**F O R M A T O
E U R O P E O   P E R   I L
C U R R I C U L U M
V I T A E**

INFORMAZIONI PERSONALI

NOME E COGNOME
Santiago Álvaro Gómez López

ISTRUZIONE E FORMAZIONE

- **Ph.D. in physics**, September 2020 – Advisor: Prof. Gustavo Moreira Lima.

- **M.S in physics**, July 2016 – University of Concepción – Advisor: Prof. Gustavo Moreira Lima.

- **Professional title of physicist,** July 2016 – University of Concepción – Advisor: Prof. Gustavo Moreira Lima.

- **B.A. in physics,** July 2013 – University of Concepción.

MADRELINGUA

- Spagnolo

ALTRE LINGUE

- Inglese

PUBLICATIONS

1. Certifying semi-device-independent security via wave-particle duality experiments – arXiv (submitted to npj Quantum Information) – C Raj, T Prasad, A Chaturvedi, L Pollyceno, D Spegel-Lexne, **S Gómez**, J Argillander, A Alarcon, GB Xavier, M Pawlowski, PR Dieguez – 2025.

2. Noise-resilient quantum random access codes – Physical Review A – HS Karthik, **S Gómez**, FM Quinteros, M Pawlowki, SP Walborn, G Lima, ES Gómez - 2025.

3. Experimental demonstration of the equivalence of entropic uncertainty with wave-particle duality – **Science Advances** – Daniel Spegel-Lexne, **Santiago Gómez**, Joakim Argillander, Marcin Pawłowski, Pedro R Dieguez, Alvaro Alarcón, Guilherme B Xavier – 2024.

4. Orbital Angular Momentum Wave-Particle Duality in a Few-Mode Optical Fiber Platform – **CLEO: Science and Innovations** – **Santiago Gómez**, Daniel Spegel-Lexne, Joakim Argillander, Hilma Karlsson, Marcin Pawłowski, Pedro R Dieguez, Alvaro Alarcón, Guilherme B Xavier – 2024.

5. All-in-fiber dynamic orbital angular momentum mode sorting – A Alarcón, **S. Gómez**, D Spegel-Lexne, J Argillander, J Cariñe, G Cañas, G Lima, G B Xavier – **ACS Photonics** – 2023.

6. Experimental quantum state discrimination using the optimal fixed rate of inconclusive outcomes strategy – **S. Gómez**, E S Gómez, O Jiménez, A Delgado, S P Walborn, G Lima – **Scientific reports** – 2022.

7. Optimal strategy to certify quantum nonlocality – **S Gómez**, D Uzcátegui, I Machuca, ES Gómez, SP Walborn, G Lima, D Goyeneche – **Scientific reports** – 2021.

8. Post-measurement adjustment of the coincidence window in quantum optics experiments – J Cariñe, **S. Gómez**, G Obregón, E S Gómez, M Figueroa, G Lima, G B Xavier – **IEEE Access** – 2021.

9. Multi-dimensional entanglement generation with multi-core optical fibers – ES Gómez, **S. Gómez**, I Machuca, A Cabello, S Pádua, SP Walborn, G Lima – **Physical Review Applied** – 2021. **Editors' Suggestion.**

10. Experimental investigation of partially entangled states for device-independent randomness generation and self-testing protocols – **S. Gómez**, A Mattar, I Machuca, ES Gómez, D Cavalcanti, O Farías, A Acín, G Lima – **Physical Review A** – 2019.

11. Experimental nonlocality-based randomness generation with non-projective measurements – **S. Gómez**, A Mattar, ES Gómez, D Cavalcanti, OJ Farías, A Acín, G Lima – **Physical Review A** – 2018. **Editors' Suggestion, Rapid Communication**.

12. Device-independent certification of a nonprojective qubit measurement – E S Gómez, **S Gómez**, P González, G Cañas, J F Barra, A Delgado, G B Xavier, A

Cabello, M Kleinmann, T Vértesi, G Lima – **Physical review letters** – 2016.

13. Experimental multiparty sequential state discrimination – MA Solis-Prosser, P González, J Fuenzalida, **S. Gómez**, GB Xavier, A Delgado, G Lima – **Physical Review A** – 2016.

14. Mutually unbiased bases with free parameters – D Goyeneche, **S. Gómez** – **Physical Review A** – 2015.

PROFESSIONAL EXPERIENCE

15. **Research stays under the supervision of Prof. Guilherme Xavier in Linkoping University in Sweden, Information Coding Division** – September 2023 – November of 2023.

16. **University Lectures** – Subject: Electromagnetism – University of Bio-Bio – Details: theory and laboratories – March to September of 2023.

17. **Research stays under the supervision of Prof. Guilherme Xavier in Linkoping University in Sweden, Information Coding Division** – August 2022 to October 2022.

18. **Postdoctoral researcher, MIRO (Millennium Institute for Research in Optics)** – April 2021 to April 2024.

POSTER PRESENTATIONS

19. S. Gómez. Title of poster: Experimental nonlocality-based randomness generation with nonprojective measurements. Poster session presented at: **QCYPT,** 2019. Montréal, Canada.

20. S. Gómez. Title of poster: Experimental nonlocality-based randomness generation with nonprojective measurements. Poster session presented at: **QCALL,** 2018. Padova, Italia.

21. S. Gómez. Title of poster: Mutually unbiased with free parameters. Poster session presented at: **VI Quantum information school and workshop,** 2017. Paraty, Brazil.

22. S. Gómez. Title of poster: Experimental multi-party sequential state discrimination. Poster session presented at: **RIO/OPTILAS,** 2016. Maresias, Brazil.

23. S. Gómez. Title of poster: Experimental multi-party sequential state discrimination. Poster session presented at: **Quantum Optics VIII,** 2016. Pucón, Chile.

24. S. Gómez. Title of poster: Continuous of mutually unbiased bases. Poster session presented at: **SOCHIFI XIX,** 2014. Concepción, Chile.

AWARDS

1. *Concurso FONDECYT de Postdoctorado 2021 (Agencia Nacional de investigación y Desarrollo)* – April 2021 to April 2024 – 3210359. Researcher: Santiago Gómez López. The amount of the project is 27.604 $ per year.

2. **Concurso Beca de Doctorado Nacional CONICYT (Comisión Nacional de Investigación Científica y Tecnológica)** – March 2017 to September 2020 – Folio: 21171288.

3. **Awarded at the RIO/OPTILAS conference for outstanding poster presentation** – November 2016.

ADDITIONAL INFORMATION

4. **Lab skills:** Source of photons: Polarization and Path entanglement; Bell test scenarios**,** POVM measurements; space-division multiplexing: multicore fibers, few mode fibers, demultiplexer device, photonic lantern, special light modulators.

5. **IT skills:** Wolfram Mathematica, MATLAB and python (Qiskit).

6. **Languages:** Spanish and English.

7. **Experimental design:** Free space and All-in-fiber platforms.

8. **Data Analysis.**