Curriculum Vitae:

Plaçais, Bernard (born Jan. 30, 1957, Angers, France, married, 3 children)
Mesoscopic Physics group, Laboratoire de Physique of the Ecole Normale Supérieure (LPENS)
Phone (Lab): +33 1 4432 3456
ResearcherID: E-3014-2016, https://orcid.org/0000-0003-2408-7393
Personnal pages : http://www.phys.ens.fr/~placais/index.html

Education:
Graduated : École Supérieure de Physique et Chimie Industrielles, 1980.
Master : DEA Physique des Solides, Sorbonne Université (SU), 1980.
Thèse 3ième cycle, SU-1983, "*Anisotropy of mutual friction and spatial distribution of quantized vortices in rotating He4 superfluid"*. (advisor Yvan Simon).
Thèse d'Etat, SU-1990 : "*Flux flow noise in type-II superconductors"*. (Jacques Friedel, president)

Academic Positions:
2014 – Invited Professor at Aalto University, Helsinki, Finland, 1 month (Prof. P. Hakonen)
2013 – CNRS 1th. Class Research Director, Laboratoire Pierre Aigrain, ENS
2010 – Director of the GDR Mesoscopic Quantum Physics (CNRS network, 350 participants, 8 years)
2008 – Head of the LPENS Mesoscopic physics group (8 academics)
2003 – CNRS 2nd. Class Research Director, Laboratoire Pierre Aigrain, ENS
2000 – Co-founder of the ENS Mesoscopic Physics group (with DC Glattli and JM. Berroir)
1995 – Visiting scientist at Aalto university, Helsinki, Finland, 1 year (M. Krusius ROTA-group)
1983 – CNRS research fellow at ENS
1981 – National service as research-scientist at CEA/LETI, *Josephson electronics project* (with G. Matheron)

Recent research in mesoscopic physics (2001-2021):
Electron statistics and quantum optics : integer and fractional quantum Hall edge-channels
Graphene and 2DM electronics: µ-wave electronics, electron optics, plasmonics and optoelectronics
Hot carriers in graphene and carbon nanotubes: intrinsic phonons, supercollisions and radiative cooling
Topological Insulators: Volkov-Pankratov states of 3D-TIs, quantum spin Hall edge states of 2D-TIs

Early research in vortex matter (1981-2000):
Vortices in rotating superfluid He-3: cosmological scenario of vortex nucleation probed by NMR
Vortices in superconductors: DC transport, AC response of a pined vortex array and stick-slip noise
Vortices in rotating superfluid He-4: Ekman layer and vortex mutual friction probed by second sound

Summary of publications: 115 international publications including: 1 Nature, 4 Science, 2 Nature Physics, 1 Nature Nanotechnology, 6 Nature Communications, 13 Phys. Rev. Letters, 7 nano-science journals (Nano Letters, 2D-Materials, Nanoscale, ACS photonics), 24 Physical Review B, 4 Applied Physics Letters, …. and 20 proceedings. Citations 3900/5000/5500, h-index 31/35/37 (WOS/ResearchGate/Scholar), Average citations per article 41 (WOS proceedings excluded). Ten articles in outreach activity.

Ten representative publications:

1. *Continuum electrodynamics of type-II superconductors in the mixed state,* Phys. Rev. B. 54, 13083 (1996)
2. *Vortex formation in superfluid He3, as analogue of cosmological defect formation*, Nature 382, 334 (1996)
3. *Violation of Kirchhoff's laws for a coherent RC circuit,* Science 313, 499 (2006)
4. *An on-demand coherent single electron source,* Science 316, 1169 (2007)
5. *Coherence/iindistinguishability of electrons emitted by independent sources*, Science 339, 1054 (2013)
6. *Supercollision cooling in undoped graphene*, Nature Physics 9, 109 (2013)
7. *Volkov-Pankratov states in topological HgTe heterojunctions,* Phys. Rev. B 96, 195104 (2017)
8. *A graphene Zener-Klein transistor cooled by a hyperbolic substrate*, Nature Nanotech. 13, 47 (2018)
9. *Landau velocity for collective quantum Hall breakdown in graphene*, Phys. Rev. Lett. 121, 136804 (2018)
10. *Fractionnal statistics in anyons collisions*, Science 368, 173 (2020)

Major Professional Activities:

Co-chairman of "Rencontres du Vietnam" and "Rencontres de Moriond" international conference series:
2006 Vietnam : Nanophysics from fundamentals to applications, Hanoi 2006, 170 participants
2008 Moriond : Quantum Transport and Nanophysics, La Thuile 2008, 160 participants
2013 Vietnam : Nanophysics from fundamentals to applications, the return, Quy-Nhon 2013, 160 participants
2017 Vietnam : Nanophysics from fundamentals to applications, reloaded, Quy-Nhon 2017, 165 participants

Organizer/Director of 4 sessions of the "Nanoscience in Ile de France" summer schools (2007-10)

Director of the French Mesoscopic Quantum Physics Network (2010-17), organizer of:
2017 GDR-Meso meeting in Aussois, Dec. 4-7, 108 participants
2016 GDR-Meso meeting in Aussois, Dec. 5-8, 102 participants
2016 GDR-Meso school in Cargèse, Oct. 31- Nov.12, 50 students, 15 lecturers
2016 GDR-Meso wrokshop, Topological matter and phases, Lyon, Oct. 3-4, 60 participants
2015 Joint GDR-Meso QDR-Graphene meeting in Aussois, Nov. 30-Dec.4, 250 participants
2014 GDR-Meso meeting in Aussois, Dec. 1-4, 140 participants
2014 GDR-Meso Technoparade in Marcoussis, Sep. 18-19, 40 participants
2013 GDR-Meso meeting in Aussois, Dec. 9-12, 125 participants
2012 GDR-Meso school in Cargèse, Sept. 3-15, 49 students, 15 lecturers
2012 GDR-Meso meeting in Aussois, Oct. 15-18, 106 participants
2011 GDR-Meso meeting in Aussois, Dec. 5-8, 123 participants
2010 GDR-Meso near-field workshop in Paris, Nov. 2-3, 41 participants.
2010 GDR-Meso meeting in Aussois, Sept. 20-23, 101 participants.

Advisory :
2020 International Advisory Committee of ICSNN2020, Quy-Nhon, Vietnam.
2020 International Advisory Committee of GRAPHENE2020, GRAPHENE2021, Grenoble, France.

Laboratory Evaluation Panels
2010 AERES Institut des Nanosciences et Cryogénie – INAC, Deputy-President
2011 -15 Steering committee of Labex LANEF-1, Grenoble, member
2014 AERES Unité Mixte de Physique UMPhy CNRS/Thales, Member
2015 HCERES Institut des Nanosciences et Cryogénie – INAC, Member
2019 HCERES Unité Mixte de Physique UMPhy CNRS/Thales, President
2020 -24 Steering committee of Labex LANEF-2, Grenoble, Président

Bureau of the Condensed Matter Division of the Société Française de Physique :
2008 The 11th « Journées de la matière condensée », Aug. 25-29, Strasbourg
2010 The 12th « Journées de la matière condensée », Aug. 23-27, Troyes
2011 Congress of the SFP, colloquium 'new quantum sates of matter, July 4-8, Bordeaux
2012 The 13rd « Journées de la matière condensée », Aug. 27-31, Montpelier

Bureau of the Domaine d'Intérêt Majeur Nano-K of IdF,

Scientific councils
Physics Department of Ecole Normale Supérieure (2006-10), nominated
UFR de Physique, Sorbonne University (2010-14, 2017-2021), nominated
GDR Physique Quantique Mésoscopique (2010-)
Ecole Normale Supérieure (2019-), elected

Guest-Editor/Editorial board member
2015 Special issue on ''Hot carriers in graphene'', J. Phys.: Condensed Matter
2018 Special issue on "Graphene and Graphene-based Composites for Electronics", Applied Sciences.
2019 Special issue on ''Topological insulators and Weyl semimetals'', J.Phys. Materials
2018- Editorial Board of J.Phys. Materials

Editor/Referee,
Science, Nature, Nature Physics, Nature Communications, Nature Electronics, Phys. Rev. Lett., Phys. Rev. B, EPL, Appl. Phys. Lett., J. Appl. Phys., Carbon, Physica B.

Evaluation panels of Research Proposals
1999 -08 Selection Panel of the ''European Ultra-Low Temperature Installation'', Helsinki, Finland
2010 -12 Agence Nationale Recherche, Projets blancs
2011 -21 Laboratoire Excellence, LANEF, Grenoble (president 2020-)
2019 -22 Selection Panel of the " European Microkelvin Platform", Helsinki, Finland
2020 -22 Agence Nationale Recherche, CS24.

Referee in Promotion of (Ass.) Professor in Physics
Sorbonne Université (PR46.1,2013 ; PR46.3,2021),
Université Paris-Sud (PR46.1,2013),
Université de Lille (MCF, 2013),
Université Grenoble-Alpes (MCF, 2019),
Ecole Polytechnique (Profs. : 2020-2024).

Present/recent funding and collaborations :

EU Projects:

CARDEQ-2007**:** *Carbon Nanotube devices at the quantum limit*, (coord. P. Hakonen Aalto)	350 k€
GRAPHENE FLAGSHIP-2013-2023 (WP7 Electronic devices, coord. D. Neumaier Aachen)	2.1 M€

National ANR projects:

HF-CNT-2005 : *High-frequency carbon nanotubes* (coord. B. Plaçais)	100 k€
2e-BQT-2005 : *Transport Quantique Balistique à 2 Electrons* (coord. D.C. Glattli)	100 k€
MIGRAQUEL-2010: *Microwave Graphene Quantum Electronics* (coord. B. Plaçais)	300 k€
1-Shot-2010 : *Electron Quantum Optics* (coord. J.M. Berroir)	300 k€
1-Shot-Reloaded-2014 : *Electron Quantum Optics* (coord. J.M. Berroir)	350 k€
GoBN-2014 : *Graphene on Boron Nitride* (coord. A. Loiseau)	120 k€
1-Shot-reloaded 2014: *Electron Quantum Optics* (coord. J.M. Berroir)	300 k€
BIRDS-2018 : *Bidim. RF optoelectronic devices based on PtSe2* (coord. P. Lagagneux)	200 k€

Ile de France, SESAME/DIM-Projects

SESAME-2000: Electronique Quantique Subnanoseconde	1.4 MF
SESAME-2006: Salle Blanche Paris Centre	750 k€
DIM-CNANO-2008: *RF Probe Station* (coord. B. Plaçais)	045 k€
DIM-CNANO-2009: *Gra-FET-e* (coord. B. Plaçais)	055 k€
DIM-Nano-K-2012: *Topins&Graves* (coord. B. Plaçais)	055 k€
SESAME-2016: Liquéfacteur PSL-Hélium	600 k€
DIM-SIRTEQ-2017: *µQS, Microwave Quantum Station* (coord. E. Bocquillon)	160 k€.

Invited conference presentations (since 2007)

1. *Phonon cooling pathways of hot electrons in graphene*, 3rd EU-JP Flagship Workshop on Graphene & 2DMs, Nov. 19-21 2018, Sendai, Japan
2. *Electronic transport in Graphene*, (2 lectures) Graphene Summer School, Cargèse, April 1-6 2018
3. *Topological confined massive surface states in strained bulk HgTe probed by RF Compressibility*, ENS-UT Workshop on Physics, Tokyo Nov. 15-16 2017.
4. *Observation of topological Volkov-Pankratov states in strained bulk HgTe*, Rencontres du Vietnam : Nanophysics form fundamental to applications, Quy-Nhon, Vietnam, 31 July 6 Aug. 2017.
5. *Hyperbolic cooling of graphene Zener-Klein transistors*, Graphene 2017, Barcelona, Spain, 28-31 mars 2017.
6. *Electronic surface compressibility in 3D HgTe topological insulator*, Joint Conference of New Trends in Topological Insulators and 17th International Conference on Narrow Gap Systems, Wurzburg, Germany, July 24-29, 2016.

7. *A fully tunable Klein tunneling contact junction in graphene*, 16th edition of Trends in Nanotechnology International Conference (TNT2015), Toulouse, Sept. 7-11 2015.
8. *Noise in graphene and carbon nanotube devices*, 7th International Conference on Unsolved Problems on Noise, Barcelona, Casa Convalescencia, Spain, July 13-17 2015.
9. *Noise in graphene devices, Ballistic graphene devices*, (2 lectures) Graphene Study, School of the EU Graphene Flagship, Kaprun, Austria, March 23-28 2015.
10. *Graphene RF electronics*, French-Singaporean workshop on Technologies and Applications of ultra-high frequency nano-systems, Nanyang Technical University, Singapore, October 16-17 2014.
11. *Quantum electronics in 2D electron systems*, (2 lectures) Aalto University, Otaniemi, April (2014).
12. *Coherence and indistinguishability of single electron wavepackets emitted by independent Sources*, IXth. Rencontres du Vietnam, Nanophysics: from fundamental to applications, (Quy-Nhon, Vietnam), 2013.
13. *Supercollision cooling in graphene*, Imagine-Nano : Graphene 2013, (Bilbao, Spain), 2013.
14. *Hot electrons in graphene*, EDISON18: The 18th International Conference on Electron Dynamics in Semiconductors, Optoelectronics and Nanostructures, (Matsue, Japan), 2013.
15. *Noise of a single electron emitter : experiment*, International Conference on Noise and Fluctuations (ICNF 2011), (Toronto, Canada), 2011.
16. *Quantum transport in graphene*, GDRI-GNT :Graphene and Nanotubes, (Dourdan, France), 2011.
17. *The carbon nanotube mesoscopic transistor, dynamics and optimisation as nanosecond pulsed charge detector*, Journés de la matière condensée de la société française de physique, JMC11, (Strasbourg, France), 2008.
18. *Realization of a time controlled single electron* source, VIth Rencontres de Moriond in Mesoscopic Physics Quantum Transport and Nanophysics, (La Thuile, Italy), 2008.
19. *Transport dynamique dans les conducteurs mésoscopiques : aspects expérimentaux*, Summer School Mesoscopic Quantum Physics (Cargèse, France), 2008.
20. *Single electron experiments in ballistic quantum conductors: injection and detection*, Spin and Qubit 2008 Symposium at the Niels Bohr Institute, (Copenhagen, Denmark), 2008.
21. *Single electron experiments in quantum conductors*, Symposium on Quantum Phenomena and Devices at Low Temperatures, (Espoo, Finland), 2008.
22. *Realization of a time-controlled subnanosecond single electron source for ballistic Qubits*, International Conference on Electronic Properties of Two-Dimensional Systems and Modulated Semiconductor Structures (EP2DS17), (Genoa, Italy), 2007.
23. *Charge dynamics in a quantum coherent RC* circuit, VIth. Rencontres du Vietnam, Nanophysics: from fundamentals to applications, (Hanoi, Vietnam), 2006.

Summary of supervision:

LPENS Mesoscopic Physics Team management and achievements :

- Head of LPENS mesoscopic physics group (6 PhDs, 4 post-docs, 9 members): Sébastien Balibar (DRCE émérite), Jean-Marc Berroir (PRCE-ENS), Erwann Bocquillon (CRCN), Philippe Campagne-Ibarcq (CR-INRIA), Mathieu Delbecq (MCF-SU), Gwendal Fève (PR1-SU), Takis Kontos (DR2), Zaki Leghtas (MCF-Mines), Bernard Plaçais (DR1).
- 9 PhD group-alumnis in academics: J. Gabelli (CRCN-LPS), G. Fève (PR1-SU), J. Chaste (CRCN-C2N), C. Feuillet-Palma (MCF-ESPCI), E. Bocquillon (CRCN-LPENS), F. Parmentier (CRCN-SPEC), M. Delbecq (MCF-SU), J. Viennot (CRCN-Néel), A. Marguerite (CRCN-LPEM).
- The 6 post-docs of mine in academics: E. Pallecchi (MCF-Lille), D. Brunel (MCF-SU), S. Jhang (AssPR-Séoul), B. Assaf (AssPR-Notre-Dame, US), W. Yang (AssPR-Beijin), D. Mele (MCF-Lille).
- 7 group members/alumnis ERCs: G. Fève (consolidator), T. Kontos (starting, POC), E. Bocquillon (starting), F. Parmentier (starting), D.C. Glattli (advanced), A. Bachtold (advanced), Z. Legthas (starting).
- 3 Collaborators awarded: G. Fève (Ancel-2021), F. Parmentier and E. Bocquillon (Nicholas Kurti-2017)
- 2 meso-group start-ups: Alice&Bob and C12

Supervised PhD thesis :

1. **Rodolphe Martin** (with Y. Simon) “Les supraconducteurs de type II: étude expérimentale du bruit d’effet Joule’’ , Paris, Université Paris-Diderot, 1992.
2. **Ville Ruutu** (with M. Krusius, Aalto) “NMR experiments on topological defects in 3He superfluids”, Espoo, Helsinki University of Technology 1996.

3. **Norbert Lütke-Entrup** (with Y. Simon) “High frequency susceptibility of a pinned vortex array », Paris, SU, 1999.
4. **Gianrico Lamura** (with J. Bok, ESPCI) “Excitations de basse énergie par la mesure de la longueur de pénétration dans les supraconducteurs à basse/haute température critique’’, Paris, SU, 2000.
5. **Julien Gabelli** (with J.M. Berroir and D.C. Glattli) “Cohérence quantique des conducteurs en régime dynamique’’, Paris, SU, 2006.
6. **Gwendal Fève** (with D.C. Glattli) “ Quantification du courant alternatif : la boîte quantique comme source d’électrons uniques subnanoseconde’’, Paris, SU, 2006.
7. **Julien Chaste** “Transistor à nanotube de carbone unique, propriétés dynamiques et résolution d’électrons uniques’’, Paris, SU, 2009.
8. **Lorentz Herrmann** (with T. Kontos) “Carbon Nanotubes as Cooper Pair Beam Splitters’’, Regensburg, SU-Regensburg, 2010.
9. **Cheryl Feuillet-Plama** (with T. Kontos) ‘’Dynamique et manipulation de spin dans les nanotubes de carbone’’, Paris, SU, 2010.
10. **François Parmentier** (with J-M. Berroir and G. Fève) ’’Expérience de Hanbury-Brown et Twiss avec des électrons uniques’’, Paris, SU, 2010.
11. **Andreas Betz** (with J.M. Berroir) “Elastic and inelastic scattering in graphene studied by microwave transport and noise», Paris, SU, 2012.
12. **Erwann Bocquillon** (with G. Fève) “Electron quantum optics in quantum Hall edge channels», Paris, SU, 2012.
13. **Quentin Wilmart** “Engineering doping profiles in graphene: From Dirac fermion optics to high frequency electronics», Paris, SU, 2015.
14. **Andreas Inhofer** (with E. Bocquillon) “Probing AC electronic compressibility of 3D HgTe and Bi2Se3 topological insulators at high electric fields: Evidence’’, Paris, ENS, 2017.
15. **Simon Berthou** (with C. Voisin) “Etude opto-électronique des mécanismes de relaxation des électrons chauds dans les hétérostructures en graphène’’, Paris, ENS, 2017.
16. **Alberto Montanaro** (with P. Legagneux, Thalès-RT) “Etude de photo mélangeurs haute fréquence à base de graphène’’ Paris, ENS-PSL, April 2019.
17. **Kokoura Mensah** (with U. Bockelman, ESPCI) “Détection d'acides nucléiques avec des réseaux de transistors à effet de champs à base de graphène’’, PSL, Paris, Sept. 13th 2019.
18. **Holger Graef** (with E. Teo, NTU-Singapore) “Transport in ballistic graphene: Dirac fermion optics and plasmonics’’, Paris, Sorbonne Université and Nanyang Technical University, Paris, ENS, Sept. 15th 2019.
19. **Romaric Le Goff** (with E. Baudin) “Photodétecteurs infra-rouge GHz basés sur des hétérostructures de van der Waals : la voie des dichalcogénures de métaux nobles’’, Paris, ENS-PSL, June 21th. 2021.
20. **Alexandre Gourmelon** (with E. Bocquillon) “Dynamique de charges et de spins dans les canaux de bord topologiques de l'Effet Hall Quantique de Spin’’, Paris, ENS-PSL, 2022.
21. **Aurélien Schmitt** (with E. Baudin) “Graphene far from equilibrium’’, Paris, ENS-PSL, 2023.
22. **Christian Schraeder** (with U. Bockelman, Institut Cochin) “ biosensing with graphene transistors’’, Paris, ENS-PSL, 2024.

External PhD. thesis committee membership (since 2010)

1. **Soukaina Ben Salk** (Président) “Graphène et matériaux 2D: techniques de transfert, fabrication d'hétérostructures et applications”, Lille, U-Lille, Juin 25, 2020.
2. **Paul Amari** (Président) “Vortex dynamics in ion-irradiated YBCO supercondcuting nanowires : toward single photon detection”, Paris, SU, March 6, 2020.
3. **Jean Choukroun** (Membre) “Etude de dispositifs à base d'hétérostructrures planaires de TMDs”, Palaiseau, UPSaclay Université, Dec. 14, 2018.
4. **Athmane Tadjine** (Président) “Structure électronique et propriétés de réseaux cohérents de nanocristaux semi-conducteurs ”, IEMN, U-Lille, Sept. 27, 2018.
5. **Thibaud Louvet** (Président, Rapporteur) “Effets de désordre et anomalie de chiralité dans les semi-métaux de Weyl”, ENS-Lyon, July 12, 2018.
6. **David Perconte** (Président) “Proximity effect between a high temperature superconductor and graphene”, Palaiseau, SU, March.8, 2018.
7. **Sergueï Tchoumakov** (Membre) “Signatures relativistes en spectroscopie de matériaux topologiques : en volume et en surface”, Orsay, UPSaclay Université, Sept. 28, 2017.
8. **Alexis Jouhan** (Président) “DC and AC transport in field-effect controlled LaAlO3/SrTiO3 interface”, Paris, ESPCI-SU, April.14, 2017.

9. **Katrin Zimmermann** (President) “Quantum point contact in high mobility graphene”, Grenoble, UGA, June.20, 2016.
10. **Thibault Sohier** (Président) “Electrons and phonons in graphene: coupling, screening and transport in the field effect setup”, Paris, UPMC, Sept. 22, 2015.
11. **Louis Bouet** (Membre) “Valley dynamics and excitonic properties in monolayer transition metal dichalcogenides”, Toulouse, Université Fédérale Toulouse Midi-Pyrénées, Oct. 9, 2015.
12. **Salim Berrada** (Président) “Etude Théorique de Nouveaux Concepts de Nano-Transistors en Graphène”, Orsay, UPSud, Mai. 16, 2014.
13. **Gaston Kane** (Président) “High-field Transport in Graphene and Carbon Nanotubes”, Paris, UPMC, June 7, 2013.
14. **Benoît Voisin** (Rapporteur) ‘’Contrôle d’électrons et de dopants uniques dans des transistors silicium’’, Grenoble, UGA, Dec. 16, 2013.
15. **Adrian Balan** (Président) “Electrostatically/chemically doped Graphene”, Paris, UPMC, July 13, 2012.
16. **Adrien Allain** (Rapporteur) “Supraconductivité induite dans le graphène dopé par des nanoparticules métalliques”, Grenoble, UGA, Dec. 14, 2012.
17. **Julien Salort** (Membre) “Turbulence quantique versus classique”, Grenoble, UGA, Nov. 16, 2011.
18. **Nan Meng** (Rapporteur) “Fabrication et caractérisation de transistors à base de Nano Ruban de Graphène en vue d’application haute fréquence”, Université de Lille, Feb. 14, 2011.
19. **Phuong-Anh Huynh** (Membre) “Amélioration de la cohérence quantique dans le régime d’effet Hall quantique entier”, Saclay, UPSud, Feb. 9, 2011.
20. **Alexei Chepelianskii** (Rapporteur) “Non equilibrium transport and chirality in mesoscopic physics”, Orsay, UPSud, 2011.
21. **Niels Vandecasteele** (Président) “Désordre et transport électronique dans le graphène et les nanotubes de carbone”, Paris, UPMC, Dec. 16, 2010.

Recent HDR-thesis committees (since 2007)

1. **Benjamin Sacépé** (Rapporteur), “Strongly disordered superconductors, coherence and topology in the quantum Hall regime of grephene“, Grenoble, UGA, July 7th. 2021.
2. **Miguel Monteverde** (Membre) “Electrical transport in the α-(BEDT-TTF)2I3 Dirac system”, Orsay, Paris-Saclay University, Nov. 18th 2020.
3. **Emmanuel Baudin** (Membre) “Two examples of one-dimensional electromagnetism: Nonlinear optics of exciton-polaritons and hot electrons in graphene”, Paris, PSL Research University, Nov. 17th 2020.
4. **Benoit Fauqué** (Correspondant) “Quantum matter under magnetic field”, Paris, ENS, July 3rd 2019.
5. **Fabrice Gerbier** (Président) “Magnetism in atomic quantum gases”, Paris, ENS, June. 29, 2015.
6. **Jérôme Cayssol** (Membre) “Various probes of Dirac matter from graphene to topological insulators”, Bordeaux, Bordeaux University, Nov. 29, 2012.
7. **Khalil Harrabi** (Président) “Study of the decoherence in superconducting qubits, preceded by time analysis of resistance jumps in Nb and YBCO strips”, Paris, ENS, Nov. 23, 2012.
8. **Alain Pautrat** (Membre) “Etude des réseaux de vortex supraconducteurs et de systèmes électroniques désordonnés”, Caen, Université de Caen, Oct. 14, 2009.
9. **Alex Zazounov** (Membre) “Coherent phenomena in electron transport through a molecular conductor ”, Marseille, Université Aix-Marseille, 2007.
10. **Bertrand Reulet** (Président) “Transport quantique et fluctuations dans les conducteurs mésoscopiques”, Orsay, Université Paris sud, 2007.

Institution building:

Mesoscopic physics laboratory including the ENS clean-room facility:

In 2000, I installed the mesoscopic physics Laboratory at LPENS. The project involved a global fund raising (ENS, CNRS, MEN, SESAME IdF) of 650 k€. Laboratory equipment included a dilution refrigerator with an 18T magnet for high-frequency mesoscopic physics in 2D electron systems (2DES) and a series of cryostats for carbon nanotubes and graphene studies. Beside the core group activity on 2DES, the laboratory was meant as an *incubator for junior researchers*: Adrian Bachtold (2001-2006) and Takis Kontos (2007-2012). Since then the size of the mesoscopic physics ENS group has grown reaching now 8 permanent members, 12 PhD students, and 5 post-docs, dispatched into 4 experimental laboratories. Cryogenic equipment

includes 7 dilution refrigerators (3 wet and 4 dry), 4 helium cryostats, and 2 cryogenic microwave probe stations.

In 2005, I impulse the creation of a (100 m^2) clean room at the ENS physics department, inaugurated in 2007. The initial project involved a global funding (ENS, CNRS, MEN, SESAME IdF) of 2 M€. The clean room is equipped with optical/electronic lithography and metal deposition techniques. Initially devoted to our activities on carbon nanotubes and graphene, the clean-room activity has enlarged, enabling the takeoff of new mesoscopic activities. It is now widely used beyond the mesoscopic physics group by optics and THz groups at LPENS, and external users of Paris Science et Lettre (PSL) and Paris-Centre institutions. Operated by Michael Rosticher (IR) and José Palomo (IE), it is the flagship of the ‘’Paris Center Proximity Clean Room’’ network. It has been completed in 2014 by the creation of a material growth facility (CNT, Graphene, Bi2Se3) under the supervision of Aurélie Pierret (IR).

Renovation of the ENS physics department including building of the PSL Hélium liquefaction center:

Since 2010, the Physics Department of ENS undergoes a two-step 60M€ renovation process. I participate to the second one (CPER2) as a member of the scientific team (one per Lab) in charge of the program and survey of the project execution. The CPER2 project involves the creation of a new liquefaction center for Paris Sciences et Lettres (PSL), including the physics and chemistry departments of ENS, the Collège de France and ESPCI. The 2M€ equipment is partially supported by a 600k€ support from SESAME-2016 IdF that I coordinated. The realization will be achieved in 2022, before the main CPER2 demolition/construction process to secure a continuous liquid helium delivery.