

LUIZ DAVIDOVICH - LIST OF PUBLICATIONS

(Titles originally in Portuguese have been translated into English)

- L. Davidovich, *Preferred Pulse Width and Velocity in Self-Induced Transparency*, in “Electromagnetic Interactions of Two-Level Atoms”, Proceedings of the 1970 Rochester Symposium, ed. J.H. Eberly (Univ. of Rochester, Rochester, N.Y., 1970).
- L. Davidovich and J. H. Eberly, *A Preferred Pulse in Self-Induced Transparency*, Opt. Comm. **3**, 32 (1971).
- L. Davidovich, *On the Weisskopf-Wigner Approximation in Atomic Physics*, Ph.D. Thesis (Univ. of Rochester, Rochester, N.Y., 1975).
- L. Davidovich and H. M. Nussenzveig, *Theory of Natural Line Shape*, in “Coherence and Quantum Optics IV”, eds. L. Mandel and E. Wolf, p. 953 (Plenum, N.Y., 1978).
- L. Davidovich and H. M. Nussenzveig, *Excitation and Decay of a Multilevel Atom*, in “Group Theoretical Methods in Physics”, ed. W. Beiglbock, Lecture Notes in Physics, vol. **94**, p. 250 (Springer, N.Y., 1979).
- H. S. Brandi and L. Davidovich, *Atomic Ionization by Strong Coherent Radiation*, J. of Phys. B**12**, L615 (1979).
- L. Davidovich and H. M. Nussenzveig, *Theory of Natural Line Shape*, in “Foundations of Radiation Theory and Quantum Electrodynamics”, ed. A.O. Barut, p. 83 (Plenum, N.Y., 1980).
- H. S. Brandi, L. Davidovich, and N. Zagury, *High-Intensity Approximations Applied to Multiphoton Ionization*, Phys. Rev. A **24**, 2044 (1981).
- H. S. Brandi, L. Davidovich, and N. Zagury, *Non-perturbative Methods Applied to Multiphoton Ionization*, J. de Physique **C2**, suppl. au n^o 11, **43**, 397 (1982).
- L. Davidovich, *Electrons and Atoms in Intense Laser Fields*, Rev. Bras. Fís., special volume on Nuclear Physics, p. 221 (SBF, São Paulo, 1982).
- H. Rochlin and L. Davidovich, *Quantum Theory of Laser Radiation Scattering by Electrons in Magnetic Fields*, Phys. Rev. A **28**, 2329 (1983).
- L. Davidovich, *Uranium Isotope Separation with Lasers*, Ciência Hoje **2**, n^o 10, 82 (1984).
- H. S. Brandi, L. Davidovich, and N. Zagury, *Interaction of Atoms with Strong Electromagnetic Fields*, in Proceedings of the VII Brazilian Symposium on

Theoretical Physics, eds. J. Mignaco and R. Shellard, p. 33 (CNPq, Brasília, 1984).

- H. S. Antunes Neto, L. Davidovich, and D. Marchesin, *High-Intensity Ionization Approximations: Test of Convergence in a One-Dimensional Model*, in “Coherence and Quantum Optics V”, eds. L. Mandel and E. Wolf, p. 1109 (Plenum, N.Y., 1984).
- H. Rochlin and L. Davidovich, *Electrons in Crossed Laser and Magnetic Fields: An Exactly Soluble Model in QED*, in “Coherence and Quantum Optics V”, eds. L. Mandel and E. Wolf, p. 1017 (Plenum, N.Y., 1984).
- L. Davidovich, *Introduction to Quantum Optics and Laser Theory* (Monograph, PUC/RJ, 1984).
- H. S. Antunes Neto and L. Davidovich, *Convergence of High-Intensity Expansions for Atomic Ionization*, Phys. Rev. Lett. **53**, 2238 (1984).
- L. Davidovich, *The Search for Optical Computers*, Ciência Hoje **3**, n^o 18, 12 (1985).
- L. Davidovich, *Dynamical Holograms and Phase Conjugating Mirrors*, Ciência Hoje, Vol.4, n^o 22, 16 (1986).
- J.M. Raimond, L. Davidovich, M. Brune, and S. Haroche, *Rydberg Atoms Two-Photon Micromaser*, in “Fundamentals of Quantum Optics II”, ed. F. Ehlotzky, p. 165 (Springer, N.Y., 1987).
- M. Brune, J. M. Raimond, P. Goy, L. Davidovich, and S. Haroche, *Realization of a Two-Photon Maser Oscillator*, Phys. Rev. Lett. **59**, 1899 (1987).
- L. Davidovich, J. M. Raimond, M. Brune, and S. Haroche, *Quantum Theory of a Two-Photon Micromaser*, Phys. Rev. **A36**, 3771 (1987).
- L. Davidovich, J. M. Raimond, M. Brune, and S. Haroche, *Multistability and Chaos in a Two-Photon Microscopic Maser*, in “Instabilities and Chaos in Quantum Optics”, eds. N. Abraham, F. T. Arechhi, and L. Lugiato (Plenum, N.Y., 1988).
- M. Brune, J. M. Raimond, P. Goy, L. Davidovich, and S. Haroche, *The Two-Photon Rydberg Atom Micromaser*, IEEE Journal of Quantum Electronics **24**, 1323 (1988).
- J. C. de Castro Neto, L. Davidovich, and J. R. Rios Leite, *Non Linear and Quantum Optics*, Proceedings of the First Jorge André Swiecca School on Non Linear and Quantum Optics, book edited by the Brazilian Physical Society (1988).

- M. Brune, J. M. Raimond, P. Goy, L. Davidovich, and S. Haroche, *The Two-Photon Rydberg Atom Micromaser*, in Atomic Physics XI, eds. Haroche, Gay, and Grynberg, World Scientific (1989).
- C. R. Carvalho, L. Davidovich, and N. Zagury, *Singular Starting Times in Micromasers*, Opt. Communications **72**, 306 (1989).
- J. Bergou, L. Davidovich, M. Orszag, C. Benkert, M. Hillery, and M. O. Scully, *Influence of the Pumping Statistics in Lasers and Masers*, Opt. Communications **72**, 82 (1989).
- J. Bergou, L. Davidovich, M. Orszag, C. Benkert, M. Hillery, and M.O. Scully, *Role of Pumping Statistics in Maser and Laser Dynamics: I. Density Matrix Approach*, Phys. Rev. A **40**, 5073 (1989).
- C. Benkert, M.O. Scully, J. Bergou, L. Davidovich, M. Hillery, and M. Orszag, *Role of Pumping Statistics in Laser Dynamics: Quantum Langevin Approach*, Physical Review A **41**, 2756 (1990).
- H. S. Antunes Neto, L. Davidovich, and P. W. Milonni, *Comment on Multiphoton Ionization Transition Amplitudes and the Keldysh Approximation*, Phys. Rev. A **41**, 901 (1990),
- H. S. Brandi, L. Davidovich, G. Jalbert, B. Koiller, and N. Zagury, *Nonperturbative Approaches of Laser Interaction with Matter: From Atoms to Solids*, in “Intense Laser Phenomena and Related Subjects”, eds. I. Y. Kiyan e M. Y. Ivanov (World Scientific, Singapura, 1990).
- J. Bergou, L. Davidovich, M. O. Scully, S. Y. Zhu, and M. S. Zubairy, *Double Two-Photon Lasers as Bright Sources of Squeezed Light*, Phys. Rev. A **42**, 5544 (1990).
- L. Davidovich, *Nonperturbative Methods For Atomic Ionization by Ultrastrong Laser Fields*, in “ Multiphoton Processes”, eds. G. Manfray and P. Agostini (CEA, Saclay, 1991).
- P. A. Maia Neto, L. Davidovich, and J. M. Raimond, *Theory of the Nondegenerate Two-Photon Micromaser*, Phys. Rev. A **43**, 5073 (1991).
- E. S. Guerra, A. Z. Khoury, L. Davidovich, and N. Zagury, *Role of Pumping Statistics in Micromasers*, Phys. Rev. A **44**, 7785 (1991).
- P. A. Maia Neto and L. Davidovich, *Quantum Noise Reduction in Two-Photon Oscillators*, Phys. Rev. A. **45**, 3139 (1992).
- M. Brune, J. M. Raimond, S. Haroche, and L. Davidovich, *QND Measurements and Schrödinger Cat States Generation in Cavity QED*, in *Laser Spectroscopy X*, Proceedings of the Tenth International Conference on

- Laser Spectroscopy, eds. M. Ducloy, E. Giacobino e G. Camy (World Scientific, Singapura, 1992).
- M. Brune, J. M. Raimond, S. Haroche, L. Davidovich, and N. Zagury, *Manipulation of Photons in a Cavity by Dispersive Atom-Field Coupling: Quantum Nondemolition Measurements and Generation of “Schrödinger Cat” States*, Phys. Rev. A. **45**, 5193 (1992).
 - L. Davidovich, *Sub-Poissonian Lasers and Masers*, in *Lasers’91: Proceedings of the International Conference on Lasers’91*, ed. F. Duarte (Society of Optics & Electronics, VA, 1992).
 - C. R. Carvalho and L. Davidovich, *Dynamic Lamb-Dip Effects in Gas Lasers with Inhomogeneously Broadened Saturable Absorbers*, Phys. Rev. A **45**, 6748 (1992).
 - M. Kolobov, L. Davidovich, E. Giacobino, and C. Fabre, *Role of Pumping Statistics and Dynamics of Atomic Polarization in Quantum Fluctuations of Laser Sources*, Phys. Rev. A **47**, 1431 (1993).
 - Y. Aharonov, L. Davidovich, and N. Zagury, *Quantum Random Walks*, Phys. Rev. A **48**, 1687 (1993).
 - L. Davidovich, A. Maali, M. Brune, J. M. Raimond, and S. Haroche, *Quantum Switches and Non-Local Microwave Fields*, Phys. Rev. Lett. **71**, 2360 (1993).
 - L. Davidovich, *Light without Noise*, Ciência Hoje **15**, number 88, p. 4 (1993).
 - W. Becker, L. Davidovich, and J. K. McIver, *Keldysh-like expansion for above-threshold Ionization*, Phys. Rev. A **49**, 1131-1140 (1994).
 - S. Haroche, M. Brune, J. M. Raimond, and L. Davidovich, *Mesoscopic quantum coherences in cavity QED*, in *Fundamentals of Quantum Optics III*, ed. F. Ehlotzky (Springer Verlag, N. Y., 1994).
 - S. M. Dutra and L. Davidovich, *Phase squeezing in two-photon correlated-spontaneous-emission lasers*, Phys. Rev. A **49**, 2986-2992 (1994).
 - L. Davidovich, N. Zagury, M. Brune, J. M. Raimond, and S. Haroche, *Teleportation of an atomic state between two cavities using nonlocal microwave fields*, Phys. Rev. A **50**, R895-898 (1994).
 - Márcia T. Fontenelle and L. Davidovich, *Subpoissonian light from a laser with an injected signal*, Phys. Rev. A **51**, 2560-2574 (1995).
 - J. M. Raimond, M. Brune, S. Haroche, F. Schmidt-Kaler, L. Davidovich, and N. Zagury, *Measuring and manipulating quantum fields in a cavity by atom Interferometry*, in *Atomic Physics 14: Fourteenth International Conference*

- on Atomic Physics*, eds. Wineland, Wieman, and Smith, 297-313 (A.I.P. Conference Proceedings n. 323, American Institute of Physics, N.Y., 1995).
- L. Davidovich, M. Brune, J. M. Raimond, and S. Haroche, *Mesoscopic quantum coherences in cavity QED: Preparation and decoherence monitoring schemes*, Phys. Rev. A **53**, 1295-1309 (1996).
 - A. Z. Khoury, M. I. Kolobov, and L. Davidovich, *Quantum-limited linewidth of a bad-cavity laser with inhomogeneous broadening*, Phys. Rev. A **53**, 1120-1125 (1996).
 - L. Davidovich, *Sub-Poissonian processes in quantum optics*, Review of Modern Physics **68**, 127-173 (1996).
 - A. Z. Khoury, M. I. Kolobov, and L. Davidovich, *Quantum-limited linewidth of a bad-cavity laser with inhomogeneous broadening*, Phys. Rev. A **53**, 1120-1125 (1996).
 - T. B. L. Kist, A. Z. Khoury, and L. Davidovich, *Effect of atom pairs on the vacuum trapping state in micromasers: a Monte-Carlo wave-function approach*, Phys. Rev. A **54**, 2510-2513 (1996).
 - L. Davidovich, M. Orszag, and N. Zagury, *Quantum nondemolition measurements of vibrational populations in ionic traps*, Phys. Rev. A **54**, 5118 (1996).
 - Márcia T. Fontenelle and L. Davidovich, *Enhanced squeezing in cascaded lasers*, Phys. Rev. A **55**, 3267-3270 (1997).
 - L. G. Lutterbach and L. Davidovich, *Method for direct measurement of the Wigner Function in cavity QED and ion traps*, Phys. Rev. Lett. **78**, 2547-2550 (1997).
 - P. Domokos, I. Protsenko, L. Davidovich, J. M. Raimond, and S. Haroche, *Quantum noise in microlasers*, Acta Phys. Slovaca **47**, 273-280 (1997).
 - L. Davidovich, *Sub-Poisson photon statistics*, in *Proceedings of Les Houches Summer School, Session LXIII: "Quantum Fluctuations"*, eds. S. Reynaud and E. Giacobino (Elsevier, Amsterdam, 1997).
 - L. Davidovich, *A prison of light for atoms*, Ciência Hoje **23**, 14-16 (1997).
 - L. Davidovich, M. Orszag, and N. Zagury, *Quantum diagnosis of molecules: a method for measuring directly the Wigner function of a molecular vibrational state*, Phys. Rev. A **57**, 2544-2549 (1998).
 - L. G. Lutterbach and L. Davidovich, *Non-classical states of the electromagnetic field in cavity QED*, Optics Express **3**, 147-153 (1998).

- L. Davidovich, *Teleportation: a solution in search of a problem*, interview to *Ciência Hoje* **23**, n^o 137, 8-12 (1998).
- L. Davidovich, *Schrödinger's cat: From the quantum to the classical world*, *Ciência Hoje* **24**, n^o 143, 26-35 (1998).
- I. Protsenko, P. Domokos, V. Lefèvre-Seguin, J. Hare, J. M. Raimond, and L. Davidovich, *Quantum theory of a thresholdless laser*, *Phys. Rev. A* **59**, 1667-1682 (1999).
- B. Rohwedder, L. Davidovich, and N. Zagury, *Measuring the quantum state of an electromagnetic field with the atomic Talbot effect*, *Phys. Rev. A* **60**, 480-486 (1999).
- T. B. L. Kist, M. Orszag, T. Brun, and L. Davidovich, *Physical interpretation of stochastic Schrödinger equations in cavity QED*, *Journal of Optics B: Quantum and Semiclassical Optics* **1**, 251-263 (1999).
- J. I. Kim, K. M. Fonseca Romero, A. M. Horiguti, L. Davidovich, M.C. Nemes, and A. F. R. de Toledo Piza, *Classical behavior with small quantum numbers: The physics of Ramsey interferometry of Rydberg atoms*, *Phys. Rev. Lett.* **82**, 4737-4740 (1999).
- L. Davidovich and L. G. Lutterbach, *Ramsey Interferometry, Wigner Functions, and Controlled-not Gates*, in *ICONO '98: Quantum Optics, Interference Phenomena in Atomic Systems, and High-Precision Measurements*, A. V. Andreev, S. N. Bagayev, A. S. Chirkin, V. I. Denisov, Editors, *Proceedings of SPIE Vol. 3736* (1999), p. 170-178.
- L. Davidovich, *Decoherence, Wigner Functions, and the Classical Limit of Quantum Mechanics in Cavity QED*, in *Mysteries, Puzzles, and Paradoxes in Quantum Mechanics*, edited by R. Bonifacio (AIP Conference Proceedings 461, Woodbury, NY, 1999), p. 151-162.
- B. Rohwedder, L. Davidovich, and N. Zagury, *Determination of the Wigner Function of an Optical Field Using the Atomic Talbot Effect*, in *Mysteries, Puzzles, and Paradoxes in Quantum Mechanics*, edited by R. Bonifacio (AIP Conference Proceedings 461, Woodbury, NY, 1999), p. 243-246.
- L. Davidovich, *Quantum Optics in Cavities and the Classical Limit of Quantum Mechanics*, in *Latin-American School of Physics - XXXI ELAF - New Perspectives on Quantum Mechanics*, edits. S. Hacyan, R. Jáuregui, and R. López-Peña (AIP Conference Proceedings 464, Woodbury, NY, 1999), p. 3-43.

- L. Davidovich, *Measuring the Quantum State of the Electromagnetic Field*, in *Collective Excitations in Fermi and Bose Systems*, edits. C.A. Bertulani, L.F. Canto, and M.S. Hussein (World Scientific, Singapura, 1999), p. 325-340.
- L.G. Lutterbach and L. Davidovich, *Production and detection of highly-squeezed states in cavity QED*, Phys. Rev. A **61**, 023813-1 – 023813-9 (2000).
- P. Milman, Y. Castin, and L. Davidovich, *Decoherence as phase diffusion*, Phys. Rev. A **61**, 063803-1 – 063803-6 (2000).
- P. Domokos, J. Hare, V. Lefèvre, J.M. Raimond, S. Haroche, I. Protsenko, and L. Davidovich, *Quantum theory of microlasers in the close-to-threshold regime*, Laser Physics **10**, 42-47 (2000).
- G. Nogues, A. Rauschenbeutel, S. Osnaghi, P. Bertet, M. Brune, J.M. Raimond, S. Haroche, L.G. Lutterbach, and L. Davidovich, *Measurement of a negative value for the Wigner function of radiation*, Phys. Rev. A **62**, 054101-1 – 054101-4 (2000).
- M. França Santos, L. G. Lutterbach, S.M. Dutra, N. Zagury, and L. Davidovich, *Reconstruction of the state of the radiation field in a cavity through measurements on the outgoing field*, Phys. Rev. A **63**, 033813-1 – 033813-8 (2001).
- Z. Kis, W. Vogel, L. Davidovich, and N. Zagury, *Dark $SU(2)$ states of the motion of a trapped ion*, Phys. Rev. A **63**, 053410-1 – 053410-7 (2001).
- M. França Santos, L. G. Lutterbach, and L. Davidovich, *Probing entanglement in phase space: signature of GHZ states in the Wigner Function*, Journal of Optics B: Quantum and Semiclassical Optics **3**, No. 1, S55-S59 (2001).
- A. R. R. Carvalho, P. Milman, R. L. de Matos Filho, and L. Davidovich, *Decoherence, pointer engineering, and quantum state protection*, Phys. Rev. Lett. **22**, 4988-4992 (2001) – Commented on the section *News and Views* of Nature, **412**, 869 (2001).
- Z. Kis, W. Vogel, and L. Davidovich, *Nonlinear coherent states of trapped-atom motion*, Phys. Rev. A **64**, 03401-1 – 03401-10 (2001).
- C. Di Fidio, W. Vogel, R. L. de Matos Filho, and L. Davidovich, *A single-trapped-ion vibronic Raman laser*, Phys. Rev. A **65**, 013811-1 – 013811-12 (2002).
- A. R. R. Carvalho, L. Davidovich, R. L. de Matos Filho, and F. Toscano, *Dissipation, diffusion, and the quantum-classical limit in phase space*, in *Squeezed States and Uncertainty Relations*, pp. 94 – 101, Eds. H. Moya- Cessa, R. Jauregui, S. Hacyan, and O. Castaños (Rinton Press, Princeton, 2003).

- L. Davidovich, *Decoherence and quantum-state measurement in quantum optics*, in *Decoherence and Entropy in Complex Systems*, pp. 268 – 286, Ed. H.-T. Elze (Springer, Berlin, 2004).
- P. A. S. Pires Filho, C. L. Cesar, and L. Davidovich, *Theory of output coupling for trapped fermionic atoms*, Phys. Rev. A **69**, 023615-1 – 023615-16 (2004).
- A. R. R. Carvalho, R. L. de Matos Filho, and L. Davidovich, *Environmental effects in the quantum-classical transition for the delta-kicked harmonic oscillator*, Phys. Rev. E **70**, 026211-1 – 026211-15 (2004).
- L. Davidovich, *Quantum information: From teleportation to the quantum computer*, Ciência Hoje **35**, no. 206, pp. 24 – 29 (2004).
- L. Davidovich, Quantum information, Bulletin of the Materials Research Society **30**, pp. 99 – 104 (2005) – Invited review paper.
- F. Toscano, R. L. de Matos Filho, and L. Davidovich, *Decoherence and the quantum-classical limit in the presence of chaos*, Phys. Rev. A **71**, 010101-1 – 010101-4(R), (2005) – Rapid Communication.
- F. Toscano, D. A. R. Dalvit, L. Davidovich, and W. H. Zurek, *Sub-Planck phase-space structures and Heisenberg-limited measurements*, Physical Review A **73**, 023803-1 – 023803-7 (2006).
- F. de Melo, L. Aolita, F. Toscano, and L. Davidovich, *Direct measurement of the quantum state of the electromagnetic field in a superconducting transmission line*, Phys. Rev. A **73**, 030303-1 – 030303-4 (2006)– Rapid Communication.
- M. França Santos, P. Milman, L. Davidovich, and N. Zagury, *Direct measurement of finite-time disentanglement induced by a reservoir*, Phys. Rev. A (Rapid Communication) **73**, 040305-1 – 040305-4 (2006).
- S. Walborn, P. H. Souto Ribeiro, L. Davidovich, F. Mintert, and A. Buchleitner, *Experimental determination of entanglement with a single measurement*, Nature **440**, 1022-1024 (2006).
- L. Davidovich, *Decoherence, quantum information, and quantum-state reconstruction in quantum optics*, invited review paper, 67 pages, in Handbook of Theoretical and Computational Nanotechnology, Eds. Michael Rieth and Wolfram Schommers, ISBN 1-58883-042-X (American Scientific Publishers (2006).
- S. P. Walborn, P. H. Souto Ribeiro, L. Davidovich, F. Mintert, and A. Buchleitner, *Experimental determination of entanglement by a projective measurement*, Phys. Rev. A **75**, 032338-1 – 032338-9 (2007).

- M. P. Almeida, F. de Melo, M. Hor-Meyll, A. Salles, S. P. Walborn, P. H. Souto Ribeiro, and L. Davidovich, *Environment-induced sudden death of entanglement*, Science **316**, 579-582 (2007). This paper was commented by Eberly and Yu in the Section Perspectives of the same journal, pages, 555-557.
- L. Aolita, L. Davidovich, K. Kim, and H. Häffner, *Universal quantum computation in decoherence-free subspaces with hot trapped-ions*, Phys. Rev. A **75**, 052337 (8 pages) (2007).
- Susanne Pielawa, Giovanna Morigi, David Vitali, and Luiz Davidovich, *Generation of EPR-entangled radiation through an atomic reservoir*, Phys. Rev. Lett. **98**, 240401 (4 pages) (2007).
- F. de Melo, S. P. Walborn, János A. Bergou, and L. Davidovich, *Quantum non-demolition test of bipartite complementarity*, Phys. Rev. Lett. **98**, 250501 (4 pages) (2007).
- L. Neves, G. Lima, E.J.S. Fonseca, L. Davidovich, and S. Pádua, *Characterizing entanglement in qubits created with spatially correlated twin photons*, Phys. Rev. A **76**, 032314 (7 pages) (2007).
- L. Aolita, R. Chaves, D. Cavalcanti, A. Acín, and L. Davidovich, *Scaling laws for the decay of multiqubit entanglement*, Phys. Rev. Lett., **100**, 080501, 4 pages (2008).
- P. H. Souto Ribeiro, S. P. Walborn, C. Raitz, Jr., L. Davidovich, and N. Zagury, *Quantum random walks and wave-packet reshaping at the single-photon level*, Phys. Rev. A **78**, 012326 (5 pages) (2008).
- A. Salles, F. de Melo, M. P. Almeida, M. Hor-Meyll, S. P. Walborn, P. H. Souto Ribeiro, and L. Davidovich, *Experimental investigation of the dynamics of entanglement: Sudden death, complementarity, and continuous monitoring of the environment*, Phys. Rev. A **78**, 022322 (15 pages) (2008).
- O. Jiménez Faras, C. Lombard Latune, S. P. Walborn, L. Davidovich, and P. H. Souto Ribeiro, *Determining the dynamics of entanglement*, Science, **324**, 1414-1417 (2009).
- Daniel Cavalcanti, Rafael Chaves, Leandro Aolita, Luiz Davidovich, and Antonio Acín, *Open-system dynamics of graph-state entanglement*, Phys. Rev. Lett. **103**, 030502 (4 pages) (2009).
- M. Hor-Meyll, A. Auyuanet, C. V. S. Borges, A. Aragão, J. A. O. Huguenin, A. Z. Khoury, and L. Davidovich, *Environment-induced entanglement with a single photon*, Phys. Rev. A **80**, 042327 (10 pages) (2009).

- M. Abanto, L. Davidovich, Belita Koiller, and R. L. de Matos Filho, *Quantum computation with doped silicon cavities*, Physical Review B **81**, 085325 (7 pages) (2010).
- S. Pielawa, L. Davidovich, D. Vitali, and G. Morigi, *Engineering atomic quantum reservoirs for photons*, Physical Review A **81**, 043802, (11 pages) (2010).
- A. Auyuanet and L. Davidovich, *Quantum correlations as precursors of entanglement*, Physical Review A **82**, 032112 (11 pages) (2010).
- L. Aolita, D. Cavalcanti, R. Chaves, C. Dhara, L. Davidovich, and A. Acín, *Noisy evolution of graph-state entanglement*, Phys. Rev. A **82**, 032317 (10 pages) (2010).
- R. Chaves and L. Davidovich, *Robustness of entanglement as a resource*, Phys. Rev. A **82**, 052308 (10 pages) (2010).
- B. M. Escher, R. L. de Matos Filho, and L. Davidovich, *General framework for estimating the ultimate precision limit in noisy quantum-enhanced metrology*, Nature Physics **7**, 406-411, [http://dx.doi.org/ 10.1038/NPHYS1958](http://dx.doi.org/10.1038/NPHYS1958) (2011). See also the corresponding News and Views by L. Maccone and V. Giovannetti, Nature Physics **7**, 376-377 (2011).
- B. M. Escher, R. L. de Matos Filho, and L. Davidovich, *Quantum metrology for Noisy Systems*, Brazilian Journal of Physics **41**, 229-247 (2011).
- O. Jiménez Faras, A. Valdés-Hernández, G. H. Aguilar, P. H. Souto Ribeiro, S. P. Walborn, L. Davidovich, Xiao-Feng Qian, and J. H. Eberly, *Experimental investigation of dynamical invariants in bipartite entanglement*, Phys. Rev. A **85**, 012314 (2012).
- O. Jiménez Farías, G. H. Aguilar, A. Valdés-Hernández, P. H. Souto Ribeiro, L. Davidovich, and S. P. Walborn, *Observation of the Emergence of Multipartite Entanglement Between a Bipartite System and its Environment*, Phys. Rev. Lett. **109**, 150403 (2012).
- B. M. Escher, L. Davidovich, N. Zagury, and R. L. de Matos Filho, *Quantum Metrological Limits via a Variational Approach*, Phys. Rev. Lett. **109**, 190404 (2012).
- M. M. Taddei, B. M. Escher, L. Davidovich, and R. L. de Matos Filho, *Quantum Speed Limit for Physical Processes*, Phys. Rev. Lett. **110**, 050402 (2013).

- C. L. Latune, B. M. Escher, R. L. de Matos Filho, and L. Davidovich, *Quantum limit for the measurement of a classical force coupled to a noisy quantum-mechanical oscillator*, Phys. Rev. A **88**, 042112 (2013).
- G. H. Aguilar, O. Jiménez Farías, A. Valdés-Hernández, P. H. Souto Ribeiro, L. Davidovich, and S. P. Walborn, *Flow of quantum correlations from a two-qubit system to its environment*, Phys. Rev. A **89**, 022339 (2014).
- G. H. Aguilar, A. Valdés-Hernández, L. Davidovich, S. P. Walborn, and P. H. Souto Ribeiro, *Experimental entanglement redistribution under decoherence channels*, Physical Review Letters **113**, 240501 (2014).
- Leandro Aolita, Fernando de Melo and Luiz Davidovich, *Open-system dynamics of entanglement: a key issues review*, Rep. Prog. Phys. **78**, 042001 (2015).
- G. Bié Alves, B. M. Escher, R. L. de Matos Filho, N. Zagury, and L. Davidovich, *Weak-value amplification as an optimal metrological protocol*, Physical Review A **91**, 062107 (2015).
- L. Davidovich, *From quantum to classical: Schrödinger cats, entanglement, and decoherence*, Physica Scripta **91**, 063013 (2016).
- M. Penasa, S. Gerlich, T. Rybarczyk, V. Métillon, M. Brune, J. M. Raimond, S. Haroche, L. Davidovich, and I. Dotsenko, *Measurement of a microwave field amplitude beyond the standard quantum limit*, Physical Review A **94**, 022313 (2016).
- G. Bié Alves, A. Pimentel, M. Hor-Meyll, S. P. Walborn, L. Davidovich, and R. L. de Matos Filho, *Achieving metrological precision limits through postselection*, Physical Review A **95**, 012104 (2017).
- A. Ghosh, C. L. Latune, L. Davidovich and G. Kurizki, *Catalysis of heat-to-work conversion in quantum machines*, Proceedings of the National Academy of Sciences **114**, 12156 (2017).
- S. P. Walborn, A. H. Pimentel, L. Davidovich, and R. L. de Matos Filho, *Quantum-Enhanced Sensing from Hyper-Entanglement*, Physical Review A **97**, 010301(R) (2018).
- M. H. M. Passos, W. F. Balthazar, A. Z. Khoury, M. Hor-Meyll, L. Davidovich, and J. A. O. Huguenin, *Experimental investigation of environment-induced entanglement using an all-optical setup*, Physical Review A **97**, 022321 (2018).
- S. P. Walborn, G. H. Aguilar, P. L. Saldanha, L. Davidovich, and R. L. de Matos Filho, *Interferometric sensing of the tilt angle of a Gaussian beam*, Physical Review Research **2**, 033191 (2020).

- J. Wang, L. Davidovich, and G. S. Agarwal, *Quantum sensing of open systems: Estimation of damping constants and temperature*, Physical Review Research **2**, 033389 (2020).
- L. Davidovich, *The new wave of quantum metrologies*, Cornerstone, p. 28, Hagler Institute for Advanced Study (2021).
- G. S. Agarwal and L. Davidovich, *Quantifying quantum-amplified metrology via Fisher information*, Physical Review Research **4**, L012014 (2022).
- L. Davidovich and R. L. de Matos Filho, *Quantum sensing and ghost imaging*, Proc.SPIE Int.Soc.Opt.Eng. **12446**, 1244603 (2023).
- L. Davidovich and R. L. de Matos Filho, *Quantum illumination strategy for parameter estimation*, Physical Review A **108**, 042612 (2023).
- J. Wang, R. L. de Matos Filho, G. S. Agarwal, and L. Davidovich, *Quantum advantage of time-reversed ancilla-based metrology of open systems*, Physical Review Research **6**, 013034 (2024).
- L. Davidovich, *Quantum sensing: Beyond the classical limits of precision*, arXiv:2401.13658 [quant-ph], to be published in book by the Vatican Academy of Sciences (2024).