

Santiago Oviedo Casado

Curriculum Vitae

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Date of birth 12/09/1987



Higher Education

- 2012 - 2016 **Theoretical Physics Institute, Ulm University,**
Ph.D. in Theoretical Physics (Cum Laude), “Quantum effects in biological systems”, Supervisors: Prof. Dr. Martin B. Plenio and Prof. Dr. Susana F. Huelga.
- 2010 - 2012 **Institute of Theoretical Physics UAM - CSIC,**
M.Sc. in Theoretical Physics, Thesis “The $\mu\nu$ SSM with an extra U(1) gauge symmetry”, Supervisor: Prof. Dr. Carlos Muñoz.
- 2005 - 2010 **Autonomous University of Madrid,** *Licentiate degree in Physics.*

Jobs and positions

- 2019 - now **Research fellow,** *Quantum Technologies group, The Racah Institute of Physics, Hebrew University of Jerusalem.*
- 2016 - 2019 **Research fellow,** *Applied Physics Department, Technical University of Cartagena.*
- 2012 - 2016 **Research fellow (*Akademischer Mitarbeiter*),** *Institute of theoretical physics, Ulm University.*

Scholarships awarded

- 2019 - 2021 **Fundación Ramón Areces postdoctoral fellowship (XXXI edition of grants for Post-graduate Studies in Life and Matter Sciences in Foreign Universities and Research Centers 2019/2020,** *Racah Institute of Physics, Hebrew University of Jerusalem, Supervisor: Prof. Dr. Alex Retzker.*
- 2010 - 2012 **Postgraduate researcher,** *Introduction to Research Fellowship, Theoretical Physics Department, Autonomous University of Madrid.*
Supervisors: Prof. Dr. Ángeles Díaz and Dr. Guillermo Högèle
- 2007 - 2012 **Fellowship from Spanish Ministry of Education,**
General purpose fellowship for university studies.

Publications

- 2020 **Correlated noise in Brownian motion allows for super resolution,** *Santiago Oviedo Casado; Amit Rotem; Ramil Nigmatullin; Javier Prior; Alex Retzker, arXiv:2005.08346.*
- 2020 **Magnetic pulses enable multidimensional optical spectroscopy of dark states,** *Santiago Oviedo Casado; František Šanda; Jürgen Hauer; Javier Prior, The Journal of Chemical Physics **152**, 084201 (2020), arXiv:1901.00247.*

- 2019 **Limits on spectral resolution measurements by quantum probes**, Amit Rotem; Tuvia Gefen; Santiago Oviedo Casado; Javier Prior; Simon Schmitt; Yoram Burak; Liam McGuinness; Fedor Jelezko; Alex Retzker, *Physical Review Letters* **122**, 060503 (2019), arXiv:1707.01902v2.
- 2018 **Determination of the Optimal Size of Photovoltaic Systems by Using Multi-Criteria Decision-Making Methods**, Guido Camilo Guerrero Liquez; Santiago Oviedo Casado; Juan Miguel Sánchez Lozano; María Socorro García Cascales; Javier Prior Arce; Antonio Urbina Yeregui, *Sustainability*, **10**(12), 4594 (2018).
- 2018 **Magnetic fields: a tool for the study of organic solar cells**, Santiago Oviedo Casado; Antonio Urbina Yeregui; Javier Prior Arce, *The European Physical Journal Special Topics* **227**(3–4), 259268 (2018), arXiv:1712.01165.
- 2018 **Surprising phenomenology in the non-Universal U (1) gauge extended $\mu\nu$ SSM**, Víctor Martín Lozano; Santiago Oviedo Casado, *Journal of High Energy Physics* **2018**(102), (2018), arXiv:1804.02378.
- 2018 **Theory of Excitonic Delocalization for Robust Vibronic Dynamics in LH2**, Felipe Caycedo Soler; James Lim; Santiago Oviedo Casado; Niek F. van Hulst; Susana F. Huelga; Martin B. Plenio, *The Journal of Physical Chemistry Letters* **9**(12), 34463453 (2018), arXiv:1804.04679.
- 2017 **Magnetic field enhancement of organic photovoltaic cells performance**, Santiago Oviedo-Casado; Antonio Urbina; Javier Prior, *Scientific Reports* **7**, 4297 (2017), arXiv:1702.05130.
- 2016 **Phase-dependent exciton transport and energy harvesting from thermal environments**, Santiago Oviedo-Casado; Javier Prior; Alex W. Chin; Robert Rosenbach; Susana F. Huelga; Martin B. Plenio, *Physical Review A*. **93**, 020102(R) (2016), arXiv:1506.08151.

Teaching

- 01/02/2019 - 31/05/2019 **Ampliación de Física**, *Grado en Fundamentos de Arquitectura*, Technical University of Cartagena.
- 20/02/2019 - 25/03/2019 **Física**, *Grado en Ingeniería agroalimentaria y de sistemas biológicos*, Technical University of Cartagena.
- 20/02/2019 - 25/03/2019 **Física II**, *Grado en Arquitectura Naval e Ingeniería de Sistemas Marinos*, Technical University of Cartagena.
- 01/10/2018 - 22/12/2018 **Física**, *Grado en Fundamentos de Arquitectura*, Technical University of Cartagena.
- 15/10/2018 - 18/11/2018 **Física I**, *Grado en Ingeniería Mecánica*, Technical University of Cartagena.
- 01/02/2018 - 31/05/2018 **Ampliación de Física**, *Grado en Fundamentos de Arquitectura*, Technical University of Cartagena.
- 01/10/2017 - 22/12/2017 **Física**, *Grado en Fundamentos de Arquitectura*, Technical University of Cartagena.
- 01/11/2011 - 01/06/2012 **Física para Biólogos**, *Grado en Biología*, Autonomous University of Madrid.

Talks and posters

- 2020 **Sensing protocols for the NV-NMR spectrometer**,
SPIE Photonics West 2020, San Francisco, California, United States, 01 - 06 of February 2020, (Talk).
- 2019 **Unveiling dark states via magnetic field aided two-dimensional spectroscopy**,
Multidimensional Spectroscopy and Dynamics, Reitenhaslach, Bayern, Germany, 24 - 25 of September 2019, (Talk).
- 2019 **Limits on spectral resolution measurements by quantum probes**,
New Trends in Complex Quantum Systems Dynamics, Venecia, Veneto, Italy, 09 - 12 of April 2019, (Talk).
- 2018 **Unveiling dark states via magnetic field aided two-dimensional spectroscopy**,
Strong coupling in organic materials, Eindhoven, Noord-Brabant, Nederland, 16 - 18 of April 2018, (Poster).
- 2017 **Phase dependent exciton transport and non-equilibrium energy harvesting from thermal environments**,
Excitation Energy Transfer Processes in Physical, Chemical and Biological Systems, Reitenhaslach, Bayern, Germany, 04 - 07 of October 2017, (Poster).
- 2017 **Magnetic field enhancement of organic photovoltaic solar cells performance**,
14th Granada Seminar, Granada, Andalucía, Spain, 20 - 23 of June 2017, (Talk).
- 2017 **Magnetic field enhancement of organic photovoltaic solar cells performance**,
New Trends in Complex Quantum Systems Dynamics 2017, Cartagena, Murcia, Spain, 08 - 12 of May 2017, (Talk).
- 2016 **Phase dependent exciton transport and non-equilibrium energy harvesting from thermal environments**,
624. WE-Heraeus Seminar on "Simulating Quantum Processes and Devices", Bad Honnef, North Rhine-Westphalia, Germany, 19 - 22 of September 2016, (Poster).
- 2015 **Phase dependent exciton transport and non-equilibrium energy harvesting from thermal environments**,
New Trends in Complex Quantum Systems Dynamics 2015, Cartagena, Murcia, Spain, 25 - 29 of May 2015, (Poster).
- 2015 **Phase dependent exciton transport and non-equilibrium energy harvesting from thermal environments**, *Irreversible dynamics: nonlinear, non-local and non-Markovian manifestations*, *51 Winter School of Theoretical Physics*, Łądek Zdrój, Lower Silesia, Poland, 9 - 14 of February 2015, (Talk).
- 2014 **Electronic and Vibrational coherence on the LH2 photosynthetic complex**, *SFB Christmas Seminar*, Ulm, Baden-Württemberg, Germany, 19 of December 2014, (Talk).
- 2013 **Quantum effects in pigment protein complexes**, *II Postgraduate Meeting On Theoretical Physics*, Madrid, Madrid, Spain, 9 - 11 of October 2013, (Talk).

Participation in research projects

01/01/2019 - **Metrología cuántica y coherencia en entornos estructurados**, *Technical University of Cartagena*, Agencia Estatal de Investigación. Spain., 29645 €.

31/01/2021

- 01/10/2018 - **Advancing Science and TEchnology thRough dIamond Quantum Sensing**, *Hebrew University of Jerusalem*, Horizon 2020, Quantum Flagship, 10.000.000 €.
- 30/09/2021
- 01/10/2020 - **Lab learn, ¿hacia un laboratorio diagnóstico autónomo?**, *Hebrew University of Jerusalem*, Fundación Ramón Areces, 26.400 €.
- 30/09/2021
- 01/01/2019 - **NVC-Laboratory Corporation**, *Technical University of Cartagena*, Fundación Séneca, research agency Murcia Region, 27.500 €.
- 31/01/2021
- 01/01/2016 - **Quantum Energy QuE-QMBS**, *Technical University of Cartagena*, Fundación Séneca, research agency Murcia Region, 250.000.
- 31/12/2020
- 01/10/2019 - **Diamantes y medicina, el laboratorio en un chip (Chip-Lab)**, *Hebrew University of Jerusalem*, Fundación Ramón Areces, 26.400 €.
- 30/09/2020
- 01/01/2016 - **Transfer excitations in light harvesting networks: From nature to artificial devices**, *Technical University of Cartagena*, Ministerio de Economía y Competitividad, 60.500 €.
- 31/12/2018
- 01/01/2015 - **FP7 EU-Project: PAPETS (Project ID: 323 901)**, *Ulm University*.
- 15/12/2015
- 01/01/2014 - **ERC Synergy Grant: Quantum Devices and Biology (BioQ)(Project ID: 319130)**, *Ulm University*, European Research Council, 10.000.000 €.
- 31/12/2014
- 01/07/2013 - **SFB/TRR 21 (SFB/Transregio 21) : Control of quantum correlations in tailored matter - Stuttgart, Ulm, Tübingen**, *Ulm University*.
- 31/12/2013
- 01/11/2012 - **Humboldt Professorship of Martin Plenio**, *Ulm University*, Humboldt Foundation, 3.500.000 €.
- 30/06/2013

Outreach

- 2017 - 2019 **Colaborator in the “Research at highschool project of the Murcia Region**,
3 projects tutored.
- 2018 **The physics of engineering**,
Engineering Campus and Science Week, Murcia, Spain, 26 of October 2018.
- 2010 y 2011 **8th and 9th instances of the International Astronomical Summer School Rozhen**,
Rozhen, Bulgaria, 2010/11, Professor.
- 2011 y 2012 **Hands on Particle Physics Masterclass**,
Volunteer. Event coordinated by the International Particle Physics Outreach Group (IPPOG), IFT/UAM-CSIC, Madrid, Spain, March 2011 and 2012.
- 2011 **String theory & W boson desintegration**,
9 edición del International Astronomical Summer School Rozhen, Rozhen, Bulgaria, 2011, (Talk).
- 2010 **Black Holes & Galaxy Mergers**,
8th International Astronomical Summer School Rozhen, Rozhen, Bulgaria, 2010, (Talk).

Skills

- Languages **Spanish**, *Nativ speaker*.
English, *Fluent*, CEFR: C1.

German, *Basic*, CEFR: A2.

Peer review Reviewer for journals such as Scientific Reports, The European Journal of Physics, or Journal of Physical Chemistry group.