

Prof. Karyn LE HUR

PhD students:

- **Julian Legendre** (CPHT Ecole Polytechnique)

I am supervising the PhD thesis of Julian Legendre since 2019 on new topological phenomena related to Kagome materials, and quantum circuit light-matter analogues; funding from ANR BOCA.

- **Philipp Klein** (CPHT Ecole Polytechnique)

I am supervising the PhD thesis of Philipp Klein since 2018 on Novel quantum Interfaces, Superconductivity and Topological Phases. Philipp has done his Master at Universities of Koeln and Toronto, under the supervision of A. Rosch and Y.-B. Kim.

- **Fan Yang** (CPHT Ecole Polytechnique)

I am supervising the PhD thesis of Fan Yang on topological phases since 2017. Fan is funded by the German DFG for a project on Artificial Gauge Fields and Topological Phases.

- **Ariane Soret** (CPHT Ecole Polytechnique and Technion Israel) (2016-2019)

Since Fall 2016, I am co-supervising the PhD thesis of Ariane Soret with E. Akkermans on superconductivity, mesoscopic and interaction effects, long-range forces and light phenomena. Ariane will defend her PhD thesis September 13th 2019, and then will be post-doctoral associate in the group of Cristiano Ciuti in Paris.

- **Loic Henriët** (CPHT Ecole Polytechnique) (2013-2016)

I have been supervising the PhD student Loic Henriët on Non-Equilibrium Quantum Systems and Light-Matter Interaction. Loic has been a post-doctoral associate at Barcelona in the group of D. Chang (2016-2019) and he is now Quantum Engineer at Institute d'Optique Charles Fabry, PASQAL.

- **Loic Herviou** (CPHT Ecole Polytechnique and Laboratoire Pierre Aigrin, ENS Paris) (2014-2017) I have co-supervised the PhD thesis of Loic Herviou together with Christophe Mora (LPA ENS) on Majorana fermions in condensed-matter systems. Loic is now post-doctoral fellow at Stockholm in the group of J. Bardarson.

- **Kirill Plekhanov** (CPHT Ecole Polytechnique and LPTMS Orsay) (2015-2018)

I have co-supervised the PhD thesis of Kirill Plekhanov with Guillaume Roux (LPTMS Orsay) on Floquet theory and artificial gauge fields, topological phases. Kirill has already obtained several post-doctoral offers and is now post-doctoral associate in Basel, in the group of J. Klinovaja and D. Loss.

- **Tudor Alexandru Petrescu** (Yale/Ecole Polytechnique-graduation September 2015)

I have supervised the PhD thesis of Alex Tudor Petrescu in the area of topological insulators in cold atoms and novel phases of light. Alex has obtained a 3-year postdoctoral position in the group of Hakan Tureci at Princeton, and he is now post-doctoral associate in the Quantum Institute at Sherbrooke in Canada.

- **Tianhan Liu** (LPTHE Jussieu/CPHT Ecole Polytechnique - graduation September 2015)

I have co-supervised the PhD thesis of Tianhan Liu with Benoît Douçot (LPTHE Lussieu) on interacting topological phases of matter. Tianhan has obtained a 4-year post-doctoral position in the group of D. Kovrizhin at Cambridge and then Oxford.

- **Prasenjit Dutt** (PhD student at Yale, graduation August 2013)

I have supervised the PhD thesis of Prasenjit Dutt in the area of non-equilibrium Quantum Transport in Nanosystems. Prasenjit is now vice-president of Barclays in New York.

- **Peter Orth** (graduation, Yale 2011)

I have supervised the PhD thesis of Peter Orth in the area of cold-atomic systems, Quantum Computation, Novel phases and Quantum Phase Transitions. Peter has successfully graduated in April 2011, and he has been a postdoctoral Fellow at Karlsruhe (Germany), a Junior Group leader in the group of J. Schmalian. He moved to U. Minnesota at Minneapolis and is now assistant professor at Ames Lab, Iowa in USA.

- **Francis Song** (graduation 2012, Yale)

I have supervised the PhD student Francis Song in the area of quantum computing, many-body entanglement, and Density matrix Renormalization Group (DMRG). Francis was a post-doctoral fellow at New-York University with X. -J. Wang in Theoretical Neuroscience. Francis is now working for Deep Mind in London on Artificial Intelligence.

- **Émilie Dupont** (graduation 2006 - Sherbrooke)

I have supervised Émilie Dupont in the area of Mesoscopic physics, Entanglement, and Quantum Computing. Émilie has obtained positions of ATER at the Université Pierre and Marie Curie, Jussieu (Paris, France), at U. Cergy Pontoise and in Caen. Emilie is now a Science Teacher at Cité scolaire Marcel Gambier, Le Havre Area, France.

- **Michel Pioro-Ladrière** (graduation, 2005, Sherbrooke)

I have supervised Michel Pioro-Ladrière in co-direction with Andy Sachrajda (NRC Ottawa) in the field of Nanoelectronics and Quantum Computation. Michel has done both theory and experiments. Michel has been a postdoctoral fellow with Tarucha in Japan. In 2006, Michel received the price of the best PhD thesis at Sherbrooke in Science and Engineering.

Michel became my successor (professor) at Sherbrooke university.

- **Georg Seelig** (co-direction with Prof. Markus Büttiker, 2000/2002, Geneva)

I have supervised Georg Seelig on strongly-correlated electron problems at the mesoscopic scale, and we have written a paper together on this topics (Physical Review B **65**, 165338 (2002)). Georg went to Bell Labs with Kostya Matveev, and then Georg was a postdoctoral fellow at Caltech working in bio-physics with E. Winfree for a few years. He is now Associate Professor at University of Washington Seattle.

- **Urs Ledermann** (co-direction with Prof. T.M. Rice in Zürich, 1998/2000)

I co-supervised the PhD Thesis of Urs Ledermann, “Hubbard models and Superconductivity”.

Note: I have been collaborating with Michele Filippone, PhD student in the group of Christophe Mora (LPA ENS Paris). M. Filippone has joined the group of P. Brouwer at Freie University Berlin for a post-doc, and then the group of T. Giamarchi in Geneva. I have collaborated with Bedoor Alkurtass (UC London) in the group of Sougato Bose. I have also collaborated with Cécile Repellin (LPA ENS paris and Princeton) in the group of Nicolas Regnault. Cécile Repellin is post-doctoral fellow at MIT and obtained a CNRS position in France.

- **Wei Wu** (visiting PhD student from Academy of Sciences in China, Beijing)

2011, I have been supervising the PhD student Wei Wu on Hubbard models and Cluster Dynamical Mean Field Theory. Wei was then a post-doctoral fellow at Sherbrooke University in the group of André-Marie Tremblay. He obtained a post-doctoral Simons fellow position with Antoine Georges and Michel Ferrero at CPHT and is now associate professor in China at Sun Yat-Sen.

- **Anne-Louise Gadsballe** (Sep 2010-Jan. 2011)

I have supervised the visiting PhD student **Anne-Louise Gadsballe** from Aarhus (Denmark) on D-wave superfluidity of cold atomic fermion systems.

Postdoctoral research fellows:

• **Joel Hutchinson** (Ecole Polytechnique 2019-)

Joel Hutchinson has done his PhD at the University of Alberta in Canada with Joseph Maciejko and Frank Marsiglio on condensed-matter systems, high- T_c superconductors and spin-orbit systems. He did a master thesis in Vancouver with Gordon Semenoff on AdS-CFT analogues of quantum Hall systems. Joel has received an NSERC award from Canada, and came to us as part of the CIFAR collaboration.

• **Tal Goren** (Ecole Polytechnique 2016-2018)

Tal has done in PhD in Israel at Technion in the group of Eric Akkermans, on novel time-dependent protocols to probe electron systems, such as Ramsey protocols. We have collaborated on this subject during her PhD, and Tal was a a post-doctoral fellow in our group working on topological systems in CQED for two years. Tal was funded by Ecole Polytechnique and PALM. Tal is now working for ge healthcare as algorithm developer in Israel.

• **Zoran Ristivojevic** (2012-2014 CPHT Ecole Polytechnique, now CNRS Toulouse)

I have been collaborating with Zoran Ristivojevic and Loic Henriet on quantum impurity systems out of equilibrium (see list of publications). In 2013-2014, Zoran was funded by Ecole Polytechnique and by a post-doctoral fellowship of the LabeX Palm, Paris-Saclay. He obtained a permanent CNRS position at Toulouse.

• **Ion Garate** (post-doctoral fellow at Yale and now associate professor at Sherbrooke)

I have been collaborating with Ion Garate (Yale post-doc, assistant and now associate professor at Sherbrooke University) on the theory of quantum RC circuit with interactions and topological insulators, topological superconductors.

• **Thomas Schmidt** (Yale 2011, now assistant professor at university of Luxembourg)

I have been collaborating with the postdoctoral fellow, Thomas Schmidt (group of my colleague Prof. Leonid Glazman at Yale and now Junior Group Leader at Basel) in the area of quantum impurity systems, mesoscopic systems and cold atoms. Thomas has obtained an Assistant Professor position at University of Luxembourg, on his way to associate tenure promotion.

• **Stephan Rachel** (Oct. 2009-2012 Yale, now professor at Melbourne Australia)

Stephan Rachel has obtained a prestigious DFG postdoctoral fellowship from Germany and has chosen to come to Yale under my supervision. Stephan and I have been working in the area of Dirac fermions, topological insulators and topological qubits, and cold-atomic realizations. Stephan was a senior associate at TU Dresden in the group of Matthias Vojta, and he spent a period at Princeton, collaboration with A. Bernevig, before joining Melbourne (Australia) as a permanent Faculty Position in 2017.

• **Jens Koch** (Yale, now Professor at Northwestern university)

I have collaborated with the postdoctoral fellow Jens Koch (group of my colleague Prof. Steve Girvin) in the area of Josephson junction arrays and novel correlated many-body phenomena when coupling photons to atoms.

• **Doron Bergman** (Yale, 2007-2009)

I have supervised the postdoctoral fellow Doron Bergman (PhD in Santa-Barbara with Prof. Leon Balents) in the area of topological zero modes in superconductors and Dirac models, cold atomic systems and high- T_c superconductors. Doron has accepted a position in Big-Data Management, at Tachyus, San Francisco.

• **Adilet Imambekov** (Yale, assistant professor at Rice University until July 2012)

I have been collaborating with Adilet Imambekov in the area of non-equilibrium spin dynamics applied to cold atomic systems. Adilet from Kazakhstan did his PhD at Harvard with Eugene Demler, then was a postdoctoral fellow at Yale (group of my colleague Prof. Leonid

Glazman) and then obtained a Faculty Position at Rice University. Adilet tragically died in the mountain in an expedition (<http://physicstoday.scitation.org/doi/10.1063/PT.4.1676/full/>) and it is a big loss for all of us (Adilet was brilliant, talented for sport and very kind). We continue to work on our collaborative stochastic project (PhD thesis of Peter Orth, Yale 2011 and PhD thesis of Loïc Henriët, CPHT 2016), that we developed based on a pioneer paper by Adilet and colleagues before his PhD (G. Lesovik, A. V. Lebedev, A. O. Imambekov <https://link.springer.com/article/10.1134/1.1494045>).

- **Pavel Vitushinsky, Sherbrooke**

I have co-supervised the postdoctoral fellow Pavel Vitushinsky (co-direction with Prof. A. Clerk, McGill) in the area of novel phenomena in nanosystems and non-equilibrium transport.

- **Andriy Nevidomskyy** (2005/2006 Sherbrooke, now associate professor at Rice University)

I have supervised Andriy Nevidomskyy on mesoscopic physics at Sherbrooke. Andriy is now associate professor at Rice University.

- **Mei-Rong Li** (2002/2005 Sherbrooke)

I have supervised Mei-Rong Li on mesoscopic physics and more precisely on noisy quantum dots. Mei-Rong obtained an offer for a tenure track position from Hofstra University (New-York) but declined it and she is working in Mathematical Finance in Canada.

- **John Hopkinson** (2002/2004 Sherbrooke)

I have supervised John Hopkinson – PhD student from Rutgers (Piers Coleman) – on the areas high- T_c superconductors, and mesoscopic physics for two years. John then received a prestigious NSERC fellowship and decided to continue his research experience in Toronto with Hae-Young Kee, on frustrated magnetism. John was at Brandon University, Canada as an Associate Professor and he is now an instructor at UBC British Columbia, Vancouver.

Visiting Scholars:

Summer 2014: I hosted Prof. Henrik Johannesson (U. Goteborg, Sueden) and Prof. Andrew Jordan (U. of Rochester USA). Andrew came back in 2018 at CPHT. I have been collaborating with the assistant professor C.-H. Chung (Taiwan); he took a sabbatical leave (Aug 2009-Jan 2010) in my group at Yale. Ion Garate (Sherbrooke) has visited us Fall 2016 at Ecole Polytechnique.

Other supervisions and collaborations with postdocs:

Also, I collaborate with post-docs at other institutions: **Greg Fiete** (KITP Santa-Barbara, associate professor at the University of Texas at Austin and now professor at Northeastern University), **Angela Kopp** (Rutgers University, now working at D. E. Shaw Research in New-York), **Cristina Bena** (IPHT Saclay), **Patrik Recher** (PhD Bale, postdoc at Stanford, then Emmy Noether position at Wurzburg and now professor at Braunschweig), **Marco Schiro** (Princeton, now CNRS IPHT Saclay), **Ivana Vidanovic Vasic** (Frankfurt, now professor in Serbia), **Albolfazl Bayat** (UC London), **Marie Piraud** (Munich).

1 Training of intermediate-qualified students

- **2019:** Supervision of **Julian Legendre** (M2 student, University Paris-Sud and ENS Paris) and **Ephraim Bernhardt** (M1 student, ENS Paris).

- **2018:** Supervision of **Andrea Pizzi** (M2 student, Ecole Polytechnique Turin and Paris-Saclay, complex systems, ranked 1st 18,7/20), **Vivien Perrin** (M2 ENS Paris quantum physics

ranked first 18,1/20, third year of ENS Cachan), **Peng Cheng** (M1 student at Ecole Polytechnique, high-energy physics). Funding Labex PALM. Andrea is PhD student at Cambridge, Vivien spent his fourth-year of ENS Cachan at Sherbrooke and will start his PhD at LPS Orsay, and Peng is continuing in high-energy physics at CEA Saclay.

- **2016-2017**: Supervision of the third year student at Ecole Polytechnique, **Felicien Appas**. Felicien has written a paper with us, and is now a PhD student at Paris Diderot with Sara Ducci.

- **2015-2017**: I have been supervising the Master students **Antonio Sclocchi** (Turin, Paris-Saclay), **Mme Fan Yang** (Master Ecole Polytechnique), and **Thilina Arachige** (co-supervision with Julien Laurat, ENS). Mme Fan Yang has continued at the M2 level in our group, and then she started a PhD with us, fall 2017. Antonio continues in statistical physics and he is now doing a PhD at LPTMS with S. Franz. T. Arachige is doing a PhD in Germany at Turbingen.

- **Kirill Plekhanov, M2 student from Master M2 ICFP**

I have been supervising Kirill Plekhanov, on Dirac Materials and Floquet Topological Insulators. Kirill has applied for a PhD Fellowship from EDPIF to continue at the PhD level, in co-direction with Guillaume Roux (LPTMS Orsay).

- **Loic Herviou, M2 student at Ecole Polytechnique**

I have co-supervised the Master student Loic Herviou on Majorana Fermions, Superconducting Wires in Cavities, with my colleague Christophe Mora (LPA ENS Paris). Loic has pursued at the PhD level, and Loic is now post-doctoral fellow at Stockholm.

- **Loic Henriet, M2 student at Ecole Polytechnique**

I have supervised the Master Student M2 Loic Henriet, Ecole Polytechnique, on driven and dissipative quantum impurity models, January-April 2013. Loic has pursued at the PhD level with us and is now post-doctoral fellow at Barcelona.

- **Alexis Jouan, M2 student (CPHT Ecole Polytechnique)**

I have co-supervised the Master student M2 Alexis Jouan, LPA ENS Paris, with Christophe Mora on Majorana fermions in cavity QuantumElectrodynamics environment, Winter 2013. Alexis has done a PhD thesis with Jérôme Lesueur at ESPCI and is now post-doctoral fellow in Sydney.

- **Ionut-Dragos Potirniche (CPHT Ecole Polytechnique)**

I have supervised the undergraduate student Dragos Potirniche, Princeton, Summer 2012. Dragos is now PhD student at Berkeley with Ehud Altman.

- **Sachin Pathak (CPHT Ecole Polytechnique)**

I have supervised the undergraduate student from Bangalore, Sachin Pathak, on QED cavity systems.

- **Mehmet Dogan (Yale)**

I have supervised the second year Master student **Mehmet Dogan** at Yale on many-body physics with photons and atoms. Mehmet has done a PhD thesis in the group of S. Ismail-Beighi on ab-initio calculations, graduation 2017. We have written a paper together with Pierre Nataf. Mehmet is now post-doctoral fellow at Berkeley with Steven Louie.

- **Ivan Stanic (Masters student, Yale)**

I have supervised the student Ivan Stanic in the area of graphene (2007-2009).

- **Daliang Li (Yale)**

I have supervised the first-year student **Daliang Li** at Yale during the summer 2010. Daliang was a PhD student in the group of Prof. W. Skiba at Yale in high-energy physics, and is now post-doctoral fellow at John Hopkins.

- **Jean-Francois Rupprecht (Master project 2010 Yale)**

I have supervised the Master student **Jean-Francois Rupprecht** from ENS Paris (Feb-July 2010) on bilayer graphene systems, scattering theory and Berry phase. Jean-Francois has written a Master Thesis on this subject and was a PhD student at LPTMC UPMC with O. Benichou, R. Voituriez. He was a post-doctoral fellow at ENS Paris with L. Bocquet and in Singapore with Jacques Prost. Jean-François is now CNRS researcher in AIX-Marseille.

- **Sean Litsey** (Yale 2009-2010)

I have supervised the Senior student **Sean Litsey** on the intriguing phenomenon of ripples in graphene. Sean was a PhD student at UCLA and is now Applied Machine Learning Data Scientist.

- **Raphael Jeanneret** (Master project 2009 Yale)

I have supervised the Master student **Raphael Jeanneret** from ENS Lyon for a summer project on graphene systems, Dirac fermions, and Applications. Raphael continues in bi-physics, soft matter and hydrodynamics and is now a post-doctoral fellow at ENS Paris after a stay in Balearic Islands.

- **summer students** (2007)

I have supervised the first-year PhD students **Michael Kastoryano** and **Joseph Bae** at Yale. Michael has done his PhD at Copenhagen with M. Wolff and is now an assistant professor at Cologne working on quantum information theory.

- **Philippe Doucet-Beaupré** (COOP student 2004/2007, Sherbrooke)

I have supervised the Bachelor student **Philippe Doucet-Beaupré** on the application of the Wilson Renormalization Group (NRG) approach to the spin-boson model (or Caldeira-Leggett model). He has built a trustable and powerful Numerical Renormalization Group method. We have written a Physical Review Letter together and Philippe is now a PhD student at University of Urbana Champaign USA.

- **Louis Gaudreau** (COOP student 2002/2005, Sherbrooke)

I have supervised the Bachelor student **Louis Gaudreau** during his 3 COOP training courses in the area of Quantum Computing. Louis Gaudreau was a Master student in my group, hired in co-direction with A. Sachrajda at NRC Ottawa. Louis has done a PhD at NRC Ottawa, and then followed an international path in Munich and Barcelona, and is now back as a scientist in NRC Ottawa.