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Personal address : 7 rue Roche Veyrand, 38380 Saint Laurent du Pont
Born the 02-02-1971 in Valence (France)

Research themes :

● *Thermodynamics and thermal physics of meso and nanoscopic systems* : superconductivity, phase coherence, quantification of magnetic flux in nano-objects highly sensitive specific heat measurement.
● *Phonon transport in the quantum regime* : measurement of the phonon transport at the nanoscale at low temperatures, in nanowire, in nanothermoelectric systems, phononic crystal, thermal diodes.
● *Nanomagnetism* : study of magnetization reversal processes in magnetic nanosystems like exchange bias, by magnetization, specific heat and heat release measurement.
● *MIT and SIT*: nanocalorimetry of the phase transition at the superconductor to insulator transition in very thin film.
● *New materials*: application of carbonated materials (Diamond, DLC) to thermal sensing, nanothermoelectricity.
● *Biophysics and Out of equilibrium thermodynamics*: biothermal sensors, thermal properties of polymer, protein, glass transition, spin glass, thermal denaturation etc...

55 publications in international journals. 5 articles for the general public, 3 chapters of book, 20 invited talks in international conferences and seminars abroad.

Professional Status

2014 Directeur de Recherche at CNRS, Institut NÉEL (UPR 2940).
2007/2014 Chargé de Recherches at CNRS, Institut NÉEL (UPR 2940).
2001/2007 Chargé de Recherches at CNRS, CRTBT (UPR 5001).
2008 Habilitation à Diriger les Recherches, Université Joseph Fourier, Grenoble, France.
1999/2001 Post-Doctoral position at the Robert C. Dynes lab (University of California San Diego).
1996/1999 Ph.D. in Condensed Matter Physics. Université Joseph Fourier (UJF) Grenoble, France.

Research management

Group Leader of the team *Thermodynamic and Biophysics of Small Systems* at the Institut Néel.
Habilitation to research supervision (HDR): *Thermodynamics and thermal physics of nanosystems* (9 october 2008)
Thesis supervision:
Florian ONG, *Mesoscopic superconductivity studied by nanocalorimetry* (Région Rhône-Alpes fellowship 2004-2007)
Jean-Savin HERON *Quantum thermal conductance of silicon nanowire* (MENSR fellowship 2006-2009)
Germain SOUCHE *Thermal physics and phase coherence* (Région Rhône-Alpes fellowship 2007-2011)
Christophe BLANC *Phonon transport in the quantum regime* (MENSR fellowship 2010-2013)
Hossein FTOUNI *Thermal transport in 2D suspended membrane* (Libanese fellowship 2011-2014)
Yanqing LIU Phonon engineering for thermoelectricity (Région Rhône-Alpes fellowship 2012-2015)
Post-doctorate:

Aitor F. Lopeandia: *Thermal signature of magnetization reversal processes in nanomagnetic systems* (Jose Castillejo and Marie Curie fellowship 36 months)
Aurélien Sikora: *New thermal sensor based on carbonated materials: thermal conductance and heat capacity*. (ANR Sensocarb 12 months)
Dimitri Taïnoff : *Ge nanomaterials for thermoelectricity and phonon engineering* (Project NAT-PIE Energy CNRS and EU project MERGING 36 months).
Kunal Lulla: *NEMS for mechanical measurement in the quantum regime* (MicroKelvin EU project 20 months)
Training period supervision: supervision of 7 master 2R, 6 (Diplom Arbeit, Master 1, L3, école d'ingénieur, IUP).
Project management and funding: IPMC project 2003, Cible Project RRA 2004, IPMC project 2005, Cible Project RRA 2006, Cible Project RRA 2007, ANR Sensocarb 2007, Castillejo Fellow 2007, Marie Curie project Nanocal 2008, ANR Quantherm 2008, EU project MicroKelvin 2008/2011, PIE project CNRS 2010, ANR QNM 2010, leader Alliance Biosensors (LabEx LANEF) 2011-2021, EU project MERGING (3.5M€) 2013-2015
Scientific activities: GDR Physique Quantique Mésoscopique, GDR Micro Nanothermique, thesis jury.
Administrative charges: conseil de laboratoire, conseil de département.
Teaching: Thermodynamic, Electrothermal physics and mathematics at IUT Mesures Physiques et Génie Thermique since 6 years. Ecole de cryogénie 2009-2013, Cryocourse (2011,2013).

Publications list:

51- D. Kazazis, E. Bourhis, J. Gierak, O. Bourgeois, T. Antoni, and U. Gennser, Suspended Two-Dimensional Electron and Hole Gases, J. of Phys. Conf. Series 2012.
50-M. Defoort, K.J. Lulla, C. Blanc, O.Bourgeois, E. Collin, Stressed silicon nitride nanomechanical resonators at helium temperatures, J. Low Temp. Phys. Submitted 2012.
49-M. Defoort, K. Lulla, C. Blanc, O. Bourgeois, Yu. M. Bunkov, H. Godfrin, and E. Collin, Universal scaling law in nanomechanical dynamic bifurcation, submitted to Phys. Rev. 2012.
48-Germain M. Souche, Julien Huillery, Hugues Pothier, Philippe Gandit, Jérôme I. Mars, Sergey E. Skipetrov, Olivier Bourgeois, Searching for thermal signatures of persistent currents in normal metal rings, submitted to Physical Review B 2012.
47-H. Ftouni, C. Blanc, A. Sikora, J. Richard, M. Defoort, K. Lulla, E. Collin, O. Bourgeois, Thermal conductivity measurement of suspended Si-N membranes from 10K to 275K using the 3ω-Völklein method, accepted in J. of Physics Conf. Series.
46-A. Sikora, H. Ftouni, J. Richard, C. Hébert, D. Eon, F. Omnès, and O. Bourgeois, *Highly sensitive thermal conductivity measurements of suspended membranes (SiN and diamond) using a 3ω-Völklein method*. Rev. Sci. Instrum. **83**, 054902 (2012). Cond-Mat 1201.4034v1.
45- E. Collin, M. Defoort, K. Lulla, T. Moutonet, J.-S. Heron, O. Bourgeois, Yu. M. Bunkov, and H. Godfrin, In-situ comprehensive calibration of a tri-port nano-electro-mechanical device, Rev. Sci. Instrum. **83**, 045005 (2012).
44- S. Laureti, S.Y. Suck, H. Haas, O. Bourgeois and D. Givord, *Size Dependence of Exchange-Bias in Co/CoO Nanostructures*, Phys. Rev. Lett. **108**, 077205 (2012).
43-E. André, A.F. Lopeandia, J.-L. Garden, O. Bourgeois, *Cellule de mesure nanocalorimétrique par methode alternative en parylène autosuspendu*, Du capteur au diagnostique in Instrumentation, Mesure et Métrologie, (ed Lavoisier) **11**, 89 (2011).
42- M. Defoort, K. Lulla, J-S. Heron, O. Bourgeois, E. Collin, and F. Pistolesi, *Audio mixing in a tri-port nano-electro-mechanical device*, Appl. Phys. Lett. **99**, 233107 (2011). (Virtual Journal of Nanoscale Science and Technology, **24**, 25, december 19, 2011).

41-E. Collin, T. Moutonet, J.-S. Heron, O. Bourgeois, Yu. M. Bunkov, and H. Godfrin, *Nonlinear parametric amplification in a tri-port nanoelectromechanical device*, Physical Review B **84**, 054108 (2011).
40- M. Molina Ruiz, A.F Lopeandia, F. Pi, D. Givord, O. Bourgeois, and J. Rodriguez-Viejo, *Evidence of finite size effect on the Néel temperature in ultra-thin layers of CoO nanograins*, Physical Review B **83**, 140407(R) (2011).
39-E. Collin, T. Moutonet, J.-S. Heron, O. Bourgeois, Yu.M. Bunkov, H. Godfrin, *A tunable hybrid electro-magnetomotive NEMS device for low temperature physics*, J. Low Temp. Phys. **162**, 653 (2011).
38- J.-L. Garden, J. Richard, H. Guillou and O. Bourgeois, *Polytetrafluoroethylene as a model system for studies of out of equilibrium thermodynamic phase transitions: a dynamic nanocalorimetry study*, book chapter 7, J. Chem. Res. (2010).
37-J-S. Heron, C. Bera, T. Fournier, N. Mingo, and O. Bourgeois, *Blocking phonons via nanoscale geometrical design*, Phys. Rev. B **82**, 155458 (2010). (Virtual Journal of Nanoscale Science and Technology, **22**, 20, November 8, 2010).
36-A.F. Lopeandia, E. André, J-L.Garden, D. Givord and O. Bourgeois, *Highly sensitive parylene membrane-based ac-calorimeter for small mass magnetic samples*, Rev. Sci. Instrum. **81**, 053901 (2010).
35-A. Sikora, P. Paolino, H. Ftouni, C. Guerret-Piécourt, J.-L. Garden, A.-S. Loir, F. Garrélie, C. Donnet, O. Bourgeois, *Depth-dependence of electrical conductivity of diamond like carbon films*, Appl. Phys. Lett. **96**, 162111 (2010).
34-E. Collin, J. Kofler, J.-S. Heron, O. Bourgeois, Yu. Bunkov, H. Godfrin, *Novel"vibrating wire like" NEMS and MEMS structures for low temperature physics*, J. Low Temp. Phys. **158**, 678 (2010).
33-O. Bourgeois, *Heat Transfer in Low Temperature Micro- and Nanosystems*, Topics in Applied Physics **118**, 537 (2009) in *Thermal Nanosystems and Nanomaterials*, Ed S. Volz, Spinger 2009.
32-A. Sikora, O. Bourgeois, J.C. Sanchez-Lopez, J.-N. Rouzaud, T.C. Rojas, A.-S. Loir, J.-L. Garden, F. Garrelie, C. Donnet, *Effect of boron incorporation on the structure and electrical properties of diamond-like carbon films deposited by femtosecond and nanosecond pulsed laser ablation*, Thin Solid Films **518**, 1470 (2009).
31-S.Y. Suck, U. Wolff, V. Neu, S. Bahr, O. Bourgeois, and D. Givord,, *Magnetic Force Microscopy analysis of magnetization reversal in exchange-biased Co/CoO nanostructure arrays*, Appl. Phys. Lett. **95**, 162503 (2009).
30-A. Sikora, A. Berkesse, O. Bourgeois, J.-L. Garden, C. Guerret-Piécourt, J.-N. Rouzaud, A.-S. Loir, F. Garrélie, C. Donnet, *Structural and electrical characterization of boron containing diamond-like-carbon films deposited by femtosecond pulsed laser deposition*, Solid State Sci. **11**, 1738 (2009).
29-F. Gauthier, J. Salort, O. Bourgeois, J.-L. Garden, R. du Puits, A. Thess and P.-E. Roche, *Temperature fluctuations in the Ultimate Regime of Convection*, EuroPhysics Lett. **87**, 44006 (2009).
28-J. Salort, F. Gauthier, B. Chabaud, O. Bourgeois, J.-L. Garden, R. du Puits, A. Thess, and P.-E. Roche. *Convection at very high rayleigh number: signature of transition from a micro-thermometer inside the flow*. In B. Eckhardt, editor, Advances in Turbulence XII, Springer Proceedings in Physics, **132**, 159–162. (2009).
27-J.-L. Garden, H. Guillou, A.F. Lopeandia, J. Richard, J-S. Heron, G.M. Souche, F.R. Ong, O. Bourgeois *Thermodynamics of small systems by nanocalorimetry, from physical to biological nano-objects*, Thermochimica Acta **492**, 16 (2009).
26-J.-S. Heron, T. Fournier, N. Mingo and O. Bourgeois, *Mesoscopic surface effects on the phonon transport in silicon nanowire*, Nano Letters **9**, 1861 (2009).
25-J.-S. Heron, G.M. Souche, F.R. Ong, P. Gandit, T. Fournier and O. Bourgeois, *Temperature modulated methods for the measurement of the thermal properties of nanosystems*, J. Low Temp. Phys. **154**, 150 (2009).
24-A. Sikora, A. Berkesse, O. Bourgeois, J.-L. Garden, C. Guerret-Piécourt, A.-S. Loir, F. Garrélie, C. Donnet, *Electrical properties of boron doped diamond like carbon thin films deposited by femtosecond pulsed laser ablation*, Appl. Phys. A **94**, 105 (2009).

23-H. Rabani, F. Taddei, O. Bourgeois, R. Fazio and F. Giazotto, *Phase dependent electronic specific heat in mesoscopic Josephson junctions*, Phys. Rev. B **78**, 012503 (2008).
22-J.-S. Heron, T. Fournier and O. Bourgeois, *Surface effect on the phonon transport of silicon nanowire*, Journal of Physics: Conference Series **92**, 012088 (2007).
21-F.R. Ong and O. Bourgeois, *Topology effect on the heat capacity of mesoscopic superconducting disks*, Europhys. Lett. **79**, 67003 (2007).
20-J.-L. Garden, J. Richard, H. Guillou and O. Bourgeois, *Non-equilibrium heat capacity of polytetrafluoroethylene at room temperature*, Thermochim. Acta **461**, 122 (2007).
19-F.R. Ong, O. Bourgeois, J. Chaussy, S. Skipetrov, S. Popa, J. Mars and J-L. Lacoume, *Fine frequency shift of single vortex entrance and exit in superconducting loops*, Physica C **466**, 37 (2007).
18-O. Bourgeois, C. Macovei, E. André, J-L. Garden, J. Chaussy, and D. Givord, *A new sensor for thermodynamic measurements of magnetization reversal in magnetic nanomaterials*, J. Mag. Mag. Mat. **316**, 94 (2007).
17-G. Leroy, J. Gest, L. K. J. Vandamme and O. Bourgeois, *Noise measurements on NbN thin films with a negative temperature coefficient deposited on sapphire and on SiO_2*, Fluct. and Noise Lett. **7**, L19 (2007).
16-O. Bourgeois, Th. Fournier, and J. Chaussy, *Measurements of the thermal conductance of silicon nanowires at low temperature*, J. Appl. Phys. **101**, 016104 (2007) [cond-mat/0608705] (Virtual Journal of Nanoscale Science and Technology, **15**, 4, January 30, 2007).
15-O. Bourgeois, E. André, C. Macovei and J. Chaussy, *Liquid nitrogen to room temperature thermometry using niobium nitride thin films*, Rev. Sci. Instrum. **77**, 126108 (2006).
14-F.R. Ong, O. Bourgeois, S. Skipetrov, and J. Chaussy, *Thermal signatures of Little-Parks effect in the heat capacity of mesoscopic superconducting rings*, Phys. Rev. B **74**, 140503(R) (2006)
13-O. Bourgeois, F. Ong, S. Skipetrov, and J. Chaussy, PTS A and B, **850**, 735 (2006).
12-O. Bourgeois, Th. Fournier and J. Chaussy, PTS A and B, **850**, 1325 (2006).
11-E. Château, J-L. Garden, O. Bourgeois and J. Chaussy, *Physical kinetics and thermodynamics of phase transitions probed by dynamic nanocalorimetry*. Appl. Phys. Lett. **86**, 151913 (2005) (Virtual Journal of Nanoscale Science and Technology, **11**, 15, April 18, 2005).
10-O. Bourgeois, S. Skipetrov, F. Ong and J. Chaussy, *Attojoule calorimetry of mesosocopic superconducting loops*, Phys. Rev. Lett., **94**, 057007 (2005) (Virtual Journal of Nanoscale Science and Technology, 11, **7**, 2005).
9-G. Leroy, J. Gest, L. K. J. Vandamme and O. Bourgeois, Proc. SPIE **5469**, 362 (2004).
8-O. Bourgeois, A. Frydman, and R. C. Dynes, Phys. Rev. B **68**, 092509 (2003).
7-W. Guichard, M. Aprili, O. Bourgeois, T. Kontos, J. Lesueur, and P. Gandit, Phys. Rev. Lett., **90**, 167001 (2003).
6-O. Bourgeois, A. Frydman, and R. C. Dynes, Phys. Rev. Lett., **88**, 186403 (2002).
5-O. Bourgeois and R. C. Dynes, Phys. Rev. B, **65**, 144503 (2002).
4-O. Bourgeois, P. Gandit, J. Lesueur, A. Sulpice, X. Grison, and J. Chauss, Eur. Phys. J. B, **21**, 75 (2001).
3-O. Bourgeois, P. Gandit, A. Sulpice, J. Chaussy , J. Lesueur, and X. Grison, Phys. Rev. B, **63**, 064517 (2001)
2-P. Gandit, O. Bourgeois, J. Lesueur, R. Mélin, A. Sulpice, X. Grison, and J. Chaussy, Physica B, **284-288**, 497 (2000)
1-R. Mélin and O. Bourgeois, in *Quantum Physics at mesoscopic scale*, Edited by C. Glattli, M. Sanquer, and J. Tran Thanh Van, Series Moriond Condensed Matter Physics (Editions Frontieres, france 1999)