

# GUILLERMO FEDERICO QUINTEIRO

Departamento de Física, Univ. Nacional del Nordeste, Argentina

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<http://twistedlight-solid.blogspot.com>

## EDUCATION

### University Degrees

- Ph.D. in Physics. Michigan State University - USA, 2006.
- Master of Science - Physics. Michigan State University, USA, 2004.
- Licenciatura en Física. Univ. de Buenos Aires, Argentina, 2000.

### Internacional Schools

- Manipulating Quantum Coherence in Solid State Systems, Romania, September 2005.
- Semiconductor Quantum Dots: Physics and Devices, Ascona - Switzerland, August 2004.
- Modern Challenges in Statistical Mechanics PASI, Bariloche - Argentina, July 2002.
- Modeling of Biological Systems MBL Woods Hole, MA - USA, March - May 2000.
- El Leoncito School on Solar Physics, San Juan - Argentina, February 2000.

## RESEARCH EXPERIENCE

### Present positions

- Researcher (Inv. Independiente). CONICET (National Council of Scientific Research - Argentina). April 2009-present.

### Past positions

- Postdoctoral Fellow. Univ. de Buenos Aires, Argentina. April 2008- March 2009.
- Research Associate. Univ. Nacional de Gral. Sarmiento, Argentina. Sept. 2007- Dec. 2007.
- Postdoctoral Fellow. Univ. de Buenos Aires, Argentina. December 2006-August 2007.
- Grad. student RA. Michigan State University, USA. 2003-2006.
- Grad. student RA. Univ. de Buenos Aires, Argentina. 2000-2002.
- Undergrad. student RA. Comision Nacional de Energy Atomica, Argentina. 1997-2000.

### International research visits and stays

- Naval Rersearch Lab, Washington, USA, 2018. 1 week.
- DU, Denver, USA, 2018. 1 week in Prof. Siemens group.
- UM, Montpellier, France, 2017. 2 weeks in Prof. Arnaud Garnache's group.
- WWU, Münster, Germany, 2016/2017. 2 months in Prof. Tilmann Kuhn's group.
- DU, Denver, USA, 2016. Visiting Researcher - Marsico Fellowship Program, 2 weeks.
- WWU, Münster, Germany, 2015. 1 months in Prof. Tilmann Kuhn's group.
- UFMG, Minas Gerais, Brazil, 2014. 2 weeks in Prof. F. Massami Matinaga's group.

- WWU, Münster, Germany, 2013-2015. 9 months in Prof. Tilmann Kuhn's group.
- YU, New York, USA, 2011. Fulbright Fellow, 3 months in Prof. Lea Ferreira's group.
- MLU, Halle, Germany, 2009-2010. 6 months in Prof. J. Berakdar's group.
- NRC, Ottawa, Canada, 2008. 2 months in Prof. P. Hawrylak's group.
- LNLS, Campinas, Brazil, 2007. 1 week in Prof. Gilberto Madeiros' group.
- UA, Alicante, Spain, 2006. 1 month in Prof. J. Fernandez-Rossier's group.

## Publications (peer reviewed)

[ **SA**: Papers as Sole Author / **EC**: Editor's Choice ]

26. Mark T. Lusk, Mark E. Siemens, G. F. Quinteiro, *Large centroid shifts of vortex beams reflected from multi-layers*, Journal of Optics **21** (1), 015601 (2018)
25. D. O. Pabon, S. A. Ledesma, G. F. Quinteiro, M. G. Capeluto, *Design of a compact device to generate and test beams with orbital angular momentum in the EUV*, Applied Optics **56** (29), 8048-8054 (2017).
24. **EC** G. F. Quinteiro, F Schmidt-Kaler, CT Schmiegelow, *Twisted-lighthion interaction: the role of longitudinal fields*, Phys. Rev. Lett. **119**, 25320 (2017).
23. D. O. Pabon, S. A. Ledesma, G. F. Quinteiro, M. G. Capeluto, *Design of a compact setup to generate and test optical vortex beams*, Optica pura y aplicada **50** (3), 289-295 (2017).
22. G. F. Quinteiro, D. E. Reiter, T. Kuhn, *Formulation of the twisted-light-matter interaction at the phase singularity: beams with strong magnetic fields*, Phys. Rev. A **95**, 012106 (2017).
21. G. F. Quinteiro, D. E. Reiter, T. Kuhn, *Formulation of the twisted-light-matter interaction at the phase singularity: The twisted-light gauge*, Phys. Rev. A **91**, 033808 (2015).
20. G. F. Quinteiro, T. Kuhn, *Light-hole transitions in quantum dots: realizing full control by highly focused optical-vortex beams*, Phys. Rev. B **90**, 115114 (2014).
19. M. B. Farias, G F Quinteiro, P. I. Tamborenea, *Photoexcitation of graphene with twisted light*, The European Physical Journal B **86** (10), 1-9 (2013).
18. B. Sviderski, G F Quinteiro, P. I. Tamborenea, *Twisted-light-induced intersubband transitions in quantum wells at normal incidence*, J. Phys.: Condens. Matter **25** (38), 385301(2013).
17. G. F. Quinteiro, P. Dmitruk, A. A. Aligia, *Efficient spin control in high-quality-factor planar microcavities*, Phys. Rev. B **86**, 035329 (2012).
16. J. A. Andrade Hoyos, A. A. Aligia, and G. F. Quinteiro, *Effective Hamiltonian for the impurity-impurity interaction in micropillars in the presence of decoherence*, Phys. Rev. B **85**, 165421 (2012).
15. G. F. Quinteiro, P. I. Tamborenea, J. Berakdar, *Orbital and spin dynamics of intraband electrons in quantum rings driven by twisted light*, Opt. Express **19**, 26733-26741 (2011).
14. J. A. Andrade Hoyos, A. A. Aligia, and G. F. Quinteiro, *Spin-spin indirect interaction at low energy excitation in zero-dimensional cavities*, J. Phys.: Condens. Matter **23** (2011).
13. G. F. Quinteiro, A O Lucero and P I Tamborenea, *Electronic transitions in quantum dots and rings induced by inhomogeneous off-centered light beams*, J. Phys. Condens. Matter **22** (2010) 505802.
12. **SA** G. F. Quinteiro, *Below-bandgap excitation of bulk semiconductors by twisted light*, EPL Volume **91**, 27002 (2010).
11. G. F. Quinteiro and P. I. Tamborenea, *Twisted-light-induced optical transitions in semiconductors: Free-carrier quantum kinetics*, Phys. Rev. B **82**, 125207 (2010).
10. G. F. Quinteiro and J. Berakdar, *Electric currents induced by twisted light in quantum rings*, Opt. Express **17**, 20465-20475 (2009).

9. G. F. Quinteiro and P. I. Tamborenea, *Electronic transitions in disk-shaped quantum dots induced by twisted light*, Phys. Rev. B **79**, 155450 (2009).
8. **EC** G. F. Quinteiro and P. I. Tamborenea, *Theory of the optical absorption of light carrying orbital angular momentum by semiconductors*, EPL **85**, 47001 (2009).
7. **SA** G. F. Quinteiro, *Donor-donor interaction mediated by cavity-photons and its relation to interactions mediated by excitons and polaritons*, Phys. Rev. B **77**, 075301 (2008).
6. G. F. Quinteiro, J. Fernandez-Rossier, C. Piermarocchi, *Long-range spin-qubit interaction mediated by microcavity polaritons*, Phys. Rev. Letters **97**, 97401 (2006).
5. G. F. Quinteiro, C. Piermarocchi, *Entanglement and errors in the control of spins by optical coupling*, Phys. Rev. B **72**, 045334 (2005).
4. C. Piermarocchi, G. F. Quinteiro, *Coherent optical control of spin-spin interaction in doped semiconductors*, Phys. Rev. B **70**, 235210 (2004).
3. **SA** G. Quinteiro, *Beam Optimization: Improving Methodology*, Annals of Nuclear Energy **31** (2004) pp. 399-411.
2. G. Quinteiro, R. Calabrese, *Characterization and Optimization Analysis of a BNCT Biological Facility*, Annals of Nuclear Energy **29/15** (2002) pp. 1779-1794.
1. **SA** G. Quinteiro, *Study of kinetic parameters in the RA-4 reactor by means of computational modeling and neutron noise measurements*, Annals of Nuclear Energy **28** (2001) pp. 913-921.

### Proceedings (peer reviewed)

8. G. F. Quinteiro, D. E. Reiter and T. Kuhn, *Magnetic-optical transitions induced by twisted light in quantum dots*, J. Phys.: Conf. Ser. 906 012014 (2017).
7. T. Kuhn, D. E. Reiter, and G. F. Quinteiro, *Optical control of exciton and spin states in a quantum dot by excitation with twisted light*, J. Phys.: Conf. Ser. 647 012012 (2015).
6. G. F. Quinteiro and T. Kuhn, *Spin Control in Charged Quantum Dots by Twisted Light*, CLEO: QELS.Fundamental Science, paper FW1E.8 (2015).
5. G. F. Quinteiro and P. I. Tamborenea, *Electric currents induced by twisted light in bulk semiconductors*, CLEO/Europe - EQEC 2009, art. no. 5192760 (2009).
4. C. Piermarocchi, G. F. Quinteiro, J. Fernandez-Rossier, *Long-range spin-qubit interaction in planar microcavities*, Quantum Electronics and Laser Science Conference, paper JTua23 (2007).
3. G. Quinteiro, H. Corti, M. Marconi, *Diffusion in aqueous solutions containing disaccharides using laser techniques*, (2001) SPIE, Vol SPIE 4419, 244.
2. G. Quinteiro, R. Calabrese, *Modeling of the RA-1 Reactor Using a Monte Carlo Code*, Asoc. Argentina de Tecnología Nuclear, IAEA vol. 32, ref. 32046430 (2000).
1. C. Calabrese, H. Scolari, C. Grizutti, J. Castillo, G. Quinteiro, F. Cantargi, *Thermal Facility for BNCT in the RA1 Argentine Research Reactor*, International Symposium on Research Reactor Utilization, Safety and Management, (1999) IAEA-SM-360/4P.

### Book Chapters

1. *Avances de la física sobre otras disciplinas*, in book *Las ciencias sociales seguirn imitando a las ciencias duras? Un simposio a distancia.*, Colección Investigación Aplicada de Editorial Antigua. ISBN 978-987-3707-09-4 (2015).

### Conferences

20. XXIII Latin American Symposium on Solid State Physics, Bariloche - Argentina, May 2018 (2 posters).
19. Reunion AFA, La Plata Sept. 2017 (poster).

18. Fundamental Optical Processes in Semiconductors (FOPS), USA Sept. 2017 (poster).
17. RIAO/OPTILAS 2016, Pucón, Chile Oct. 2015. Poster presentation.
16. Solidos 2015, La Plata, Argentina Oct. 2015. Poster presentation (2).
15. XVII Giambiagi Winter School, Buenos Aires, Argentina Aug. 2015. Poster presentation.
14. 100a Reunion Nacional de Fisica AFA, San Luis, Argentina Sept. 2015. Poster presentation.
13. CLEO, San Jose, USA, May 2015. Oral presentation.
12. Quantum Optics VI, Piriapolis, Uruguay, November 2012. Poster presentation.
11. Quantum Science Symposium, Boston, USA, September 2011.
10. XIII Giambiagi School Nanophot., Buenos Aires, Argentina, July 2011. Poster presentation.
9. APS March Meeting Dallas, March 2011. Oral presentation.
8. The 23rd General Conference of the Condensed Matter Division of the European Physical Society, Poland Sept. 2010. Poster presentation.
7. SOLIDOS'09 Valparaiso Chile, November 2009. Oral presentation.
6. CLEO, Munich, Germany 2009. Oral presentation.
5. Coherent spintronic workshop, Waterloo Canada, January 2008.
4. Manipulating Quantum Coherence in Solid State Systems, Romania, 2005. Oral presentation.
3. Semiconductor Quantum Dots: Physics and Devices, Switzerland, 2004. Poster presentation.
2. APS March Meeting 2004, Montreal - Canada, 2004. Oral presentation.
1. XII Congreso Argentino de Fisicoquímica y Química Inorgánica, San Martín de los Andes - Argentina, 2001. Poster presentation.

## Colloquia

Spawar System Center Pacific, San Diego **USA 2018**; Naval Research Lab, Washington **USA 2018**; University of Denver, **USA 2016**; Friedrich-Schiller-University Jena, **Germany 2015**; Universidad Estadual de Campinas, **Brazil 2015**; Universidad Federal de Minas Gerais, **Brazil 2014**; Laboratorio TANDAR, **Argentina 2012**; Michigan State University, **USA 2011**; Yeshiva University, New York, **USA 2011**; Westfälisches Wilhelm Universität Münster, **Germany 2011**; Instituto Balseiro, **Argentina 2011**; Martin Luther Universität, Halle, **Germany 2010**; Martin Luther Universität, Halle, **Germany 2009**; National Research Council of Canada, Ottawa, **Canada 2008**; Laboratorio Nacional de Luz Sincrotron, **Brazil 2007**; Max-Planck-Institut für Mikrostrukturphysik, **Germany 2006**; Univ. de Alicante, **Spain 2006**; University of Michigan, Ann Arbor, **USA 2005**.

## Distinguished fellowships

- DAAD-CONICET fellowship, Germany, 2016.
- Marsico Visiting Researcher, USA, 2016.
- CONICET fellowship, Germany 2013.
- Fulbright fellowship, USA 2011.
- DAAD fellowship, Germany, 2009 and 2010.
- Student Award by Ministerio Nacional de Educacion, Argentina 1997.

## Grants

- 2009-2018: 5 Argentine national grants received, for financial support spanning each 2-3 years.

## General

- Journal Referee: Since 2005. Journals: PRL, PRB, PRA, Nature Photonics, NJP.
- Computer coding: Fortran / C / Visual Basic / MCNP / Mathematica.
- DAAD Grants Referee since 2015.

## TEACHING EXPERIENCE

### Present position

- Full Professor (Prof. Titular). Departamento de Física, Univ. Nacional del Nordeste, Ciudad de Corrientes, Corrientes - Argentina. December 2018-present.

### Past positions

- Lecturer (JTP). Univ. de Buenos Aires, Argentina. December 2007 - October 2018.
- Lecturer (Jefe de Trabajos Prácticos (JTP)) Instituto de Ciencias, UNGS, Argentina, 2007.
- TA. Michigan State University, USA, 2002-2003.
- TA. Univ. de Buenos Aires, Argentina, 2001-2002.
- TA (undergrad.). Univ. de Buenos Aires, Argentina, 2000-2001.

### Mentoring

- Licenciatura student, Univ. de Buenos Aires - Argentina, July 2018 - present.
- Fulbright Visiting Researcher, Prof. Mark Siemens (Univ. of Denver), 3 months, 2017.
- Licenciatura student, Univ. de Buenos Aires - Argentina, 2016 - 2017.
- PHD student, Univ. de Buenos Aires - Argentina, 2015 - 2017.
- Licenciatura student, Univ. de Buenos Aires - Argentina, 2012.
- Visiting undergrad. student, Univ. de Buenos Aires - Argentina, August 2010.
- PHD student, Univ. de Buenos Aires - Argentina, September 2008 - September 2010.
- Undergrad. student, Michigan State University - USA, Summer 2004.
- Two undergrad. students, Univ. de Buenos Aires - Argentina, Spring 2002.

### General

- Committee member at three (3) Master Thesis degree, Universidad de Buenos Aires, 2008-present.
- Committee member for the annual selection of Teaching Assistants at Universidad de Buenos Aires, 2014.

## PROFESIONAL EXPERIENCE

From 1997 to 2000, I worked in the Comisión Nacional de Energía Atómica, performing numerical analysis and experiments on nuclear reactors.

### Technical reports (no peer reviewed)

3. G. Quinteiro, F. Cantargi, *Estimación del flujo térmico y de la relación de cadmio en la columna térmica del reactor RA-1*, Informe de Tareas CNEA.C.RCN.ITA.088 (1999).
2. G. Quinteiro Rosen, *Determinación del inventario radioactivo de los elementos combustibles del RA-3*, Informe de Tareas CNEA.C.RCN.ITA.048 (1998).

1. G. Quinteiro Rosen, *Estimación de la fracción reducida de neutrones retardados y el tiempo entre reproducciones para el reactor RA-4*, Informe Técnico CNEA.C.RCN.ITE.105 (1998).

### Conferences

2. Asociación Argentina de Tecnología Nuclear, Buenos Aires, 1998 and 2000. Oral presentations.
1. Asociación Física Argentina, La Plata, 1997 and 1998. Poster presentations.

<b>MISCELLANEOUS</b>
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### Outreach activities

- Semana de la Física, Departamento de Física, Univ. de Buenos Aires, 2011 and 2013.
- International Teaching Assistant Orientation Program 2005. Michigan State U., 2004 and 2005.

### Patents

- AR059047B4 "Exprimidor de limon a membrana permeable" Argentina, 2010.

### Pedagogy workshops

- Jornada de Capacitación Docente, 2012. CEFIEC, Univ. de Buenos Aires, Argentina.

### Scientific editor

- I administer (editing and writing) a scientific blog on the topic of light-matter interaction: [twistedlight-solid.blogspot.com.ar](http://twistedlight-solid.blogspot.com.ar) . 2014 - present.

### Languages

- Spanish: native / English: fluent / German: Advanced / Portuguese: Intermediate