

# Curriculum Vitae

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Erwann BOCQUILLON

Professor of Experimental Physics  
University of Cologne  
Zùlpicher Straße  
50937 Cologne

French  
Born on 11/02/1985  
Phone : +49(0)221 470 76334  
bocquillon@ph2.uni-koeln.de  
ORCID: 0000-0002-5875-1718

## Positions

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| Oct. 2021 - | <b>Prof. of Experimental Physics (W2), University of Cologne</b><br>Tenure Track to W3 Professorship   |
| 2016 - 2021 | <b>CNRS Junior Researcher, Laboratoire de Physique de l'ENS, Paris</b><br>formerly Laboratoire Pierre Aigrain, Mesoscopic Physics Group<br>permanent civil servant position                        |
| 2016        | <b>CNRS Post-Doctoral Researcher, Laboratoire Pierre Aigrain, Paris</b><br>Mesoscopic Physics Group  |
| 2013 - 2016 | <b>Post-doc, University of Würzburg</b><br>Chair of L. W. Molenkamp<br><i>Superconducting nanostructures on topological insulators</i><br>Fellowship from the A. von Humboldt foundation (2 years) |
| 2009 - 2012 | <b>Agrégé-Préparateur, École Normale Supérieure (Paris)</b><br>Teaching assistant with full teaching duty (192 hr/yr)  |

## Education

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| 2009 - 2012 | <b>PhD in Physics</b><br>Ecole Normale Supérieure - Université Pierre et Marie Curie<br>supervision : G. Fève and B. Plaçais<br><i>Electron quantum optics in quantum Hall edge channels</i> |
| 2008 - 2009 | <b>Master "Quantum Physics"</b><br>Ecole Normale Supérieure - Paris Sud 11<br>rank: 3rd, Very good (Summa cum Laude)   |
| 2007 - 2008 | <b>Agrégation de Physique</b><br>Préparation à l'Agrégation de Montrouge<br>National qualification exam for high school teachers, rank: 2 <sup>nd</sup> /~1300                               |
| 2005 - 2009 | <b>Student at École Normale Supérieure (Paris)</b><br>admitted at BSc level via national entrance exam (option MP)   |
| 2002 - 2005 | <b>Classes préparatoires MPSI-MP*</b><br>Lycée Faidherbe, Lille  |

## Scientific stays

Apr. 2015	Research stay with R.S. Deacon, group of K. Ishibaji RIKEN, Japan (3 weeks)
Mar. 2014	Research stay with R.S. Deacon, groups of K. Ishibaji & S. Tarucha RIKEN, Japan, DFG-JST program "Topological Electronics" (4 weeks)

## Grants and Awards

2018 - 2023	ERC Starting Grant – Project CASTLES
2018 - 2020	"Mi-Lourds" Investment project (SIRTEQ, Région Ile de France)
2017	Nicholas Kurti Science Prize for Europe
2013 - 2015	Post-doctoral Fellow of the Humboldt Foundation

## Teaching and supervision experience

- Invited lecturer in several local or international winter/summer schools: Mauterndorf 2020, Topological Matter 2017 & 2018, Summer Academy 2018 of SFB1277, Elitenetzwerk Bayern Winter School 2019
- Teaching experience as lecturer and teaching assistant, at BSc and MSc level
  - Teaching in English and French
  - Tutorials, Lectures and Labs
- Member of the committee, Entrance competitive exams to ENS
- Supervision of 3 Master students, co-supervision of 1 PhD student (in France), supervision of 2 Bachelor students, 3 Master students, co-supervision of 3 PhD students (in Germany)

## Collective responsibilities

2020 - 2021	Elected member of the council of ENS Physics Department
2019 - 2021	Elected member of the council of LPENS
2019 - 2021	Co-organization of the LPENS seminar "Quantum Materials and Devices"
2018	Local organization committee member for "International Conference On Quantum Computing" Paris
Since 2015	Regular referee for Agence Nationale pour la Recherche, Nature Nanotechnology, Nature Comms, PRL, PRB...
2010-2012	Elected member of the council of Laboratoire Pierre Aigrain Organization of the "Students seminar"

## Major Collaborations

- Groups of **T. Martin** (University of Marseille, France) and **M. Büttiker** (University of Geneva, Switzerland), on electron quantum optics in quantum Hall edge channels

- Group of **P. Degiovanni** (École Normale Supérieure Lyon, France), collaboration on the topic of electron quantum optics in quantum Hall edge channels and interactions.
- **T.M. Klapwijk** (Delft University of Technology, The Netherlands), **S. Tarucha**, **K. Ishibashi** and **R.S. Deacon** (RIKEN, Japan) on the study of induced superconductivity in topological insulators.
- Group of **L.W. Molenkamp** (University of Würzburg, Germany). Since I left Würzburg at the end of June 2016, my group has been collaborating with the Molenkamp group, on HgTe-based topological insulators.
- **D. Carpentier** (École Normale Supérieure Lyon, France), **M.-O. Goerbig**, **S. Tchoumakov** (University Paris-Sud) on the topic of topological/trivial heterojunctions
- **B. Trauzettel**, **R. Thomale**, **O. Kashuba**, **T. Müller** (University of Würzburg), on the topic of helical Luttinger liquids.

## Selected publications

1. A. Gourmelon, H. Kamata, J.-M. Berroir, G. Fève, B. Plaçais, and E. Bocquillon. Characterization of helical Luttinger liquids in microwave stepped-impedance edge resonators. *Physical Review Research*, 2(4):043383, December 2020
2. H. Bartolomei, M. Kumar, R. Bisognin, A. Marguerite, J.-M. Berroir, E. Bocquillon, B. Plaçais, A. Cavanna, Q. Dong, U. Gennser, Y. Jin, and G. Fève. Fractional statistics in anyon collisions. *Science*, 368(6487):173–177, 2020
3. M.C. Dartiailh, S. Hartinger, A. Gourmelon, K. Bendias, H. Bartolomei, H. Kamata, J.-M. Berroir, G. Fève, B. Plaçais, L. Lunczer, R. Schlereth, H. Buhmann, L.W Molenkamp, and E. Bocquillon. Dynamical Separation of Bulk and Edge Transport in HgTe-Based 2D Topological Insulators. *Physical Review Letters*, page 6, 2020
4. Bocquillon, E., Wiedenmann, J., Deacon, R.S., Klapwijk, T.M., Buhmann, H., and Molenkamp, L.W. Microwave Studies of the Fractional Josephson Effect in HgTe-Based Josephson Junctions. In *Topological Matter*, number 190 in Springer Series in Solid-State Sciences. Springer Berlin Heidelberg, New York, NY, 2018
5. R. S. Deacon, J. Wiedenmann, E. Bocquillon, F. Domínguez, T. M. Klapwijk, P. Leubner, C. Brüne, E. M. Hankiewicz, S. Tarucha, K. Ishibashi, H. Buhmann, and L. W. Molenkamp. Josephson Radiation from Gapless Andreev Bound States in HgTe-Based Topological Junctions. *Physical Review X*, 7(2), April 2017
6. E. Bocquillon, R.S. Deacon, J. Wiedenmann, P. Leubner, T. M. Klapwijk, C. Brüne, K. Ishibashi, H. Buhmann, and L. W. Molenkamp. Gapless Andreev bound states in the quantum spin Hall insulator HgTe. *Nature Nanotechnology*, 12(2):137–143, August 2016
7. J. Wiedenmann, E. Bocquillon, R. S. Deacon, S. Hartinger, O. Herrmann, T. M. Klapwijk, L. Maier, C. Ames, C. Brüne, C. Gould, A. Oiwa, K. Ishibashi, S. Tarucha, H. Buhmann, and L. W. Molenkamp.  $4\pi$ -periodic Josephson supercurrent in HgTe-based topological Josephson junctions. *Nature Communications*, 7:10303, January 2016
8. E. Bocquillon, V. Freulon, J.-M. Berroir, P. Degiovanni, B. Plaçais, A. Cavanna, Y. Jin, and G. Fève. Separation of neutral and charge modes in one dimensional chiral edge channels. *Nature Communications*, 4(1), December 2013
9. E. Bocquillon, V. Freulon, J.-M. Berroir, P. Degiovanni, B. Plaçais, A. Cavanna, Y. Jin, and G. Fève. Coherence and Indistinguishability of Single Electrons Emitted by Independent Sources. *Science*, 339(6123):1054–1057, March 2013