

## Publicações do Grupo de Ótica Quântica e Informação Quântica da UFMG:

### Publicações em 2021 (lista parcial)

Marcello Nery, Marco Túlio Quintino, Philippe Allard Guérin, Thiago O. Maciel, and Reinaldo O. Vianna: Simple and maximally robust processes with no classical common-cause or direct-cause explanation. [Quantum 5, 538](#) (2021).

A. C. Cardoso, J. G. L. Condé, B. Marques, J. S. Cabral, and S. Pádua: Simulation of a quantum jump in three-level systems using photonic Gaussian modes. [Phys. Rev. A 103, 013722](#) (2021).

Raul Corrêa and Pablo L. Saldanha: Apparent quantum paradoxes as simple interference: Quantum violation of the pigeonhole principle and exchange of properties between quantum particles. [Phys. Rev. A 104, 012212](#) (2021).

Pablo L. Saldanha: Aharonov-Casher and shielded Aharonov-Bohm effects with a quantum electromagnetic field. [Phys. Rev. A 104, 032219](#) (2021).

Helena Bragança, M. F. Cavalcante, R. G. Pereira, and Maria C. O. Aguiar: Quench dynamics and relaxation of a spin coupled to interacting leads. [Phys. Rev. B 103, 125152](#) (2021).

Nathan Giovanni, Marcello Civelli, and Maria C. O. Aguiar: Anderson localization effects on the doped Hubbard model. [Phys. Rev. B 103, 245134](#) (2021).

E.S. Gómez, S. Gómez, I. Machuca, A. Cabello, S. Pádua, S.P. Walborn, and G. Lima: Multidimensional Entanglement Generation with Multicore Optical Fibers. [Phys. Rev. Applied 15, 034024](#) (2021).

Omar Jiménez, Miguel Angel Solís-Prosser, Leonardo Neves and Aldo Delgado: Mutual Information and Quantum Discord in Quantum State Discrimination with a Fixed Rate of Inconclusive Outcomes. [Entropy 23, 73](#) (2021).

G. F. Borges, R. D. Baldijão, A. A. Matoso, and S. Pádua : Angular spectrum influence and entanglement characterization of Gaussian-path encoded photonic qudits. [Journal of the Optical Society of America B 36, 1958](#) (2021).

Raoni S.N.Moreira, Paulo J.Cavalcanti, Luis F. Muñoz-Martínez, Johan E.O.Morales, Pablo L.Saldanha, José W.R.Tabosa, and Daniel Felinto: Nonvolatile atomic memory in the spontaneous scattering of light from cold two-level atoms. [Optics Communications 95, 127075](#) (2021).

Pablo L. Saldanha: Local Description of the Aharonov–Bohm Effect with a Quantum Electromagnetic Field. [Foundations of Physics 51, 6](#) (2021).

### Publicações em 2020

F. Scazza, G. Valtolina, A. Amico, P. E. S. Tavares, M. Inguscio, W. Ketterle, G. Roati, M. Zaccanti: Exploring emergent heterogeneous phases in strongly repulsive Fermi gases. [Phys. Rev. A. 101, 013603](#) (2020).

W. R. Cardoso, P. M. R. Lima, R. O. Vianna, and S. Pádua: Quantum coherence measurement of qudit systems using three-dimensional photonic circuits. [Phys. Rev. A 102, 032609](#) (2020).

Tamiris R. Calixto and Pablo L. Saldanha: Describing squeezed-light experiments without squeezed-light states. [Phys. Rev. A 102, 053723](#) (2020).

Raul Corrêa and Pablo L. Saldanha: Hidden momentum in continuous media and the Abraham-Minkowski debate. [Phys. Rev. A 102, 063510](#) (2020).

A. V. A. Guimarães, Marcelo F. Santos, A. Jorio, and C. H. Monken: Stokes–anti-Stokes light-scattering process: A photon-wave-function approach. [Phys. Rev. A 102, 033719](#) (2020).

R. Acosta Diaz, C. H. Monken, A. Jorio, and Marcelo F. Santos: Effective Hamiltonian for Stokes–anti-Stokes

pair generation with pump and probe polarized modes. [Phys. Rev. B 102, 134304](#) (2020).

Flávio L. N. Santos, Mônica A. Caracanhas, M. C. O. Aguiar, and Rodrigo G. Pereira: Bound states in two-dimensional Fermi systems with quadratic band touching. [Phys. Rev. B 101, 155120](#) (2020).

G. H. Aguilar, R. S. Piera, P. L. Saldanha, R. L. de Matos Filho, and S. P. Walborn: Robust Interferometric Sensing Using Two-Photon Interference. [Phys. Rev. Applied 14, 024028](#) (2020).

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. [Phys. Rev. Research 2, 033191](#) (2020).

Flávio L. N. Santos, Vivien Perrin, François Jamet, Marcello Civelli, Pascal Simon, Maria C. O. Aguiar, Eduardo Miranda, and Marcelo J. Rozenberg: Odd-frequency superconductivity in dilute magnetic superconductors. [Phys. Rev. Research 2, 033229](#) (2020).

Adalberto D. Varizi, André P. Vieira, Cecilia Cormick, Raphael C. Drumond, and Gabriel T. Landi: Quantum coherence and criticality in irreversible work. [Phys. Rev. Research 2, 033279](#) (2020).

Filomeno S. de Aguiar Júnior, Marcelo F. Santos, Carlos H. Monken, and Ado Jorio: Lifetime and polarization for real and virtual correlated Stokes-anti-Stokes Raman scattering in Diamond. [Phys. Rev. Research 2, 013084](#) (2020).

Saulo H. S. Silva, Gabriel T. Landi, Raphael C. Drumond, and Emmanuel Pereira: Heat rectification on the XX chain. [Phys. Rev. E 102, 062146](#) (2020).

M. F. Fernandes, M. A. Solís-Prosser, and L. Neves: Ptychographic reconstruction of pure quantum states. [Optics Letters 45, 6002](#) (2020).

P. Machado and S. Pádua: Quantum coherence of spatial photonic qudits: experimental measurement and path-marker analysis. [J. Opt. 22, 065201](#) (2020).

A.L. de Paula Jr., E. Pereira, R. C. Drumond and M. C. O. Aguiar: Energy current manipulation and reversal of rectification in graded XXZ spin chains. [J. Phys.: Condens. Matter 32, 175403](#) (2020).

L. A. S. Botelho and R. O. Vianna: Efficient quantum tomography of two-mode Wigner functions. [Eur. Phys. J. D 74, 42](#) (2020).

P. L. Saldanha: Inconsistency of a Realistic Interpretation of Quantum Measurements: a Simple Example. [Braz. J. Phys. 50, 438](#) (2020).

## Publicações em 2019

R. A. Ribeiro, A. A. Matoso, L. E. Oxman, A. Z. Khoury, and S. Pádua: Robustness of the fractional topological phase to dephasing. [Phys. Rev. A 99, 042101](#) (2019).

P. Machado, A. A. Matoso, M. R. Barros, L. Neves, and S. Pádua: Engineering quantum correlations for  $m \times n$  spatially encoded two-photons states. [Phys. Rev. A 99, 063839](#) (2019).

W. R. Cardoso, D. F. Barros, M. R. Barros, and S. Pádua: Implementing positive-operator-valued-measurement elements in photonic circuits for performing minimum quantum state tomography of path qudits. [Phys. Rev. A 99, 062324](#) (2019).

Marina F. B. Cenni, Raul Corrêa, and Pablo L. Saldanha: Effective electrostatic attraction between electrons due to quantum interference. [Phys. Rev. A 100, 022101](#) (2019).

S. M. Oliveira, A. L. de Paula, Jr., and R. C. Drumond: Quantum Darwinism and non-Markovianity in a model

of quantum harmonic oscillators. [Phys. Rev. A 100, 052110](#) (2019).

Filomeno S. de Aguiar Júnior, André Saraiva, Marcelo F. Santos, Belita Koiller, Reinaldo de Melo e Souza, Arthur Patrocínio Pena, Raígnia A. Silva, Carlos H. Monken, and Ado Jorio: Stokes–anti-Stokes correlated photon properties akin to photonic Cooper pairs. [Phys. Rev. B 99, 100503\(R\)](#) (2019).

Adalberto D. Varizi and Raphael C. Drumond: Quantum Ising model in a period-2 modulated transverse field. [Phys. Rev. E 100, 022104](#) (2019).

A. Matoso, R. A. Ribeiro, L. E. Oxman, A. Z. Khoury, and S. Pádua: Fractional topological phase measurement with a hyperentangled photon source. [Sci Rep 9, 577](#) (2019).

M. F. Fernandes, L. Neves. Ptychography of pure quantum states. [Sci Rep 9, 16066](#) (2019).

Omar Jiménez, Miguel Angel Solís-Prosser, Leonardo Neves, and Aldo Delgado: Quantum Discord, Thermal Discord, and Entropy Generation in the Minimum Error Discrimination Strategy. [Entropy 21, 263](#) (2019).

F. S. de Aguiar Júnior, C. H. Monken, M. F. Santos, R. de Melo e Souza, A. Saraiva, B. Koiller, and A. Jorio, Physical properties of photonic Cooper pairs generated via correlated Stokes-antiStokes Raman scattering, [Phys. Status Solidi B 256, 1900218](#) (2019).

Davi F. Barros, Luis F. Muñoz-Martínez, Luis Ortiz-Gutiérrez, Camilo A.E. Guerra, Johan E.O. Morales, Raoni S.N. Moreira, Natália D. Alves, Ayanne F.G. Tieco, Daniel Felinto, Pablo L. Saldanha: Fock-state superradiance in a cold atomic ensemble. [Opt. Commun. 443, 34](#) (2019).

## Publicações em 2018

L. Ortiz-Gutiérrez, L. F. Muñoz-Martínez, D. F. Barros, J. E. O. Morales, R. S. N. Moreira, N. D. Alves, A. F. G. Tieco, P. L. Saldanha, and D. Felinto: Experimental Fock-State Superradiance. [Phys. Rev. Lett. 120, 083603](#) (2018).

Helena Bragança, Shiro Sakai, M. C. O. Aguiar, and Marcello Civelli: Correlation-Driven Lifshitz Transition at the Emergence of the Pseudogap Phase in the Two-Dimensional Hubbard Model. [Phys. Rev. Lett. 120, 067002](#) (2018).

A. C. Cardoso, L. P. Berruezo, D. F. Ávila, G. B. Lemos, W. M. Pimenta, C. H. Monken, P. L. Saldanha, and S. Pádua: Classical imaging with undetected light. [Phys. Rev. A 97, 033827](#) (2018).

Jader P. Santos, Alberto L. de Paula, Jr., Raphael Drumond, Gabriel T. Landi, and Mauro Paternostro: Irreversibility at zero temperature from the perspective of the environment. [Phys. Rev. A 97, 050101\(R\)](#) (2018).

G. F. Borges, R. D. Baldijão, J. G. L. Condé, J. S. Cabral, B. Marques, M. Terra Cunha, A. Cabello, and S. Pádua: Automated quantum operations in photonic qutrits. [Phys. Rev. A 97, 022301](#) (2018).

A. J. Jesus-Silva, Juarez G. Silva, C. H. Monken, and E. J. S. Fonseca: Experimental cancellation of aberrations in intensity correlation in classical optics. [Phys. Rev. A 97, 013832](#) (2018).

Leonardo da Silva Souza, Tiago Debarba, Diego L. Braga Ferreira, Fernando Iemini, and Reinaldo O. Vianna: Completely positive maps for reduced states of indistinguishable particles. [Phys. Rev. A 98, 052135](#) (2018).

N. S. Móller, A. L. de Paula, Jr., and R. C. Drumond: Shielding property for thermal equilibrium states in the quantum Ising model. [Phys. Rev. E 97, 032101](#) (2018).

Raul Corrêa, Marina F. B. Cenni, and Pablo L. Saldanha: Quantum Interference of Force. [Quantum 2, 112](#) (2018).

Leonardo Neves and Graciana Puentes: Photonic Discrete-time Quantum Walks and Applications. [Entropy 20, 731](#) (2018).

Raphael C. Drumond, Cristhiano Duarte, *and* Roberto I. Oliveira: Small violations of Bell inequalities for multipartite pure random states. [Journal of Mathematical Physics 59, 052202](#) (2018).

Eduardo Lages, Wilder Cardoso, Gustavo Foresto Brito Almeida, Lívia Siman, Oscar Mesquita, Cleber Renato Mendonça, Ubirajara Agero, and Sebastião Pádua: Measurement of the refractive index profile of waveguides using defocusing microscopy. [Applied Optics 57, 8699](#) (2018).