

Ramón y Cajal

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Biographical Info

Since 2018: Ramón y Cajal Fellow.

2015-2017: Researcher. Numerical simulation and modelling, Universidad Carlos III de Madrid, Spain.

2012-2015: Juan de la Cierva Research Fellow. Theory and simulation of materials, Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain.

2011-2012: JAE-Doc Research Fellow. Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain.

2008-2010: Postdoc in the group of Markus Büttiker. Département de Physique Théorique. Université de Genève, Switzerland.

2008: Ph.D in Physics. Spin and charge transport through driven quantum dot systems and their fluctuations, Universidad Autónoma de Madrid, Spain.

2003-2008: Ph.D Student, supervisor Gloria Platero, Theory and simulation of materials, Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain.

1995-2000: Undergraduate Studies in Physics, Department of Theoretical Physics, Universidad Autónoma de Madrid, Spain.

Honors and Awards

Research Interests

Electronic transport in nanostructures.

Fluctuations.

Thermoelectrics and quantum thermodynamics.

Relevant/Recent Publications

All-thermal transistor based on stochastic switching, Rafael Sánchez, Holger

Thierschmann, and Laurens W. Molenkamp, Phys. Rev. B 95, 241401(R), (2017).

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Thermoelectricity without absorbing energy from the heat sources, Robert S. Whitney, Rafael Sánchez, Federica Haupt, Janine Splettstoesser, Physica E: Low-dimensional Systems and Nanostructures, 75, pp 257-265, (2016). [[URL](#)]

Three-terminal energy harvester with coupled quantum dots, Holger Thierschmann, Rafael Sánchez, Björn Sothmann, Fabian Arnold, Christian Heyn, Wolfgang Hansen, Hartmut Buhmann & Laurens W. Molenkamp, Nature Nanotechnology volume 10, pages 854–858, (2015). [[URL](#)]

Chiral Thermoelectrics with Quantum Hall Edge States, Rafael Sánchez, Björn Sothmann, and Andrew N. Jordan, Phys. Rev. Lett. 114, 146801, (2015). [[URL](#)]

Topical Review: Thermoelectric energy harvesting with quantum dots, Björn Sothmann, Rafael Sánchez and Andrew N. Jordan, Nanotechnology, 26(3), (2014).

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Long-Range Spin Transfer in Triple Quantum Dots, R. Sánchez, G. Granger, L. Gaudreau, A. Kam, M. Pioro-Ladrière, S. A. Studenikin, P. Zawadzki, A. S. Sachrajda, and G. Platero, Phys. Rev. Lett. 112, 176803, (2014). [[URL](#)]

Bipolar spin blockade and coherent state superpositions in a triple quantum dot, M. Busl, G. Granger, L. Gaudreau, R. Sánchez, A. Kam, M. Pioro-Ladrière, S. A. Studenikin, P. Zawadzki, Z. R. Wasilewski, A. S. Sachrajda & G. Platero, Nature Nanotechnology, 8, pp 261–265, (2013). [[URL](#)]

Optimal energy quanta to current conversion, Rafael Sánchez and Markus Büttiker, Phys. Rev. B 83, 085428, (2011). [[URL](#)]

Mesoscopic Coulomb Drag, Broken Detailed Balance, and Fluctuation Relations, Rafael Sánchez, Rosa López, David Sánchez, and Markus Büttiker, Phys. Rev. Lett. 104, 076801, (2010). [[URL](#)]

Resonance Fluorescence in Transport through Quantum Dots: Noise Properties, Rafael Sánchez, Gloria Platero, and Tobias Brandes, Phys. Rev. Lett. 98, 146805, (2007). [[URL](#)]

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