Carlos Andres Gonzalez Gutierrez CV 20/05/2021

Postdoctoral Researcher
Quantum Materials & Devices Research Group
Instituto de Nanociencia y Materiales de Aragón
CSIC-Universidad de Zaragoza, Zaragoza, Spain.
https://www.qmad.es
Tel. +34 638527584
E-mail: carlosgg04@gmail.com, carlosgg@unizar.es
Google Scholar: https://goo.gl/hmzxaa
ResearchGate: https://goo.gl/MrQrfs

Personal information

Born in Barranquilla-Colombia on January 4, 1988.

Citizenship: Colombian

Research Experience

2020-Present Postdoctoral Researcher, Instituto de Nanociencias y Materiales de Aragón, CSIC-Universidad de Zaragoza, Zaragoza, Spain.

2019-2020 Postdoctoral Fellow, Mathematical Physics Deparment, Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas, Universidad Nacional Autónoma de México, Mexico City.

Education

02/2019 PhD in Physics, Instituto de Ciencias Físicas, Universidad Nacional Autónoma de México (UNAM), Cuernavaca, Mexico.
Thesis: *Decoherence, entanglement, and quantum information with two-qubit systems*
Advisor: Prof. Dr. Thomas H. Seligman.

07/2014 M. Sc. in Physics, Instituto de Ciencias Físicas, UNAM.
Thesis: *Decoherence with nested spin environments.*
Advisor: Prof. Dr. Thomas H. Seligman.

12/2011 Physics studies, Facultad de Ciencias, Universidad del Atlántico, Barranquilla-Colombia.
Thesis: *Semiclassical approach for qubit-field interactions.*
Advisor: Dr. José Récamier Angelini.

Research interests

Quantum Theory and Quantum Technologies:

Quantum Optics and Open Quantum Systems: cavity-QED, circuit-QED, quantum magnonics.

Quantum Information: Measurement protocols, entanglement and quantum simulation.

Publications

[1] C. A. González-Gutiérrez, J. Román-Roche and D. Zueco, *Distant emitters in ultrastrong waveguide-QED:ground sate properties and non-Markovian dynamics*, In preparation (2021).

[2] C. A. González-Gutiérrez, P. Barberis-Blostein and L. A. Orozco, *Non-markovian dynamics of two-level emitters near a nanofiber with delayed feedback*, In preparation (2021).

[3] F. H. Maldonado-Villamizar, C. A. González-Gutiérrez, L. Villanueva-Vergara and B. M. Rodríguez-Lara, *Underlying SUSY in a generalized Jaynes-Cummings model*, 2020, 2010.13867.

[4] C. A. González-Gutiérrez and J. M. Torres, *Atomic bell measurement via two-photon interactions*, Phys. Rev. A **99**, 023854 (2019).

[5] C. González-Gutiérrez, O. de los Santos-Sánchez, R. Román-Ancheyta, M. Berrondo and J. Récamier, *Lie algebraic approach to a nonstationary atom-cavity system*, J. Opt. Soc. Am. B **35**, 1979 (2018).

[6] R. Román-Ancheyta, O. de los Santos-Sánchez and C. González-Gutiérrez, *Damped casimir radiation and photon correlation measurements*, J. Opt. Soc. Am. B **35**, 523 (2018).

[7] C. A. González-Gutiérrez, D. Solís-Valles and B. M. Rodríguez-Lara, *Microscopic approach to field dissipation in the jaynes–cummings model*, Journal of Physics A: Mathematical and Theoretical **51**, 015301 (2018).

[8] R. Román-Ancheyta, C. González-Gutiérrez and J. Récamier, *Influence of the kerr nonlinearity in a single nonstationary cavity mode*, J. Opt. Soc. Am. B **34**, 1170 (2017).

[9] C. A. González-Gutiérrez, R. Román-Ancheyta, D. Espitia and R. Lo Franco, *Relations between entanglement and purity in non-markovian dynamics*, International Journal of Quantum Information **14**, 1650031 (2016).

[10] O. de los Santos-Sánchez, C. González-Gutiérrez and J. Récamier, *Nonlinear jaynes–cummings model for two interacting two-level atoms*, Journal of Physics B: Atomic, Molecular and Optical Physics **49**, 165503 (2016).

[11] C. González-Gutiérrez, E. Villaseñor, C. Pineda and T. H. Seligman, *Stabilizing coherence with nested environments: a numerical study using kicked ising models*, Physica Scripta **91**, 083001 (2016).

[12] R. Román-Ancheyta, C. González-Gutiérrez and J. Récamier, *Photon-added nonlinear coherent states for a one-mode field in a kerr medium*, J. Opt. Soc. Am. B **31**, 38 (2014).

Distinctions & Fellowships

2020-2023 Member of Sistema Nacional de Investigadores (National System of Researchers, Mexico) level SNI-1

2014-2018 PhD Fellowship, CONACyT (Mexico).

2012-2014 Master Fellowship, CONACyT (Mexico).

2006-2011 Undergraduate fellowship, Universidad del Atlántico (Colombia).

Research stays

07/2016 Research stay at the group of Dr. Blas Rodríguez Lara, Instituto Nacional de Astrofísica, Óptica y Electrónica, Puebla, Mexico.

10/2015 Research stay at the group of Dr. Thomas Gorin, Universidad de Guadalajara, Mexico.

10/2014 Research stay at the group of Prof. Tomaž Prosen, University of Ljubljana, Slovenia.

Organizational experience

21/01/2017-03/02/2018 Co-organizer of the scientific gathering "UDG-UNAM-BUAP meeting on quantum information, open systems, time series and correlations ", Centro Internacional de Ciencias, Cuernavaca, Mexico.

17/09/2017-09/10/2017 Co-organizer of the scientific gathering "Transport at the Nanoscale: Molecules, Graphene and more", Centro Internacional de Ciencias, Cuernavaca, Mexico.

18–19/02/2016 Co-organizer of the mini-symposium "From Quantum Optics to Quantum Information", Centro Internacional de Ciencias, Cuernavaca, Mexico.

14–17/02/2016 Co-organizer of the scientific gathering "Topics in Quantum Optics", Centro Internacional de Ciencias, Cuernavaca, Mexico.

10-23/01/2016 Co-organizer of the scientific gathering "2° Guadalajara-Cuernavaca meeting on quantum information, open quantum systems, decoherence, correlations and time series", Mexico.

12-23/01/2015 Co-organizer of the winter school "Applications of Quantum Mechanics 2015", Instituto de Física, Mexico City, Mexico.

Skills and abilities

Computer knowledge

Programming languages: Mathematica, Python, C++, Latex.

Experience as administrator of Linux operating systems and as webmaster (www.cicc.unam.mx).

Language knowledge

Spanish: native

English: fluent

All publications are available at `https://goo.gl/1dSQDx`.

Attendance in conferences and schools

2021

10-14/05 Conference, "Quantum Information in Spain (ICE)", Poster: *Atomic Bell-Measurement via two-photon interactions*, Spain.

1-5/03 Conference, "Quantum Nanophotonics 2021", Poster: *Ultrastrong dynamics of macroscopically separated two-level emitters*, Centro de Ciencias de Benasque, Spain.

2019

4-8/11 Workshop, "Non-Hermitian Quantum Systems: from PT symmetries and transport to light-harvesting in molecular aggregates", Talk: *Non-Markovian dynamics of two-level emitters near a nanofiber with coherent delayed feedback*, Centro Internacional de Ciencias, Cuernavaca, Mexico.

24-27/10 Workshop, "International Workshop on Quantum Technologies", Cinvestav Querétaro, Querétaro, Mexico.

2018

5-25/11 Symposium, "Quantum Sensing and Applications", Huazhong University of Science and Technology, Wuhan, China.

2017

13-17/11 Workshop, "Taller de Óptica Cuántica 2017". Talk: *Microscopic approach to field dissipation in atom-field interactions* . INAOE, Puebla, Mexico.

2016

26-28/10 Conference, "IX Reunión anual de la División de Información Cuántica de la Sociedad Mexicana de Física", Poster: *Nonlinear Jaynes-Cummings model for two interacting two-level atoms*', Monterrey, Mexico.

14-18/11 Workshop, "Taller de Óptica Cuántica 2016". INAOE, Puebla, Mexico.

2015

08-12/06 Conference, "Problems on Mathematical and Quantum physics. Dedicated to 75+75 years of Professors Margarita and Vladimir Man'ko", Cuernavaca, Mexico.

23-27/11 Workshop, "Taller de Óptica Cuántica 2015", Talk: *Chaotic environments and information flow in open quatum systems*. INAOE, Puebla, Mexico.

2014

26-29/09 Summer school, "Vienna Summer School on Complex Quantum Systems, Vienna, Austria, Poster: *Decoherence in a nested spin environment.*

09-11/10 Symposium " Quantum and classical chaos: What comes next? Symposium in honor of Prof. Marko Robnik on the occasion of his 60th birthday", Ljubljana, Slovenia.

2012

26-27/04 Conference, "V Reunión anual de la División de Información Cuántica de la Sociedad Mexicana de Física", Poster: *f - deformed photon added coherent states*, INAOE, Puebla, Mexico.

Academic references

Prof. Dr. Thomas H. Seligman
seligman@fis.unam.mx
Instituto de Ciencias Físicas, UNAM
Phone: +52 (777) 329 1733

Dr. Juan Mauricio Torres González
jmtorres@ifuap.buap.mx
Instituto de Física, Benemerita Universidad Autónoma de Puebla
Phone: +52 (222) 229 55 00, Ext. 2069

Dr. Blas Manuel Rodríguez Lara
bmlara@inaoep.mx
Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE)
Phone: +52 1 (222) 266 3100 ext. 1224

Dr. Carlos Pineda
carlospgmat03@gmail.com
Instituto de Física, UNAM
Phone: +52 (55) 5622 5133