Rubén Seoane Souto, Ph.D.

Date of birth: 1989/05/10

CONTACT INFORMATION

Trollebergsvägen 30b
Lund, Sweden 22731

+34-600-546567
ruben.seoane_souto@ftf.lth.se

PERSONAL STATEMENT

I am a posdoctoral researcher expert is quantum transport properties through interacting and hybrid nanojunctions, involving BCS and topological superconductors. My current interest is on the development of quantum technologies. I am expert on non-equilibrium Green function technique, having background also on master equation and numerical renormalization group.

ACADEMIC POSITIONS

Posdoctoral researcher — Nov 2018 to present
Solid state division and Nanolund, Lund university,
Center of Quantum Devices, University of Copenhagen

Lecturer — Oct 2016 to Oct 2018
Department of theoretical condensed matter physics,
Universidad Autónoma de Madrid

Doctorate student — Jan 2013 to Oct 2016
Department of theoretical condensed matter physics,
Universidad Autónoma de Madrid

RESEARCH STAYS

Laboratoire Ondes et Matiere d'Aquitaine (CNRS), Bordeaux — Apr 2016 to Jul 2016
Supervised by Dr. Rémi Avriller

EDUCATION

Universidad Autónoma de Madrid, Madrid, Spain

Ph.D., Condensed matter physics, nanophysics and biophysics, Jun 15 2018

- Thesis title: *Quench dynamics in interacting and superconducting nanojunctions.*
- Supervisors: Prof. Alfredo Levy Yeyati and Prof. Álvaro Martín Rodero

M.S., Master in condensed matter physics and nanotechnology, Jul 2013

- Thesis: *Electronic transport through molecular transistors in the polaronic regime*
- Supervisors: Prof. Alfredo Levy Yeyati, Prof. Álvaro Martín Rodero and Prof. Rosa C. Monreal Vélez

Universidad Complutense de Madrid, Madrid, Spain

B.S., Physics. Undergraduate thesis on ADS/CFT correspondence — Jul 2012

REFEREED JOURNAL PUBLICATIONS

1. D. Kuzmanovski; **Seoane Souto, R.**; A. V. Balatsky."Odd-frequency superconductivity near a magnetic impurity in a conventional superconductor", accepted for publication in Phys. Rev. B
2. **Seoane Souto, R.**; Flensberg K.; Leijnse, M."Time scales for charge-transfer based operations on Majorana systems", accepted for publication in Phys. Rev. B
3. R. Avriller; **Seoane Souto, R.**; Martín-Rodero, A.; Levy Yeyati, A. "Build-up of Vibron-Mediated Electron Correlations in Molecular Junctions". Phys. Rev. B **99** 121403(R) (2019)
4. **Seoane Souto, R.**; R. Avriller; Levy Yeyati, A; Martín-Rodero, A.. "Transient dynamics in interacting nanojunctions within self-consistent perturbation theory". New J. Phys. **20** 083039 (2018)
5. **Seoane Souto, R.**; Martín-Rodero, A.; Levy Yeyati, A. "Andreev bound states formation and quasiparticle trapping in quench dynamics revealed by time-dependent counting statistics". Phys. Rev. B **96** 165444 (2017)
6. **Seoane Souto, R.**; Martín-Rodero, A.; Levy Yeyati, A. "Analysis of universality in transient dynamics of coherent electronic transport". Fortschr. Phys. **65**, 1600062 (2017)

7. **Seoane Souto, R.**; Martín-Rodero, A.; Levy Yeyati, A. "Andreev Bound States Formation and Quasiparticle Trapping in Quench Dynamics Revealed by Time-Dependent Counting Statistics". Phys. Rev. Lett. **117** 267701 (2016)

8. **Seoane Souto, R.**; Avriller, R.; Monreal, R. C.; Martín-Rodero, A.; Levy Yeyati, A. "Transient dynamics and waiting time distribution of molecular junctions in the polaronic regime". Phys. Rev. B **92** 125435 (2015)

9. **Seoane Souto, R.**, Levy Yeyati, A., Martín-Rodero, A.; Monreal, R. C. "Dressed tunneling approximation for electronic transport through molecular transistors". Phys. Rev. B **89** 085412 (2014)

Published books

1. **Seoane Souto, R.** "Quench dynamics in interacting and superconducting nanojunctions" Springer Thesis series recognizing outstanding Ph.D. research. February 2020. ISBN: 978-3-030-36594-3

Patents

Improved plano-convex lens projector, ES2570808B1 2017
Contribution to the invention, proposal writing and design 50%

Awards

- Seal of Excellence Certificate delivered by the European Commission Feb 2020

Student Awards

- Young researcher 1^{st} prize in material science, Instituto Nicolás Cabrera Dec 2017
- Best student poster award, 33^{rd} international conference on the physics of semiconductors, awarded by IUPAP Aug 2016
- Young researcher 2^{nd} prize in material science, Instituto Nicolás Cabrera Dec 2015

Grants

Student grants

- Predoctoral grant from the national research agency Jan 2013-Oct 2016
  Universidad Autónoma de Madrid
- Summer research fellowship from the Ignacio Cirac program chair Jul-Sept, 2012
  Institute of photonic sciences (ICFO)
- Undergraduate national research scholarship Jan-Jul, 2012
  Universidad Complutense de Madrid

Granted by RES (national supercomputing network)
Different grants for computational resources, being responsible of the project proposal, intermediate and final reports.

Travel grants
I have received grants from public institutions, companies and foundations for attending to conferences, including an invitation to the Lindau Nobel Laurate meeting.

Presentations

15 presentations at international workshops and conferences, including 8 oral contributions and 7 poster presentations.

Teaching Experience

Universidad Autónoma de Madrid.

- Experimental Techniques: Optics and Thermodynamics (3^{rd} year Physics degree).
  Responsible of the weekly practices, holding office hours and grading reports.
- Introductory course in physics (chemical engineering degree)
  Responsible of the weekly homework sessions, holding office hours and grading problem sets.
- Introductory physics laboratory (first year chemical degree)
  Responsible of the weekly sessions, holding office hours and grading exams and final reports.