

CURRICULUM VITAE

Fernando C. Lombardo

Mailing Address:

Departamento de Física, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires
Ciudad Universitaria, Pabellón 1, Buenos Aires (1428), Argentina.

Phone: +54 11 4576-3390; ext. 823

Fax: +54 11 4576-3357

e-mail: *lombardo@df.uba.ar*

url: www.df.uba.ar/users/lombardo

Citizenship: Argentine

Education

- Doctor en Ciencias Físicas (Ph.D in Physics), December 1998, Facultad de Ciencias Exactas, Universidad de Buenos Aires.

Ph.D Thesis: “Quantum to Classical Transition in Quantum Field Theory”. Advisor: Dr. Francisco D. Mazzitelli.

- Licenciado en Ciencias Físicas (M.Sc. in Physics), August 1992, Facultad de Ciencias Exactas, Universidad de Buenos Aires.

- M.Sc. Thesis: “On the Origin and Measurement of Time in Quantum Cosmology”. Advisor: Dr. Mario Castagnino.

Positions Held

- 03/02 - Present - Principal Researcher at CONICET and Associate Professor, Departamento de Física, Facultad de Ciencias Exactas y Naturales - UBA
- 07/15 - 12/21 - Simons Associate - Abdus Salam International Centre for Theoretical Physics.
- 08/17 - 08/19 - Deputy Director, Departamento de Física, Facultad de Ciencias Exactas y Naturales - UBA
- 08/15 - 08/17 - Chair of the Physics Department. Facultad de Ciencias Exactas y Naturales - UBA
- 07/09 - 07/11 - Deputy Director, Departamento de Física, Facultad de Ciencias Exactas y Naturales - UBA
- 11/99 - 12/01 - Postdoctoral Research Associate, Theoretical Physics Group, Blackett Laboratory - Imperial College of Science, Technology, and Medicine. London - UK. CONICET Fellowship.
- 03/99 - Full Time Teaching Assistant, Department of Physics, University of Buenos Aires.
- 03/97 - 02/99 - Research Fellowship, Department of Physics, University of Buenos Aires.
- 10/93 - 02/97 - Scientific Initiation Fellowship, University of Buenos Aires.

- 09/90 - 10/96 - Teaching Assistant, Department of Physics, University of Buenos Aires.

Teaching Experience

Present position: Associate Professor with full-time dedication, Department of Physics, University of Buenos Aires. Subject: Quantum Field Theory, Quantum Mechanics, Electromagnetism.

Publications

- 119** Cruz I. Velasco, Nicolás F. Del Grosso, Fernando C. Lombardo, Alejandro Soba & Paula I. Villar, Phys. Rev. A (2022) *Photon generation and entanglement in a double superconducting cavity*
- 118** C. D. Fosco, F. C. Lombardo & F. D. Mazzitelli, Phys. Rev. D (2022) *Motion induced excitation and electromagnetic radiation from an atom facing a thin mirror*
- 117** Nicolás F. Del Grosso, Fernando C. Lombardo, Francisco D. Mazzitelli, and Paula I. Villar, Phys. Rev. A **105**, 052217 (2022). *Shortcut to adiabaticity in a cavity with a moving mirror*
- 116** C. D. Fosco, F. C. Lombardo & F. D. Mazzitelli, Phys. Rev. D **105**, 045019 (2022) *Motion induced excitation and radiation from an atom facing a mirror*
- 115** Nicolás F. Del Grosso, Fernando C. Lombardo, Francisco D. Mazzitelli, and Paula I. Villar, Phys. Rev. A **105**, 022202 (2022). *The quantum Otto cycle in a superconducting cavity in the non-adiabatic regime*
- 114** Ludmila Viotti, Fernando C. Lombardo & Paula I. Villar, Phys. Rev. A **105**, 022218 (2022). *Geometric phase in a dissipative Jaynes-Cummings model: theoretical explanation for resonance robustness*
- 113** C. D. Fosco, F. C. Lombardo & F. D. Mazzitelli, Universe **7**, 158 (2021) *Motion-induced radiation due to an atom in the presence of a graphene plane*
- 112** Nicolás Mirkin, Diego Wisniacki, Paula I. Villar, and Fernando C. Lombardo, Quantum Sci. Technol. **6**, 045018 (2021) *Sensing quantum chaos through the non-unitary geometric phase*
- 111** Fernando C. Lombardo, Ricardo S. Decca, Ludmila Viotti, and Paula I. Villar, Advanced Quantum Technologies **2000155**, 1-9 (2021), *Detectable Signature of Quantum Friction on a Sliding Particle in Vacuum*
- 110** Ludmila Viotti, Fernando C. Lombardo & Paula I. Villar, Phys. Rev. A **103**, 032809 (2021). *Enhanced decoherence for a neutral particle sliding on a metallic surface in vacuum*
- 109** Nicolás F. Del Grosso, Fernando C. Lombardo & Paula I. Villar, Phys. Rev. D **102**, 125008 (2020). *Entanglement degradation of cavity modes due to the dynamical Casimir effect*
- 108** Ludmila Viotti, Fernando C. Lombardo & Paula I. Villar, Phys. Rev. A **101**, 032337 (2020). *Boundary-induced effect encoded in the corrections to the geometric phase acquired by a bipartite two-level system*
- 107** M. Belén Farías, F. C. Lombardo, A. Soba, P.I. Villar, & R.S. Decca, Nature P. Journal Quantum Information **6**, 1-7 (2020). *Towards detecting traces of non-contact quantum friction in the corrections of the accumulated geometric phase*
- 106** Nicolás F. Del Grosso, Fernando C. Lombardo & Paula I. Villar, Phys. Rev. A **100**, 062516 (2019). *Photon generation via dynamical Casimir effect in an optomechanical cavity as a closed quantum system*
- 105** M. Belén Farías, C. D. Fosco, F. C. Lombardo & F. D. Mazzitelli, Phys. Rev. D **100**, 036013 (2019). *Motion induced radiation and quantum friction for a moving atom*
- 104** Ludmila Viotti, M. Belén Farías, Paula I. Villar, & Fernando C. Lombardo, Phys. Rev. D

- 99**, 105005 (2019). *Thermal corrections to quantum friction and decoherence: a Closed-Time-Path approach to atom-surface interaction*
- 103** C. D. Fosco, F. C. Lombardo & F. D. Mazzitelli, *Annals of Phys.* **399**, 258-269 (2018). *A Magnus approximation approach to harmonic systems with time-dependent frequencies*
- 102** F.C. Lombardo, F.D. Mazzitelli, A. Soba & P.I. Villar, *Phys. Rev. A* **98**, 022512 (2018). *Dynamical Casimir effect in a double tunable superconducting circuit*
- 101** Adrián E. Rubio López, Pablo M. Poggi, Fernando C. Lombardo & Vincenzo Giannini, *Phys. Rev. A* **97**, 042508 (2018). *Landauers formula breakdown for radiative heat transfer and non-equilibrium Casimir forces*
- 100** Luis E. Oxman, Antonio Z. Khoury, Fernando C. Lombardo & Paula I. Villar, *Annals of Physics* **390** (2018) 159179. *Two-qudit geometric phase evolution under dephasing*
- 99** P.M. Poggi, F.C. Lombardo & D.A. Wisniacki, *Europhys. Letts.* **118**, 20005 (2017). *Driving-induced amplification of non-Markovianity in open quantum system evolution*
- 98** Fernando C. Lombardo & Paula I. Villar, *Europhys. Letts.* **118**, 50003 (2017). *Geometric phase corrections on a moving particle in front of a dielectric mirror*
- 97** Fernando C. Lombardo & Paula I. Villar, *J. of Phys: Conf. Ser.* **880**, 012035 (2017). *Quantum friction imprints on the geometric phase of a moving atom in front of a dielectric plate*
- 96** Paula I. Villar, Alejandro Soba & Fernando C. Lombardo, *Phys. Rev. A* **95**, 032115 (2017). *Numerical approach to simulating interference phenomena in a two-oscillating mirrors cavity*
- 95** M. Belén Farías, César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, *Phys. Rev. D* **95**, 065012 (2017). *Quantum friction between graphene sheets*
- 94** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, *Phys. Rev. D* **94**, 085024 (2016). *Difference Between the Vacuum Casimir Energies for Grounded and Isolated Conductors*
- 93** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, *Phys. Rev. D* **93**, 125015 (2016). *Casimir Free Energy at High Temperatures: Grounded versus Isolated Conductors*
- 92** Fernando C. Lombardo, Francisco D. Mazzitelli, Adrian E. Rubio Lopez, and Gustavo J. Turiaci, *Phys. Rev. D* **94**, 025029 (2016), *Nonequilibrium Lifshitz theory as a steady state of a full dynamical quantum system*
- 91** M. Belén Farías & F.C. Lombardo, *Phys. Rev. D* **93**, 065035 (2016). *Dissipation and decoherence effects on a moving particle in front of a dielectric plate*
- 90** F.C. Lombardo, F.D. Mazzitelli, A. Soba & P.I. Villar, *Phys. Rev. A* **93**, 032501 (2016). *Dynamical Casimir effect in superconducting circuits: a numerical approach*
- 89** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, *Phys. Rev. D* **92**, 125007 (2015) . *Derivative expansion for the electromagnetic Casimir free energy at high temperatures*
- 88** P.M. Poggi, F.C. Lombardo & D.A. Wisniacki, *Phys. Rev. A* **92**, 053411 (2015), *Time-optimal control fields for quantum systems with multiple avoided crossings*
- 87** César D. Fosco & Fernando C. Lombardo, *Eur. Phys. J. C*, **75**, 1-9 (2015), *Radiation from an oscillating dipole layer facing a conducting plane: resonances and Dynamical Casimir Effect*
- 86** P.M. Poggi, F.C. Lombardo & D.A. Wisniacki, *J. Phys. A: Math. Theor.* **48** (2015) 35FT02. *Enhancement of quantum speed limit time due to cooperative effects in multilevel systems*
- 85** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, *Phys. Rev. D* **91**, 105019 (2015). *Derivative expansion for the electromagnetic and Neumann Casimir effects in 2 + 1 dimensions with imperfect mirrors*

- 84** Fernando C. Lombardo & Paula I. Villar, J. Phys: Conf. Ser. **626**, 012043 (2015). *Geometric phase and Quantum Correlations for a bipartite two-level system*
- 83** M. Belén Farías, César D. Fosco, Fernando C. Lombardo, Francisco D. Mazzitelli & Adrián Rubio López, Phys. Rev. D **91**, 105020 (2015). *A functional approach to quantum friction: effective action and dissipative force*
- 82** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, Phys. Rev. A **91**, 022513 (2015). *The effect of concurrent geometry and roughness in interacting surfaces*
- 81** Fernando C. Lombardo & Paula I. Villar, Phys. Rev A **91**, 042111 (2015). *Correction to the geometric phase by structured environments: the onset of non-Markovian effects*
- 80** Adrián Rubio López & Fernando C. Lombardo, Eur. Phys. J. C **75**:93 (2015). *Quantum electrodynamics of inhomogeneous anisotropic media*
- 79** Fernando C. Lombardo & Paula I. Villar, Phys. Letts. A **379**, 246-254 (2015). *Decoherence of a solid-state qubit by different noise correlation spectra*
- 78** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, Phys. Rev. A **89**, 062120 (2014). *The derivative expansion approach to the interaction between close surfaces*
- 77** Adrián Rubio López & Fernando C. Lombardo, Phys. Rev D **89**, 105026 (2014). *Closed time path approach to the Casimir energy in real media*
- 76** Fernando C. Lombardo & Paula I. Villar, Phys. Rev. A **89**, 012110 (2014). *Corrections to Berry's phase in a solid-state qubit due to low frequency noise*
- 75** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, Phys. Re. A, **88**, 062501 (2013). *Electrostatic Interaction due to Patch Potentials on Smooth Conducting Surfaces*
- 74** P.M. Poggi, F.C. Lombardo & D.A. Wisniacki, Europhys. Lett. **104**, 40005 (2013). *Quantum speed limit and optimal evolution time in a two-level system*
- 73** César D. Fosco, Fernando C. Lombardo, Francisco D. Mazzitelli & María L. Ramaggi, Phys. Rev. D **88**, 105004 (2013) . *Quantum dissipative effects in graphene-like mirrors*
- 72** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, Phys. Rev. D **87**, 105008 (2013). *Vacuum fluctuations and generalized boundary conditions*
- 71** Fernando C. Lombardo & Paula I. Villar, Phys. Rev. A **87**, 032338 (2013), *Nonunitary geometric phases: a qubit coupled to an environment with random noise*
- 70** Fernando C. Lombardo & Gustavo J. Turiaci, Phys. Rev. D **87**, 084028 (2013), *Dynamics of an acoustic black hole as an open quantum system*
- 69** P.M. Poggi, F.C. Lombardo & D.A. Wisniacki, submitted to Phys. Rev. A **87**, 022315 (2013). *Controlling open quantum systems using fast transitions*
- 68** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, Phys. Rev. D **86**, 125018 (2012). *Fourth order perturbative expansion for the Casimir energy with a slightly deformed plate*
- 67** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, Phys. Rev. D **86**, 045021 (2012). *Derivative expansion for the Casimir effect at zero and finite temperature in $d+1$ dimensions*
- 66** César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, Phys. Rev. D **85**, 125037 (2012). *Derivative expansion of the electromagnetic Casimir energy for two thin mirrors*
- 65.** Fernando C. Lombardo & Gustavo J. Turiaci, Phys. Rev. Lett. **108**, 261301 (2012). *Decoherence and loss of entanglement in acoustic black holes*

64. César D. Fosco, Fernando C. Lombardo & Francisco D. Mazzitelli, *Annals of Physics* 327, 2050-2059, (2012). *Improved proximity force approximation in electrostatics*
63. C.D. Fosco, F.C. Lombardo & F.D. Mazzitelli, *Phys. Rev. D* 84, 105031 (2011). *The proximity force approximation for the Casimir energy as a derivative expansion*
62. F.C. Lombardo, F.D. Mazzitelli & A.E. Rubio López, *Phys. Rev. A* 84, 052517 (2011). *Casimir force for absorbing media in an open quantum system framework: Scalar model*
61. C.D. Fosco, F.C. Lombardo & F.D. Mazzitelli, *Phys. Rev. D* 84, 025011 (2011). *Quantum dissipative effects in moving imperfect mirrors: sidewise and normal motions*
60. Paula I. Villar & Fernando C. Lombardo, *Phys. Rev. A* 83, 052121 (2011). *Geometric phases under the presence of a composite environment*
59. C.D. Fosco, F.C. Lombardo & F.D. Mazzitelli, *Phys. Rev. D* 82, 125039 (2010). *Inertial forces and dissipation on accelerated boundaries*
58. F. M. Cucchiatti, J.-F. Zhang, F. C. Lombardo, P.I. Villar, & R. Laflamme; *Phys. Rev. Lett.* 105, 240406 (2010). *Observation of the geometric phase with nonunitary evolution in presence of a quantum critical environment*
57. F. C. Lombardo, F. D. Mazzitelli, P. I. Villar, & D.A.R. Dalvit; *Phys. Rev. A* 82, 042509 (2010). *Casimir energy between media-separated cylinders: the scalar case*
56. Q. Wei, D.A.R. Dalvit, F.C. Lombardo, F.D. Mazzitelli, & R. Onofrio; *Phys. Rev. A* 81, 052115 (2010). *Results from electrostatic calibrations for measuring the Casimir force in the cylinder-plane geometry*
55. F.C. Lombardo & F.D. Mazzitelli, *Physica Scripta* 82, 038113 (2010). *The quantum open systems approach to the dynamical Casimir effect*
54. F.C. Lombardo, F.D. Mazzitelli & P.I. Villar, *Quantum Field Theory Under the Influence of External Conditions*, eds. K. Milton y M. Bordag, 38 (2010). *Using boundary methods to compute the Casimir energy*
53. C.D. Fosco, F.C. Lombardo & F.D. Mazzitelli, *Phys. Letts. B* 690, 189-195 (2010). *Neumann Casimir effect: A singular boundary-interaction approach*
52. Fernando C. Lombardo & Paula I. Villar, *Phys. Rev. A* 022115 (2010). *Environmentally-induced effects on a bipartite two-level system: geometric phase and entanglement properties*
51. Fernando C. Lombardo, Francisco D. Mazzitelli, Mariano Vázquez & Paula I. Villar, *Phys. Rev. D* 80, 065018 (2009). *Computing the Casimir energy using the point-matching method*
50. C.D. Fosco, F.C. Lombardo & F.D. Mazzitelli, *Phys. Rev. D* 80, 085004 (2009). *Derivative expansion for the boundary interaction terms in the Casimir effect: generalized δ -potentials*
49. Francisco D. Mazzitelli, Fernando C. Lombardo & Paula I. Villar, *Journal of Physics: Conf. Ser.* 161, 012015 (2009). *On the accuracy of the PFA: analogies between Casimir and electrostatic forces*
48. Fernando C. Lombardo, Francisco D. Mazzitelli, and Paula I. Villar, *Phys. Rev. D* 78, 085009 (2008). *Numerical evaluation of the Casimir interaction between cylinders*
47. C.D. Fosco, F.C. Lombardo, and F.D. Mazzitelli, *Phys. Lett. B* 669, 371-375 (2008). *Casimir effect with dynamical matter on thin mirrors*
46. Fernando C. Lombardo & Paula I. Villar, *Int. J. Quantum Information* 6, 707-713 (2008). *Environmentally induced corrections to the geometric phase in a two-level system*
45. C.D. Fosco, F.C. Lombardo, and F.D. Mazzitelli, *Phys. Rev. D* 77, 085018 (2008). *Casimir energies with finite-width mirrors*

44. F.C. Lombardo, F.D. Mazzitelli, and P.I. Villar. *J. Phys. A: Math. Theor.* 41, 164009 (2008). *Exploring the quantum vacuum with cylinders*
43. C.D. Fosco, F.C. Lombardo, and F.D. Mazzitelli. *Phys. Rev. D* 76, 085007 (2007). *Quantum dissipative effects in moving mirrors: a functional approach*
42. Paula I. Villar & Fernando C. Lombardo. *Int. J. Mod. Phys. B* 21, 4659 (2007). *Visibility Fringe Reduction Due to Noise-Induced Effects: Microscopic Approach for Interference Experiments*
41. Fernando C. Lombardo & Paula I. Villar. *Phys. Lett. A* 371, 190 (2007). *Noise-induced energy-excitation by a general environment*
40. Fernando C. Lombardo, Diana Monteoliva & Paula I. Villar. *Journal of Physics: Conf. Ser.* 67, 012027 (2007). *Macroscopic tunneling, decoherence, and noise activation*
39. Paula I. Villar & Fernando C. Lombardo. *Journal of Physics: Conf. Ser.* 67, 012041 (2007). *Decoherence in a two slit diffraction experiment with massive particles*
38. F.C. Lombardo, R.J. Rivers & P.I. Villar. *Physics Letters B* 648, 64-69 (2007). *Decoherence of domains and defects at phase transitions*
37. F.C. Lombardo & P.I. Villar, *Phys. Rev. A* 74, 042311 (2006). *Geometric phases in open systems: an exact model to study how they are corrected by decoherence*
36. D. Dalvit, F.C. Lombardo & F.D. Mazzitelli, *New J. Phys.* 8, 240 (2006). *Exact zero-point interaction energy between cylinders*
35. D. Dalvit, F.C. Lombardo, F.D. Mazzitelli & R. Onofrio, *Phys. Rev. A* 74, 020101(R) (2006). *Exact Casimir interaction between eccentric cylinders*
34. M Brown-Hayes, J H Brownell, D A R Dalvit, J W Kim, A Lambrecht, F C Lombardo, F D Mazzitelli, V V Nesvizhevsky, R Onofrio & S Reynaud, *J. Phys. A: Mah. Gen.* 39 6195-6208 (2006). *Thermal and dissipative effects in Casimir physics*
33. F.C. Lombardo & P.I. Villar, *J. Phys. A: Math.Gen.* 39, 6509-6516 (2006). *Dephasing in matter-wave interferometry*
32. F.C. Lombardo & P.I. Villar, *Phys. Rev. A* 72, 034103 (2005). *Decoherence induced by a composite environment*
31. N. Antunes, F.C. Lombardo, D. Monteoliva & P.I. Villar, *Phys. Rev. E* 73, 066105 (2006). *Decoherence, tunneling and noise-activation in a double-potential well at high and zero temperature*
30. F.C. Lombardo & D. López Nacir, *Phys. Rev. D* 72, 063506 (2005) . *Decoherence during Inflation: the generation of classical inhomogeneities*
29. F.C. Lombardo & P.I. Villar, *Int. J. Mod. Phys. B* 20, 2951 (2006). *Decoherence in a composite quantum open system: the effectiveness of unstable dregrees of freedom*
28. F.C. Lombardo, F.D. Mazzitelli & P.I. Villar, *Phys. Rev. A* 72, 042111 (2005). *Decoherence induced by a fluctuating Aharonov-Casher phase*
27. R.J. Rivers & F.C. Lombardo, *Int. J. Theor. Phys.* 44, 1855 (2005). *How phase transitions induce classical behaviour*
26. F.C. Lombardo, *Brazilian Journal of Physics* 35, 2 (2005). *Influence functional approach to decoherence during Inflation*
25. R.J. Rivers & F.C. Lombardo, *Brazilian Journal of Physics*, 35, 397 (2005). *Onset of classical behaviour after a phase transition*
24. F.C. Lombardo & P.I. Villar, *Phys. Lett. A* 336, 16-24 (2005). *Decoherence induced by zero point*

23. M. Crocce, D. Dalvit, F.C. Lombardo & F.D. Mazzitelli, *J. of Optics B* 7, S32 (2005). *Hertz potentials approach to the dynamical Casimir effect in cylindrical cavities of arbitrary section*
22. M. Crocce, D. Dalvit, F.C. Lombardo & F.D. Mazzitelli, *Phys. Rev. A* 70, 033811 (2004). *Resonant photon creation in a cavity with time dependent conductivity*
21. D. Dalvit, F.C. Lombardo, F.D. Mazzitelli & R. Onofrio, *Europhysics Letts.* 67, 517-523 (2004). *Casimir force between eccentric cylinders*
20. F.C. Lombardo, F.D. Mazzitelli, & R.J. Rivers, *Nuclear Physic B* 672, 462 (2003). *Decoherence in field theory: general couplings and slow quenches*
19. R.J. Rivers, F.C. Lombardo, & F.D. Mazzitelli, *Phys. Lett. B* 539, 1 (2002). *The formation of classical defects after a slow quantum phase transition*
18. F.C. Lombardo, F.D. Mazzitelli, & R.J. Rivers, *Int. J. Theor. Phys.* 41, 2121 (2002). *Classical behaviour after a phase transition: I. Classical order parameter*
17. R.J. Rivers, F.C. Lombardo, & F.D. Mazzitelli, *Int. J. Theor. Phys.* 41, 2145 (2002). *Classical behaviour after a phase transition: II. The formation of classical defects*
16. N. Antunes, F.C. Lombardo, & D. Monteoliva, *Phys. Rev. E* 64, 066118 (2001). *Quantum effects after decoherence in quenched phase transition*
15. F.C. Lombardo, F.D. Mazzitelli, & R.J. Rivers, *Physics Letters B* 523, 317 (2001). *Classical behaviour after a phase transition*
14. D.A.R Dalvit & F.C. Lombardo, *Ciencia Hoy* 64, 16 (2001). *Transición Cuántico-Clásica: de la Teoría al Experimento*
13. F.C. Lombardo, F.D. Mazzitelli, & D. Monteoliva, *Phys. Rev. D* 62, 045016 (2000). *Classicality of the Order Parameter During a Phase Transition*
12. M. Castagnino, S. Landau, & F.C. Lombardo, *General Relativity and Gravitation* 31, 1407 (1999). *Creation of Unstable Particles and Decoherence in Semiclassical Cosmology*
11. F.C. Lombardo, M. Castagnino, & L. Bombelli, *Modern Physics Letters A* 14, 539 (1999). *From Classical Chaos to Decoherence in Robertson-Walker Cosmology*
10. F.C. Lombardo, F.D. Mazzitelli, and J.G. Russo, *Physical Review D* 59, 064007 (1999). *Energy-momentum Tensor for Dilaton Coupled Scalar Fields in Two Dimensions*
9. F.C. Lombardo & F.D. Mazzitelli, *Physical Review D* 58, 024009 (1998). *Influence Functional in Two Dimensional Dilatonic Gravity*
8. L. Bombelli, F.C. Lombardo, & M. Castagnino, *Journal of Mathematical Physics* 39, 6040 (1998). *Chaos in Robertson-Walker Cosmology*
7. F. Lombardo & F. D. Mazzitelli, *Physical Review D* 55, 3889 (1997). *Einstein-Langevin Equations From Running Coupling Constants*
6. F.C. Lombardo & F.D. Mazzitelli, *Physical Review D* 53, 2001 (1996). *Coarse Graining and Decoherence in Quantum Field Theory*
5. M. Castagnino & F.C. Lombardo, *General Relativity and Gravitation* 28, 263 (1996). *Decoherence, Correlation, and Unstable Quantum States in Semiclassical Cosmology*
4. M. Castagnino & F.C. Lombardo, *General Relativity and Gravitation* 28, 257 (1995). *Time Asymmetry in Semiclassical Cosmology*

3. M. Castagnino & F.C. Lombardo, *Physical Review D*48, 1722 (1993). *Origin and Measurement of Time in Quantum Cosmology* (Undergraduate Thesis)
2. M. Castagnino, F. Gaioli, & F.C. Lombardo, *Proceedings of the Annual Meeting on Physics of the Argentine Physics Association, vol. 5*, (1993). *Rigged Hilbert Space Approach to the Brownian Motion Problem*
1. M. Castagnino & F.C. Lombardo, *Proceedings of the Annual Meeting on Physics of the Argentine Physics Association, vol. 4*, (1992). *Time in Quantum Cosmology*

Conferences Attended

- "Traces of Quantum Friction in the Accumulated Geometric Phase", invited speaker in n KITP Conference: Quantum and Thermal Electrodynamics in the Presence of Matter: Progress and Challenges (Jul 11-14, 2022); Kavli Institute for Theoretical Physics, University of California, Santa Barbara, USA.
- "Enhanced decoherence for a neutral particle sliding on a metallic surface in vacuum", talk at KITP Program: Emerging Regimes and Implications of Quantum and Thermal Fluctuational Electrodynamics (Jun 20 - Aug 5, 2022). Round table on Quantum Friction.
- "Dynamical Casimir effect in tunable superconducting circuits", talk at KITP Program: Emerging Regimes and Implications of Quantum and Thermal Fluctuational Electrodynamics (Jun 20 - Aug 5, 2022). Round table on Dynamical Casimir Effect.
- "Entanglement degradation of cavity modes due to the dynamical Casimir effect", 24th Annual Conference on Quantum Information Processing QIP 2021, Technical University of Munich (TUM) and the Munich Center for Quantum Science and Technology (MCQST), Germany; Sat. 30. January - Fri. 05. February 2021 - online conference.
- "Photon generation via dynamical Casimir effect in an optomechanical cavity", Quantum Foundations, Technology and Applications 2020, Indian Institute of Science Education and Research Mohali, India; December 4-9 2020 - online conference.
- "Geometric Phase and Entanglement properties of a bipartite two-level system induced by electromagnetic vacuum fluctuations", Quantum Foundations, Technology and Applications 2020, Indian Institute of Science Education and Research Mohali, India; December 4-9 2020 - online conference.
- Conference on Quantum Annealing/Adiabatic Quantum Computation, (ICTP, Trieste - Italy, 4-7 October 2020).
- "Traces of non-contact quantum friction in the Lab?", invited speaker in Workshop on Quantum Foundations and Quantum Information, Quantum Science and Technology - Argentina 2019, Puerto Madryn, Chubut - Argentina, october 2019.
- "Corrections to Berry's phase in a solid-state qubit due to low frequency noise". Workshop on Quantum Driven Systems. Nov. 21 - Dec. 2, 2016. San Carlos de Bariloche, Argentina
- Conference on New Trends in Quantum Heat and Thermoelectrics (ICTP, Trieste - Italy, 22-26 August 2016).
- Workshop on Theory and Practice of Adiabatic Quantum Computers and Quantum Simulation (ICTP, Trieste - Italy, 22-26 August 2016).

- "Quantum friction and decoherence on a moving particle in front of a plate - corrections to the geometric phase", Castello Pasquini/Castiglioncello (Tuscany), Italia; September 12-16, 2016; Eight International Workshop DICE2016; Spacetime - Matter - Quantum Mechanics
- "Corrections to the Berry phase in a solid-state qubit due to noise fluctuations", Castello Pasquini/Castiglioncello (Tuscany), Italy; September 15-19, 2014; Seventh International Workshop DICE2014; Spacetime - Matter - Quantum Mechanics
- Quantum Optics VII, Mar del Plata, Argentina, 27 - 31 de octubre de 2014.
- "Nonunitary geometric phases: a qubit coupled to an environment with random noise ", IV Quantum Information School and Workshop, Paraty 2013, Paraty, Rio de Janeiro, Brazil. August 12-16, 2013.
- Workshop Decoherence and Friends, Institute for Quantum Computation, University of Waterloo, Canada. May 2013.
- 10/12 Frontiers of Casimir Physics, School and Workshop, PASI, Ushuaia, Argentina, "Fourth order perturbative expansion for the Casimir energy with a slightly deformed plate"; October 6 - 17, 2012.
- 09/11 Quantum field theory under the influence of external conditions; CENTRO DE CIENCIAS DE BENASQUE "PEDRO PASCUAL", Benasque, Spain. Talk: "The proximity force approximation for the Casimir energy as a derivative expansion"; September 18 - 24, 2011.
- 11/10 Quantum Optics V; Cozumel, México. Poster: "Geometric phase with nonunitary evolution in the presence of a critical environment", november 15-19th, 2010.
- 09/10 Workshop on Quantum Coherence and Decoherence, CENTRO DE CIENCIAS DE BENASQUE "PEDRO PASCUAL", Benasque, España. Talk: "Geometric phase in a quantum open system".
- 09/09 New Frontiers in Casimir Force Control, Santa Fe, New Mexico, USA.
- 09/09 Ninth Conference on QUANTUM FIELD THEORY UNDER THE INFLUENCE OF EXTERNAL CONDITIONS, The University of Oklahoma Norman, OK USA. Talk: " Computing the Casimir Energy using the Point-Matching Method".
- 04/09 Grav09, La Falda, Córdoba, Argentina. Talk: " The Casimir Effect: an overview on experiments and exact calculations".
- 09/08 Fourth International Workshop DICE2008 Castello Pasquini/Castiglioncello (Tuscany), Italy, September 22-27, 2008. From Quantum Mechanics through Complexity to Spacetime: the role of emergent dynamical structures. Talk: " Quantum dissipative effects in moving mirrors: particle creation and decoherence"
- 09/08 Workshop on Quantum Coherence and Decoherence, CENTRO DE CIENCIAS DE BENASQUE "PEDRO PASCUAL", Benasque, Spain. Septiembre 13 - 21, 2008. Talk: " Environmentally induced corrections to the geometric phases in open quantum systems"
- 08/08 XXXI Meeting of the net Strings@r, Departamento de Física de la Universidad Nacional de La Plata, Argentina; talk: " Quantum dissipative effects in moving mirrors: particle creation and decoherence"
- 11/07 Workshop on Noise Information & Complexity @ Quantum Scale; Ettore Majorana Centre, Erice (Sicily), Italy; talk: " Geometric phases in open systems: a model to study how they are corrected by decoherence",

- 11/07 Workshop on Noise Information & Complexity @ Quantum Scale; Ettore Majorana Centre, Erice (Sicily), Italy, poster: “Macroscopic tunneling, decoherence and noise-induced activation”
- 09/07 - 92 Reunión Nacional de Física, organizada por la AFA; división de partículas y campos; Salta, Argentina; talk: “ La interacción de Casimir entre cilindros excéntricos”
- 09/07 - Workshop on QUANTUM FIELD THEORY UNDER THE INFLUENCE OF EXTERNAL CONDITIONS; University of Leipzig, Leipzig, Germany; talk: “ Functional approach to the dynamical Casimir effect”
- 09/06 - Third International Workshop DICE2006, Quantum Mechanics Between Decoherence and Determinism: New Aspects from Particle Physics to Cosmology, Piombino, Italy; September 2006; talk: “ Macroscopic tunneling, decoherence and noise activation”
- 06/06 - XI Peyresq Workshop on Cosmology, Peyresq, Francia, June de 2006; talk: “Decoherence during Inflation: the generation of classical inhomogeneities”
- 09/05 - Seventh Workshop on QUANTUM FIELD THEORY UNDER THE INFLUENCE OF EXTERNAL CONDITIONS; IEEC, CSIC and University of Barcelona Barcelona, Spain; talk: “Decoherence induced by a fluctuating Aharonov-Casher phase”
- 12/04 - Quantum Optics II - Cozumel, México; December 2004; work presented: “Photon creation in resonant cavities: moving mirrors vs time dependent conductivity”
- 09/04 - Decoherence, Information, Complexity and Entropy - Piombino (Tuscany), Italy; September 2004; talk presented: “Decoherence during Inflation”
- 06/04 - First International Workshop on the Dynamical Casimir Effect; Padova, Italy; June 2004; talk presented: “Dynamical Casimir effect via time-dependent conductivity in the MIR experiment”
- 12/03 - Pan-American Advanced Studies Institute and Workshop “Physics of Information”; Buzios, Brazil; work presented: “Decoherence in field theory: second order phase transitions”
- 09/03 - National Meeting on Physics, S.C. de Bariloche, Rio Negro, Argentina, talk presented: “Quantum fields and classical topological defects”.
- 09/02 - International School of Astrophysics “D. Chalonge”; 9th Course: The Early Universe and the Cosmic Microwave Background: Theory and Observations; Palermo, Italy, December 2002
- 09/02 - Decoherence, Information, Complexity and Entropy - Piombino (Tuscany), Italy; September 2002; talk presented: “Decoherence and the formation of topological defects”
- 07/01 - ENF-Network “COSLAB” (Cosmology in the Laboratory); Imperial College, London, UK; July 2001; talk presented: “Decoherence and defects”
- 06/01 - Peyresq VI, “Cosmological inflation and primordial fluctuations. Energy desert and sub-millimeter gravity”, France; June 2001; talk presented: “Decoherence and the onset of classical behaviour after a phase transition”
- 03/01 - Meeting on Thermal Field Theory. Imperial College, London, UK; talk presented: “Decoherence and phase transitions”
- 12/00 - International School of Astrophysics “D. Chalonge”; 8th Course: Phase Transitions in the Early Universe; Erice, Italy

- 09/00 - ENF-Network on Topological Defects. Non-Equilibrium Field Theory in Particle Physics, Cosmology and Condensed Matter. Capri, Italy; talk presented: “Decoherence after a phase transition in quantum field theory”
- 12/98 - Annual Meeting on General Relativity and Gravitation, Mar del Plata, Buenos Aires, Argentina, talk presented: “Energy-momentum Tensor for Dilaton Coupled Scalar Fields in Two Dimensions”.
- 9/98 - 83th National Meeting on Physics, La Plata, Buenos Aires, Argentina, talk presented: “The Energy-momentum Tensor for Dilaton Coupled Scalar Fields in Two Dimensions”.
- 1/98 - Quantum Gravity in the South Cone, San Carlos de Bariloche, Argentina, talk presented: “Influence Functional in Two Dimensional Dilaton Gravity”.
- 9/97 - International School of Astrophysics “D. Chalonge”; 6th Course: Current Topics in Astrophysical Physics: Primordial Cosmology; Erice, Italy.
- 10/96 - 81th National Meeting on Physics, Tandil, Buenos Aires, Argentina, talk presented: “The Einstein-Langevin Equation”.
- 8/96 - Workshop on Quantum Dissipation and Applications, International Center for Theoretical Physics, Trieste, Italy.
- 3/96 - Quantum Gravity in the South Cone, Punta del Este, Uruguay, talk presented: “Coarse Graining and Decoherence in Quantum Field Theory”.
- 12/95 - Annual Meeting on General Relativity and Gravitation, La Plata, Argentina, talk presented: “Decoherence in Field Theory”.
- 10/95 - Annual Meeting of Fellowships of the Buenos Aires University, Buenos Aires, Argentina, talk presented: “Quantum Fluctuations and Structure Formation”.
- 10/95 - 80th National Meeting on Physics, S.C. de Bariloche, Rio Negro, Argentina, talk presented: “Decoherence in Quantum Field Theory”.
- 3/95 - VI Argentine Symposium of Particle Physics and Fields, Bariloche, Argentina.
- 8/94 - Vaquerias VI: Sixth National Seminar on Geometry, Relativity and Gravitation. Córdoba, Argentina.
- 9/93 - 78th National Meeting on Physics, Rosario, Santa Fe, Argentina, talk presented: “Quantum Brownian Motion and the Rigged Hilbert Spaces”.
- 11/93 - National Meeting on Non-Equilibrium Statistical Mechanics and Non-Linear Physics, Medifinol, Mar del Plata, Argentina, talk presented: “Rigged Hilbert Space Approach to the Brownian Motion Problem”.
- 12/93 - Annual Meeting on General Relativity and Gravitation, Punta del Este, Uruguay, talk presented: “Origin of Time in Quantum Cosmology”.
- 9/92 - 77th National Meeting on Physics, Buenos Aires, Argentina, talk presented: “Time in Quantum Gravity”.
- 12/92 - Annual Meeting on General Relativity and Gravitation, Mar del Plata, Buenos Aires, Argentina.
- 7/92 - 13th International Conference on General Relativity and Gravitation, Huerta Grande, Argentina, talk presented: “On the Origin and Measurement of Time in Quantum Cosmology”.

Grants, Fellows and Awards

- IOP Institute of Physics trusted reviewer: awarded IOP trusted reviewer status. IOP trusted reviewer status acknowledges demonstrated high level of peer review competence, with the ability to critique scientific literature to an excellent standard.
- Grant UBA; march 2004; 2008; 2011; 2014; 2018
- Grant National Agency for Science 2008; 2012; 2014; 2018
- Grants CONICET 2004; 2008; 2012; 2015
- Grant Fundación Antorchas 2004
- Reentry Grant, Fundación Antorchas; september 2001
- Postdoctoral Fellow, Fundación Antorchas, 1999-2001
- Postdoctoral Fellow, CONICET, 1999-2001
- PhD Research Fellow, University of Buenos Aires, 1994-1998
- Award for Scientific Productivity, University of Buenos Aires, 1995, 1994, 1993
- Honorable Mention of Gravity Research Foundation for “Time Asymmetry in Semiclassical Cosmology”, New York, 1994

Talks Given, Short and Long-Term Visits

- KITP Program: Emerging Regimes and Implications of Quantum and Thermal Fluctuational Electrodynamics. Kavli Institute for Theoretical Physics, University of California, Santa Barbara, USA. Conferences: ”Enhanced decoherence for a neutral particle sliding on a metallic surface in vacuum”, ”Dynamical Casimir effect in tunable superconducting circuits” (Jun 20 - Aug 5, 2022).
- International Centre for Theoretical Physics (ICTP). Trieste, Italia. Simons Associate. Sep - Oct 2019.
- International Centre for Theoretical Physics (ICTP). Trieste, Italia. Simons Associate. Sep - Oct 2018.
- Institute for Quantum Optics and Quantum Information, Innsbruck, Austria. Sep 2018. Talk: ”Dynamical Casimir effect in a double tunable superconducting circuit ”.
- International Centre for Theoretical Physics (ICTP). Trieste, Italia. Simons Associate. August - Sep 2016.
- International Centre for Theoretical Physics (ICTP). Trieste, Italia. Simons Associate. Sep - Oct 2015.
- Instituto de Física, Universidad Federal Fluminense, Brasil. No - Dec 2014.
- High Energy, Cosmology & Astroparticle Physics Section The Abdus Salam International Centre for Theoretical Physics - ICTP; Trieste - Italy. September de 2014. Seminar: ”Decoherence and loss of entanglement in acoustic black holes”.
- Laboratoire de Physique Theorique et Hautes Energies; Universite Pierre et Marie Curie - Paris VI, collaboration with Leticia Cugliandolo. September 2011. Seminars: ”Geometric phases in quantum open systems”; ”The Casimir force for absorbing media”.

- Institut de Ciències Fòniques. September 17 - 23th (2010).
- Los Alamos National Laboratory, Theretical Division. Seminar: Geometric phases in open quantum systems. July 5 - 19th (2008).
- Theoretical Physics Group, Imperial College (UK); september 2006.
- Theoretical Physics Group, Imperial College (UK); september 2004 and may 2005
- Particle Theory group, Sussex University; may 2005.
- Theoretical Division, Los Alamos National Laboratory, scientific collaboration on Casimir Effect, may-june 2003.
- Particle Theory group, Sussex University. Seminar: *Onset of classicality during a phase transition*, April 2001
- Theoretical Physics Group, Imperial College (UK). Seminar: *Classicality of the order parameter during a phase transition*, february 2000.
- Theoretical Physics Group, Imperial College (UK). Postdoctoral Academic Visitor. Argentine Research Council Fellowship. From november 1999 until november of 2001.
- Relativity Group, University of Maryland (USA). Seminar: *The Influence Functional in Semiclassical Gravity*, october 1997.
- Theoretical Division (T-6), Los Alamos National Laboratory (USA). Seminar: *The Decoherence Functional in Semiclassical Gravity*, september 1997.
- RggR Group, Service de Chuimie-Physique, and Institute Internationauxde Physique et de Chimie Solvay; Universite Libre de Bruxelles, in Brussels, Belgium. Invited by the Nobel Laureate Dr. Ilya Prigogine. From february to june of 1994. Seminar: *Chaos in Cosmology*.

Advisor

- * Phd advisor of Nicolás del Grosso from April 2019.
- * Phd advisor of Pablo Poggi, December 2017. Thesis: Coherent Control of Quantum Systems. **Thesis Awarded: JJ Giambiagi 2019 to the best Thesis in Argentina 2017-2018, Asociación Física Argentina, AFA.**
- * Phd advisor of M. Belén Farias, March 2017. Thesis: Quantum friction: dissipation induced by vacuum fluctuations.
- * Phd advisor of Adrián Rubio López, March 2015. Thesis: Out of equilibrium aspects of the Casimir Physics.
- * Phd advisor of Paula Villar, December 2007. Thesis: Quantum systems under the influence of external conditions: fluctuations and decoherence (electronic version at arXiv:0804.1969).
- * Advisor of “Licenciatura Thesis” (M.Sc. in Physics) of Ramiro de Olazabal, September 2017.
- * Advisor of “Licenciatura Thesis” (M.Sc. in Physics) of Pablo Poggi, August 2012.
- * Advisor of “Licenciatura Thesis” (M.Sc. in Physics) of Joaquín Turiacci, June 2012.
- * Advisor of “Licenciatura Thesis” (M.Sc. in Physics) of Andrés Armúa, April 2012.
- * Advisor of “Licenciatura Thesis” (M.Sc. in Physics) of Adrián Rubio López, March 2010.
- * Advisor of “Licenciatura Thesis” (M.Sc. in Physics) of Gabriel H. Aguilar, June 2008.
- * Advisor of “Licenciatura Thesis” (M.Sc. in Physics) of Diana López Nacir, march 2005.
- * Co-advisor of “Licenciatura Thesis” (M.Sc. in Physics), August 2002, of Nicolás Busca.

Other Activities

* Referee Referee of Physical Review Letters, Physical Review D, Physical Review A, Europhysics Letters, Physical Review E, Physics Letters A, Journal of Physics A, Journal of Physics B, Classical and Quantum Gravity, JCAP, Research Letters in Physics & Nanoscale; The European Physical Journal Plus (EPJP); SciPost; Results in Physics;

* Member of the Local Organizing Committee of the "PASI2012 - Exploring the Terascale and Beyond", Physical Sciences Building of the University of Buenos Aires (UBA), Buenos Aires, Argentina, from March 5 through 16, 2012

* Member of the Organizing Committee of the ENF-Network "COSLAB" (Cosmology in the Laboratory); Imperial College, London, UK; July 2001.

* Member of the Organizing Committee of the Fifth J.J. Giambiagi Winter School "Precision Cosmology"; Physics Department of the University of Buenos Aires, July-August 2003.

* Member of the Physics Department Council, in representation of Graduate Students, University of Buenos Aires; July 1997 - June 1999.

Public Lectures

* Lectures in the "Week of Physics", dedicated to high school students; Physics Department of the University of Buenos Aires. Some talks: "Physics and time travels" (2011; 2012; 2013); "The temperature of the Universe" (2006)

* Columnist in the TV show "Científicos Industria Argentina", Canal 7 TV Pública Argentina (2011 - 2016) * Invited to TV show "La Liga de la Ciencia", Canal 7 TV Pública Argentina (2017; 2018) * Invited to TV show "Todo tiene un porque", Canal 7 TV Pública Argentina (2019; 2020)