynes-Cummings Hamiltonian*, in: *Non-Hermitian Hamiltonians in Quantum Physics (Springer Proceedings in Physics 184)*, F. Bagarello, R. Passante and C. Trapani eds., Springer (2016), p. 83
  84. Lucia Rizzuto, Margherita Lattuca, Jamir Marino, Antonio Noto, Salvatore Spagnolo, Wenting Zhou, Roberto Passante, *Nonthermal effects of acceleration in the resonance interaction between two uniformly accelerated atoms*, Phys. Rev. A **94**, 012121 (2016)
  85. Pablo Barcellona, Roberto Passante, Lucia Rizzuto, Stefan Yoshi Buhmann, *van der Waals interactions between excited atoms in generic environments*, Phys. Rev. A **94**, 012705 (2016)
  86. Federico Armata, Ruggero Vasile, Pablo Barcellona, Stefan Yoshi Buhmann, Lucia Rizzuto, Roberto Passante, *Dynamical Casimir-Polder force between an excited atom and a conducting wall*, Phys. Rev. A **94**, 042511 (2016)
  87. Wenting Zhou, Roberto Passante, Lucia Rizzuto, *Resonance interaction energy between two accelerated identical atoms in a coaccelerated frame and the Unruh effect*, Phys. Rev. D **94**, 105025 (2016)

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