Curriculum Vitae

Christopher Marc MUDRY

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Education

1987-1994	Ph.D., October 1994, from the University of Illinois at Urbana-Champaign, Department of Physics. Thesis Title: *The Problem of Spin and Charge Separation.* Thesis Advisor: Prof. Eduardo Fradkin.
1981-1986	Diploma of Physics, October 1986, from the ETHZ (Swiss Federal Institute of Technology at Zürich), Department of Mathematics and Physics. Thesis title: *Viability of Gluon Annihilation into a Higgs Associated to a Pair of Top Quarks as a Mechanism for detecting the Heavy Higgs in SSC*. Diploma Advisors: Prof. C. Schmid and Prof. D. Wyler.
1977-1981	Maturité C (Classical Education Option Science), June 1981, Collège Sismondi, Geneva, Switzerland.

Professional activities

2009-present	Head Condensed Matter Theory Group at the Paul Scherrer Institute, Switzerland.
1999-present	Senior Scientist at the Paul Scherrer Institute, Switzerland.
1997-1999	Postdoctoral Fellow, Harvard University, USA.
1994-1997	Postdoctoral Fellow and Associate, Massachusetts Institute of Technology, Cambridge, USA.

Teaching activities

2002-present Lehrauftrag an der ETHZ:

- *Field Theory in Condensed Matter Physics*.

2007 Master semester at EPFL:

- *Physique du solide III*.

2001 Lehrauftrag an der Universität Zürich:

- *Field Theory in Condensed Matter Physics*.

1987-1994 Teaching Assistant, University of Illinois at Urbana-Champaign, USA:

- *Liquid Helium and Superconductivity*.
- *Advanced Solid State Physics*.
- *Solid State Physics*.
- *Statistical Mechanics*.
- *Classical Mechanics*.

1983-1985 Teaching Assistant, ETHZ:

- *Calculus for Engineer*.

Fellowships, Scholarships, and Awards

2008-present Visiting Scientist, RIKEN, JAPAN.

2004-present Visiting Scientist, Boston University, USA.

2008 Visiting Fellowship, Isaac Newton Institute for Mathematical Sciences, University of Cambridge, UK.

2001-2002 Visiting Research Scholar, Yukawa Institute for Theoretical Physics, Kyoto University, Japan.

1997-1999 Postdoctoral Fellowship from the Swiss National Science Foundation.

1996-1997 Postdoctoral Fellowship from the Massachusetts Institute of Technology, Cambridge, USA.

1994-1996 Postdoctoral Fellowship from the Swiss National Science Foundation.

1992-1993 Fellowship from the University of Illinois at Urbana-Champaign, USA.

1991-1992 Fellowship from IBM (International Business Machine).

1990-1991 Fellowship from the University of Illinois at Urbana-Champaign, USA.

Grants

- 2007-2010: Research Grant from the Swiss National Science Foundation for the project *"Dimensional crossover in strongly anisotropic antiferromagnets"*.

- 2003-2006: Research Grant from the Swiss National Science Foundation for the project *"Theoretical investigation of the magnetic coherence and nanoscale disorder effects in high temperature superconductors"*.

Publications

57. *Masses in graphene-like two-dimensional electronic systems: topological defects in order parameters and their fractional exchange statistics*, Shinsei Ryu, Christopher Mudry, Chang-Yu Hou, and Claudio Chamon, Phys. Rev. B **80**, 205319 (2009). **(Editors' Suggestion)**

56. *Spectroscopic evidence for preformed Cooper pairs in the pseudogap phase of cuprates*, M. Shi, A. Bendounan, E. Razzoli, S. Rosenkranz, M. R. Norman, J. C. Campuzano, J. Chang, M. Mansson, Y. Sassa, T. Claesson, O. Tjernberg, L. Patthey, N. Momono, M. Oda, M. Ido, S. Guerrero, C. Mudry, and J. Mesot, Eur. Phys. Lett. **88**, 27008 (2009).

55. *The superspin approach to a disordered quantum wire in the chiral-unitary symmetry class with an arbitrary number of channels*, Andreas P. Schnyder, Christopher Mudry, and Ilya A. Gruzberg, Nucl. Phys. B, **822**, 424 (2009).

54. *Unconventional Fermi surface spin textures in the Bi_xPb_{1-x}/Ag(111) surface alloy,* Fabian Meier, Vladimir Petrov, Sebastian Guerrero, Christopher Mudry, Luc Patthey, Juerg Osterwalder, and J. Hugo Dil, Phys. Rev. B **79**, 241408(R) (2009). **(Editors' Suggestion)**

53. *Spin-glass state and long-range magnetic order in $Pb(Fe_{1/2}Nb_{1/2})O_3$ seen via neutron scattering and muon spin rotation*, G.M. Rotaru, B. Roessli, A. Amato, C. Mudry, S.G. Lushnikov, and T.A. Shaplygina, Phys. Rev. B **79**, 184430 (2009).

52. *Anisotropic quasiparticle scattering rates in slightly underdoped to optimally doped high-temperature $La_{2-x}Sr_xCuO_4$ superconductors*, J. Chang, M. Shi, S. Pailhés, M. Maansson, T. Claesson, O. Tjernberg, A. Bendounan, L. Patthey, N. Momono, M. Oda, M. Ido, C. Mudry, and J. Mesot, Phys. Rev. B **78**, 205103 (2008).

51. *Electronic structure near the 1/8-anomaly in La-based cuprates*, J. Chang, Y. Sassa, S. Guerrero, M. Mansson, M. Shi, S. Pailhes, A. Bendounan, R. Mottl, T. Claesson, O. Tjernberg, L. Patthey, M. Ido, N. Momono, M. Oda, C. Mudry, and J. Mesot, New J. Phys. **10**, 103016 (2008).

50. *Boundary criticality at the Anderson transition between a metal and a quantum spin Hall insulator in two dimensions*, Hideaki Obuse, Akira Furusaki, Shinsei Ryu, and Christopher Mudry, Phys. Rev. B **78**, 115301 (2008). **(Featured in Physics, Editors' Suggestion)**

49. *Does T^* – the temperature that defines the onset of the pseudogap regime in underdoped cuprates – correspond to a phase transition or a crossover?*, Commentary by Joel Mesot and Christopher Mudry, Journal club for condensed matter physics, June 3 2008, http://www.condmatjournalclub.org.

48. *Coherent d-wave superconducting gap in underdoped $La_{1.855}Sr_{0.145}CuO_4$ as studied by angle-resolved photoemission*, M. Shi, J. Chang, S. Pailhés, M. R. Norman, J. C. Campuzano, M. Mansson, T. Claesson, O. Tjernberg, A. Bendounan, L. Patthey, N. Momono, M. Oda, M. Ido, C. Mudry, and J. Mesot, Phys. Rev. Lett. **101**, 047002 (2008).

47. *Quantum Hall Effect of Massless Dirac Fermions in a Vanishing Magnetic Field*, Kentaro Nomura, Shinsei Ryu, Mikito Koshino, Christopher Mudry, and Akira Furusaki, Phys. Rev. Lett. **100**, 246806 (2008).

46. *Electron fractionalization for two-dimensional Dirac fermions*, Claudio Chamon, Chang-Yu Hou, Roman Jackiw, Christopher Mudry, So-Young Pi, and Gordon Semenoff, Phys. Rev. B **77**, 235431 (2008).

45. *Irrational versus rational charge and statistics in two-dimensional quantum systems*, Claudio Chamon, Chang-Yu Hou, Roman Jackiw, Christopher Mudry, So-Young Pi, and Andreas P. Schnyder, Phys. Rev. Lett. **100**, 110405 (2008).

44. *$\mathbb{Z}_2$ topological term, the global anomaly, and the two-dimensional symplectic symmetry class of Anderson localization*, Shinsei Ryu, Christopher Mudry, Hideaki Obuse, and Akira Furusaki, Phys. Rev. Lett. **99**, 116601 (2007).

43. *Conductance fluctuations in disordered superconductors with broken time-reversal symmetry near two dimensions*, S. Ryu, A. Furusaki, A. W. Ludwig, and C. Mudry, Nucl. Phys. **B780**, 105 (2007).

42. *Two-dimensional spin-filtered chiral network model for the $\mathbb{Z}_2$ quantum spin-Hall effect*, Hideaki Obuse, Akira Furusaki, Shinsei Ryu, and Christopher Mudry, Phys. Rev. B **76**, 075301 (2007).

41. *When low- and high-energy electronic responses meet in cuprate superconductors*, J. Chang, S. Pailhs, M. Shi, M. Mansson, T. Claesson, O. Tjernberg, J. Voigt, V. Perez, L. Patthey, N. Momono, M. Oda, M. Ido, A. Schnyder, C. Mudry, and J. Mesot, Phys. Rev. B **75**, 224508 (2007).

40. *Landauer conductance and twisted boundary conditions for Dirac fermions in two space dimensions*, S. Ryu, C. Mudry, A. Furusaki, and A. W. Ludwig, Phys. Rev. B **75**, 205344 (2007).

39. *Screening in $(d+s)$-wave superconductors: Application to Raman scattering*, Andreas P. Schnyder, Christopher Mudry, and Dirk Manske, Phys. Rev. B **75**, 174525 (2007).

38. *Electron Fractionalization in Two-Dimensional Graphenelike Structures*, Chang-Yu Hou, Claudio Chamon, and Christopher Mudry, Phys. Rev. Lett. **98**, 186809 (2007).

37. *Magnetic-field-induced spin excitations and renormalized spin gap of the underdoped superconductor $La_{1.895}Sr_{0.105}CuO_4$*, J. Chang, A.P. Schnyder, R. Gilardi, H.M. Ronnow, S. Pailhes, N.B. Christensen, Ch. Niedermayer, D.F. McMorrow, A. Hiess, A. Stunault, M. Enderle, B. Lake, O. Sobolev, N. Momono, M. Oda, M. Ido, C. Mudry, and J. Mesot, Phys. Rev. Lett. **98**, 077004 (2007).

36. *Zero-temperature Kosterlitz-Thouless transition in a two-dimensional quantum system*, Claudio Castelnovo, Claudio Chamon, Christopher Mudry, and Pierre Pujol, Annals of Physics **322**, 903 (2007).

35. *Scaling relations in quasi-two-dimensional Heisenberg antiferromagnet*, Antoine Praz, Christopher Mudry, and Matthew Hastings, Phys. Rev. B **74**, 184407 (2006).

34. *Theory for Inelastic Neutron Scattering in Orthorhombic High-Tc Superconductors*, Andreas P. Schnyder, Dirk Manske, Christopher Mudry, and Manfred Sigrist, Phys. Rev. B **73**, 224523 (2006).

33. *High-temperature criticality in strongly constrained quantum systems*, Claudio Castelnovo, Claudio Chamon, Christopher Mudry, and Pierre Pujol, Phys. Rev. B **73**, 144411 (2006).

32. *Universal scaling relations in strongly anisotropic materials*, M. B. Hastings and C. Mudry, Phys. Rev. Lett. **96**, 027215 (2006).

31. *Disorder-induced critical phenomena–new universality classes in Anderson localization*, P. W. Brouwer, A. Furusaki, C. Mudry, and S. Ryu, BUTSURI **60**, 935 (2005); english translation can be found in cond-mat/0511622.

30. *Quantum three-coloring dimer model and the disruptive effect of quantum glassiness on its line of critical points*, Claudio Castelnovo, Claudio Chamon, Christopher Mudry, and Pierre Pujol, Phys. Rev. B **72**, 104405 (2005).

29. *From quantum mechanics to classical statistical physics: generalized Rokhsar-Kivelson Hamiltonians and the "Stochastic Matrix Form" decomposition*, Claudio Castelnovo, Claudio Chamon, Christopher Mudry, and Pierre Pujol, Annals of Physics, **318**, 316 (2005).

28. *Influence of higher d-wave gap harmonics on the dynamical magnetic susceptibility of high-temperature superconductors*, A. P. Schnyder, A. Bill, C. Mudry, R. Gilardi, H. M. Ronnow, and J. Mesot, Phys. Rev. B **70**, 214511 (2004).

27. *Crossover of the conductance and local density of states in a single-channel disordered quantum wire*, by S. Ryu, C. Mudry, and A. Furusaki, Phys. Rev. B **70**, 195329 (2004).

26. *Density of states of disordered Dirac particles: Infinitely many operators with negative scaling dimensions and freezing transitions*, by Shinsei Ryu, Christopher Mudry, and Akira Furusaki, J. Phys. Soc. Jpn. **72** Suppl. A, 219 (2003).

25. *Density of states for the π-flux state with bipartite real random hopping only: A weak disorder approach*, by C. Mudry, S. Ryu, and A. Furusaki, Phys. Rev. B **67**, 064202 (2003).

24. *On the universality of delocalization in dirty superconducting wires with broken spin-rotation symmetry*, by P. W. Brouwer, A. Furusaki, and C. Mudry, Phys. Rev. B **67**, 014530 (2003).

23. *Zero-modes in the random hopping model*, by P. W. Brouwer, E. Racine, A. Furusaki, Y. Hatsugai, Y. Morita, and C. Mudry, Phys. Rev. B **66**, 014204 (2002).

22. *Fokker-Planck equations and density of states in disordered quantum wires,* by M. Titov, P. W. Brouwer, A. Furusaki, and C. Mudry, Phys. Rev. B **63**, 235318 (2001).

21. *Density of states for dirty d-wave superconductors: A unified and dual approach for different types of disorder*, by Claudio Chamon and Christopher Mudry, Phys. Rev. B **63**, 100503(R) (2001).

20. *Transport Properties and Density of States of Quantum Wires with Off-diagonal Disorder*, by P. W. Brouwer, C Mudry, and A. Furusaki, Physica E **9**, 333 (2001).

19. *Crossover from the chiral to the standard universality classes in the conductance of a quantum wire with random hopping only*, by Christopher Mudry, P. W. Brouwer, and Akira Furusaki, Phys. Rev. B **62**, 8249 (2000).

18. *Localization and delocalization in dirty superconducting wires*, by P. W. Brouwer, A. Furusaki, I. A. Gruzberg, and C. Mudry, Phys. Rev. Lett. **85**, 1064 (2000).

17. *Density of states in coupled chains with off-diagonal disorder*, by P. W. Brouwer, C. Mudry, and A. Furusaki, Phys. Rev. Lett. **84**, 2913 (2000).

16. *Nonuniversality in quantum wires with off-diagonal disorder: a geometric point of view*, by P. W. Brouwer, C. Mudry, and A. Furusaki, Nucl. Phys. **B565**, 653 (2000).

15. *Does quasi-long-range order in the two-dimensional XY model really survive weak random phase fluctuations?*, by Christopher Mudry and Xiao-Gang Wen, Nucl. Phys. **B549**, 613 (1999).

14. *Random magnetic flux problem in a quantum wire*, by Christopher Mudry, P. W. Brouwer, and Akira Furusaki, Phys. Rev. B **59**, 13221 (1999).

13. *Density of states in the non-hermitian Lloyd model*, by Christopher Mudry, P. W. Brouwer, B. I. Halperin, V. Gurarie, and A. Zee, Phys. Rev. B **58**, 13539 (1998).

12. *Delocalization in coupled one-dimensional chains*, by P. W. Brouwer, Christopher Mudry, B. D. Simons, and A. Altland, Phys. Rev. Lett. **81**, 862 (1998).

11. *Random Dirac Fermions and Non-Hermitian Quantum Mechanics*, by Christopher Mudry, B. D. Simons, and Alexander Altland, Phys. Rev. Lett. **80**, 4257 (1998).

10. *Exact calculation of multifractal exponents of the critical wave function of Dirac fermions in a random magnetic field*, by Horacio E. Castillo, Claudio de C. Chamon, Eduardo Fradkin, Paul M. Goldbart, and Christopher Mudry, Phys. Rev. B **56**, 10668 (1997).

9. *Localization in two dimensions, Gaussian field theories, and multifractality*, by Claudio de C. Chamon, Christopher Mudry, and Xiao-Gang Wen, Phys. Rev. Lett. **77**, 4194 (1996).

8. *Liouville theory as a model for prelocalized states in disordered conductors*, by I. Kogan, Christopher Mudry, and A. M. Tsvelik, Phys. Rev. Lett. **77**, 707 (1996).

7. *Two-dimensional conformal field theory for disordered systems at criticality*, by Christopher Mudry, C. Chamon, and X.-G. Wen, Nucl. Phys. **B466**, 383 (1996).

6. *Instability of the disordered critical points of Dirac fermions*, by C. Chamon, Christopher Mudry , and X.-G. Wen, Phys. Rev. B **53**, R7638 (1996).

5. *Dirac fermions with random vector potentials: instability and multifractality*, by Christopher Mudry in Proceedings of the XXXI Rencontres de Moriond on: "*Correlated Fermions and Transport in Mesoscopic Systems*", edited by T. Martin, G. Montambaux and J. Trân Thanh Vân, Editions Frontières 1996.

4. *Absence of slave-spinons in the spin-1/2 Heisenberg chain*, by Christopher Mudry in Proceedings of the XXXI Rencontres de Moriond on: "*Correlated Fermions and Transport in Mesoscopic Systems*", edited by T. Martin, G. Montambaux and J. Trân Thanh Vân, Editions Frontières 1996.

3. *Mechanism of spin and charge separation in one dimensional quantum antiferromagnets*, by Christopher Mudry and E. Fradkin, Phys. Rev. B **50**, 11409 (1994).

2. *Separation of spin and charge quantum numbers in strongly correlated systems*, by Christopher Mudry and E. Fradkin, Phys. Rev. B **49**, 5200 (1994).

1. *Ground states of infinite-range spin-$\frac{1}{2}$ quantum Heisenberg antiferromagnets*, by Christopher Mudry and E. Fradkin, Phys. Rev. B **40**, 11177 (1989).

Preprints

4. *The $\mathbb{Z}_2$ network model for the quantum spin Hall effect: two-dimensional Dirac fermions, topological quantum numbers, and corner multifractality,* Shinsei Ryu, Christopher Mudry, Hideaki Obuse, and Akira Furusaki, arXiv:0912.2158.

3. *Topological qubits in graphene-like systems,* Luiz Santos, Shinsei Ryu, Claudio Chamon, and Christopher Mudry, arXiv:0911.3171.

2. *Superconductivity on the surface of topological insulators and in two-dimensional noncentrosymmetric materials*, Luiz Santos, Titus Neupert, Claudio Chamon, and Christopher Mudry, arXiv:0910.5921. bb

1. *Deconfined fractional electric charges in graphene at high magnetic fields*, Chang-Yu Hou, Claudio Chamon, and Christopher Mudry, arXiv:0909.2984.

Organization of workshops/conferences

- *Symposium on the Occasion of the 60th Birthday of Rudolf Morf*, June 30 2003.
- *ARPES and INS as a probe of collective modes in high-T_c superconductivity*, Paul Scherrer Institute, February 5-7 2001.

Talks at Conferences

Invited talks

- *Quantum number fractionalization in condensed matter physics*, SLS symposium on graphene, September 2009
- *Quantum transport of 2D Dirac fermions: The case for a topological metal*, Delocalization Transitions and Multifractality, a Satellite Meeting at Gregynog Hall, University of Wales, 2008.
- *Electron fractionalization in two-dimensional graphene-like structures*, National Seminar Condensed Matter Physics, Dutch Research School of Theoretical Physics, 2008.
- *Electron fractionalization in two-dimensional graphene-like structures*, Workshop on Exact Results in Low-Dimensional Quantum Systems: 2nd INSTANS Summer Conference, Galileo Galilei Institute for Theoretical Physics, University of Florence, 2008.
- *Introduction to the physics of graphene*, 7th PSI Summer School on Condensed Matter Research, 16-22 August 2008 Lyceum alpinum Zuoz, Switzerland.
- *Quantum transport of 2D Dirac fermions: The case for a topological metal*, WE Heraeus Seminar: Network Models in Quantum Physics, at Jacobs University Bremen, 2008.
- *Freezing Transitions in Anderson Localization*, Workshop on Stochastic Geometry and Field Theory: From Growth Phenomena to Disordered Systems, KITP, 7 Aug. 2006- 15 Dec. 2006.

- *The quantum three-coloring dimer model and quantum glassiness*, Workshop on Complex Behavior in Correlated Electron Systems, Lorentz Center, University of Leiden, 01-16 August 2005.

- *Freezing transition in a problem of Anderson localization*, Workshop on Quantum Systems out of Equilibrium, ICTP, Trieste, 14-24 June 2004.

- *Freezing transition in a problem of Anderson localization*, Conference on Random Matrix Theory and Related Topics, Yukawa Institute for Theoretical Physics, Kyoto University, 17-19 December 2002.

- *Transport properties and density of states of dirty unconventional (superconducting or with off-diagonal disorder) quantum wires*, Institute Theoretical Physics University of California at Santa Barbara, Program on High Temperature Superconductivity (August 7 - December 15, 2000), September 2000.

- *Transport properties and density of states of quantum wires with off-diagonal disorder*, International Seminar on Non-perturbative Approach to Disordered Systems and Quantum Hall Effect, Max-Planck-Institut für Physik Komplexer Systeme Dresden, Germany, August 2000.

- *Transport properties and density of states of quantum wires with off-diagonal disorder*, Extended Workshop on Integrable Models in Condensed matter and Non-equilibrium Physics, centre de recherche mathématiques, Université de Montréal, May-June 2000.

- *Quantum wires with off-diagonal disorder*, European Physical Society meeting, Montreux, Switzerland, March 2000.

- *Delocalization in coupled one-dimensional chains*, Gordon conference on Correlated Electron Systems, Plymouth, NH, July 1998.

- *Some open issues with the random XY model*, Extended Research Workshop on Statistical Physics of Frustrated Systems, ICTP, Trieste, Italy, September 1997.

- *Dirac Fermions in a Random Gauge Field: Example of Wave Functions with Critical Properties*, Max-Planck-Institut Workshop on Non-Perturbative Approach to Chaos in Mesoscopic Systems and Localization, Dresden, August 1996.

- *Two-Dimensional Conformal Field Theory for Disordered Systems at Criticality*, Nordita Conference on the Physics of the 2D Electron Gas, Copenhagen, June 1995.

Contributed talks

- *Density of states for dirty d-wave superconductors: A unified and dual approach for different types of disorder*, APS March metting, Seattle, March 2001.
- *Random magnetic flux problem in a quantum wire: Theory*, APS March Meeting, Atlanta, March 1999.
- *Random Dirac Fermions and Non-Hermitian Quantum Mechanics*, APS March Meeting, Los Angeles, March 1998.
- *Open issues with the Kosterlitz-Thouless-Berezinskii*, APS March Meeting, Kansas City, March 1997.
- *Multifractality and the Localization Transition in 2-d: Conformal Field Theory* , APS March Meeting, St. Louis, March 1996.
- *Multifractality and the Localization Transition in 2-d: Random Cantor Set Construction*, APS March Meeting, St. Louis, March 1996.
- *Dirac Fermions in Random Fields*, APS March Meeting, San-Jose, March 1995.
- *Spinons or no Spinons in the Frustrated Spin-1/2 Chain?*, APS March Meeting, Pittsburgh, March 1994.
- *Study of an Isotropic Spin Liquid State on the Lattice*, APS March Meeting, Seattle, March 1993.
- *Spin Liquid States and Strong Gauge Fields Fluctuations*, APS March Meeting, Indianapolis, March 1992.
- *Macroscopic Chiral States*, APS March Meeting, Cincinnati, March 1991.
- *Ground States of Infinite-Range Spin-$\frac{1}{2}$ Quantum Heisenberg Antiferromagnets*, APS March Meeting, St. Louis, March 1989.

Colloquia

- *Freezing transition in a problem of Anderson localization*, University of Karlsruhe, May 2004.
- *Does quasi-long-range order in the 2d XY model really survive weak random phase fluctuations?*, Tokyo Institute of Technology, December 1998
- *Does quasi-long-range order in the 2d XY model really survive weak random phase fluctuations?*, University of Tokyo, December 1998
- *Surprises in a Model of Localization: from Multifractality to Random Directed Polymers,* University of Missouri at Columbia, April 1998
- *Surprises in a Model of Localization: From Multifractality to Random Directed Polymers*, Paul Scherrer Institut, Switzerland, February 1998.
- *Surprises in a Model of Localization: From Multifractality to Random Directed Polymers*, International Center for Theoretical Physics, Trieste, April 1997.
- *Surprises in a Model of Localization: From Multifractality to Random Directed Polymers*, University of Rhode Island, February 1997.
- *Surprises in a Model of Localization: From Multifractality to Random Directed Polymers*, University of Stony Brook, February 1997.
- *Localization, Random Directed Polymers, and Liouville Field Theory*, University of Köln, August 1996.

Seminars

2009

- *Topological qubits in graphene-like systems*, Université Paris-Sud, Laboratoire de physiques des solides, December 2009.
- *Quantum number fractionalization in condensed matter physics*, EPFL, September 2009.

2008

- *Quantum transport of 2D Dirac fermions: The case for a topological metal*, University of Oxford, October 2008.
- *Electron fractionalization in two-dimensional graphene-like structures*, University of Warwick, October 2008.
- *Freezing transition in a problem of Anderson localization*, Cambridge University, October 2008.
- *Electron fractionalization in two-dimensional graphene-like structures*, Instituto de Ciencia de Materiales de Madrid (ICMM), March 2008.

2007

- *Electron fractionalization in two-dimensional graphene-like structures*, University of Basel, October 2007.
- *Electron fractionalization in two-dimensional graphene-like structures*, RIKEN, July 2007.
- *Electron fractionalization in two-dimensional graphene-like structures*, Ludwig Maximilian University (LMU) Munich, June 2007.
- *Electron fractionalization in two-dimensional graphene-like structures*, University of Illinois at Urbana-Champaign, May 2007.

2006

- *Electron fractionalization in two-dimensional graphene-like structures*, ICTP, Trieste, December 2006.
- *Universal scaling relations in strongly anisotropic materials*, University of Tokyo, August 2006.
- *Universal scaling relations in strongly anisotropic materials*, RIKEN, July 2006.
- *Universal scaling relations in strongly anisotropic materials*, ENS Paris, June 2006.

- *Anderson localization in quasi-one and two dimensions in the presence of either the chiral or particle-hole symmetry*, EPFL, June 2006.
- *Universal scaling relations in strongly anisotropic materials*, University of California at Riverside, February 2006.
- *Universal scaling relations in strongly anisotropic materials*, EPFL, February 2006.
- *Universal scaling relations in strongly anisotropic materials*, ILL Grenoble, January 2006.
- *Universal scaling relations in strongly anisotropic materials*, University of Chicago, January 2006.

2005

- *Universal scaling relations in strongly anisotropic materials*, University of Illinois at Urbana-Champaign, October 2005.
- *The quantum three-coloring dimer model and quantum glassiness*, University of Santa Barbara, October 2005.
- *Universal scaling relations in strongly anisotropic materials*, Boston university, September 2005.
- *Freezing transition in a problem of Anderson localization*, University of Strasbourg, May 2005.
- *The quantum three-coloring model: An example of a quantum Hamiltonian that is of the "Stochastic Matrix Form"*, University of Tokyo, March 2005.
- *The quantum three-coloring model: An example of a quantum Hamiltonian that is of the "Stochastic Matrix Form"*, RIKEN, March 2005.
- *The quantum three-coloring model: An example of a quantum Hamiltonian that is of the "Stochastic Matrix Form"*, University of Chicago, January 2005.

2004

- *Influence of higher d-wave gap harmonics on the dynamical magnetic susceptibility of high-temperature superconductors,* Cornell University, September 2004.
- *Influence of higher d-wave gap harmonics on the dynamical magnetic susceptibility of high-temperature superconductors,* Boston University, September 2004.
- *Freezing transition in a problem of Anderson localization*, Workshop on Quantum Systems out of Equilibrium, ICTP, Trieste, June 2004.
- *Open problems with the temperature evolution of spin excitations in quasi-one-dimensional quantum spin systems,* Riken, March 2004.

2003

- *Disorder and d-wave superconductivity,* Cornell University, September 2003.
- *Disorder and d-wave superconductivity,* University of Illinois at Urbana-Champaign, September 2003.
- *Freezing transition in a problem of Anderson localization*, Tokyo Institute of Technology, March 2003.
- *Freezing transition in a problem of Anderson localization*, Tokyo University, March 2003.

2002

- *Freezing transition in a problem of Anderson localization*, Boston University, October 2002.
- *Freezing transition in a problem of Anderson localization*, Harvard University, October 2002.
- *Freezing transition in a problem of Anderson localization*, MIT, October 2002.

- *Freezing transition in a problem of Anderson localization*, Cornell University, October 2002.
- *Freezing transition in a problem of Anderson localization*, University of Illinois at Urbana-Champaign, October 2002.
- *On the universality of delocalization in unconventional dirty superconducting wires with broken spin-rotation symmetry*, University of Osaka, March 2002.
- *Unusual aspects of* $2d$ *conformal field theories decribing disordered systems: The random phase XY model*, Yukawa Institute, Kyoto University, February 2002.
- *Unusual aspects of* $2d$ *conformal field theoris decribing disordered systems: From multifractal zero modes to Liouville field theory*, Yukawa Institute, Kyoto University, February 2002.
- *On the universality of delocalization in unconventional dirty superconducting wires with broken spin-rotation symmetry*, University of Tokyo, February 2002.

2001

- *Disorder induced critical behavior in thick quantum wires*, ETHZ, April 2001.

2000

- *Transport and density of states in unconventional quantum wires: a unified picture*, Basel University, December 2000.
- *Transport properties and density of states of dirty unconventional (superconducting or with off-diagonal disorder) quantum wires*, Boston University, October 2000.
- *Transport properties and density of states of dirty unconventional (superconducting or with off-diagonal disorder) quantum wires*, Ohio State University, October 2000.

- *Transport properties and density of states of dirty unconventional (superconducting or with off-diagonal disorder) quantum wires*, University of Illinois at Urbana-Champaign, October 2000.

- *Transport properties and density of states of dirty unconventional (superconducting or with off-diagonal disorder) quantum wires*, University of California at Los Angeles, September 2000.

- *Transport properties and density of states of quantum wires with off-diagonal disorder*, ETHZ, Zürich, July 2000.

- *Transport properties and density of states of quantum wires with off-diagonal disorder*, University of Geneva, April 2000.

- *Transport properties and density of states of quantum wires with off-diagonal disorder*, University of Augsburg, January 2000.

1999

- *Transport properties and density of states of quantum wires with off-diagonal disorder*, Yukawa Institute for Theoretical physics, University of Kyoto, December 1999.

- *Transport properties and density of states of quantum wires with off-diagonal disorder*, University of Tokyo, December 1999.

- *Transport properties and density of states of quantum wires with off-diagonal disorder*, University of Zürich, November 1999.

- *Transport properties and density of states of quantum wires with off-diagonal disorder*, Massachusetts Institute of Technology, March 1999.

1998

- *Does quasi-long-range order in the 2d XY model really survive weak random phase fluctuations?*, Yukawa Institute of Theoretical Physics, Japan, May 1998.

- *Random Dirac Fermions and Non-Hermitian Quantum Mechanics* , Harvard University, April 1998.

- *Open issues in the two-dimensional random phase XY model*, Oxford University, February 1998.

1997

- *Surprises in a Model of Localization: From Multifractality to Random Directed Polymers*, Harvard University, September 1997.
- *The Issue of Deconfinement in the Gauge Approach to Spin and Charge Separation in Strongly Correlated Systems*, Université de Neuchâtel, April 1997.

1996

- *From Multifractality to Random Directed Polymers at a metal-insulator transition*, Rutgers University, November 1996.
- *From Multifractality to Random Directed Polymers at a metal-insulator transition*, Princeton University, November 1996.
- *From Multifractality to Random Directed Polymers at a metal-insulator transition*, Boston College, November 1996.
- *Surprises in a Model of Localization: from Multifractality to Random Directed Polymers*, Yale University, October 1996.
- *Surprises in a Model of Localization: from Multifractality to Random Directed Polymers*, Brown University, October 1996.
- *Localization, Random Directed Polymers, and Liouville Field Theory*, Université de Fribourg, September 1996.
- *Surprises in an Exactly Solvable model of Localization*, Université de Sherbrooke, May 1996.
- *Surprises in an Exactly Solvable model of Localization*, Ohio State University, April 1996.
- *Surprises in an Exactly Solvable model of Localization*, University of Indiana at Bloomington, April 1996.

- *Surprises in an Exactly Solvable model of Localization*, Northwestern University, April 1996.
- *Surprises in an Exactly Solvable model of Localization*, University of Illinois at Urbana-Champaign, April 1996.
- *Gaussian Field Theories, Random Cantor Sets, and Multifractality*, Oxford University, February 1996.
- *Gaussian Field Theories, Random Cantor Sets, and Multifractality*, Institut Laue-Langevin, Grenoble, February 1996.
- *Dirac Fermions with Random Vector Potentials and Multifractality*, ETHZ, Zürich, January 1996.

1995

- *Two-Dimensional Conformal Field Theory for Disordered Systems at Criticality*, Université de Toulouse, June 1995.
- *Two-Dimensional Conformal Field Theory for Disordered Systems at Criticality*, Université de Genève, June 1995.
- *Two-Dimensional Conformal Field Theory for Disordered Systems at Criticality*, Université de Fribourg, June 1995.
- *Negative Dimensional Operators in the Disordered Critical Points of Dirac Fermions*, Massachusetts Institute of Technology, May 1995.
- *Negative Dimensional Operators in the Disordered Critical Points of Dirac Fermions*, University of California, Irvine, April 1995.

1994

- *Spin and Charge Separation in Strongly Correlated Electron Systems*, MIT, October 1994.

1993

- *Separation of Spin and Charge Quantum Numbers in Strongly Correlated Systems*, University of Illinois at Urbana-Champaign, October 1993.
- *Separation of Spin and Charge Quantum Numbers in Strongly Correlated Systems*, Université de Genève, September 1993.

Conferences, Workshops, and Summer Schools

- *SLS symposium on graphene, September 2009*, September 01 2009.
- *2009 Swiss Workshop on materials with novel electronic properties*, les Diableretes August 26-28 2009.
- *Delocalization Transitions and Multifractality*, A Satellite Meeting at Gregynog Hall, University of Wales, November 2-6, 2008.
- *Mathematics and Physics of Anderson localization: 50 Years After Delocalization Transitions and Multifractality*, Isaac Newton Institute for Mathematical Sciences, Cambridge University, July 14 - December 19, 2008.
- *Exact Results in Low-Dimensional Quantum Systems: 2nd INSTANS Summer Conference*, Galileo Galilei Institute for Theoretical Physics, University of Florence, September 08 - 12, 2008.
- *Probing the Nanometer Scale with Neutrons, Photons and Muons*, 7th PSI Summer School on Condensed Matter Research, 16-22 August 2008, Lyceum alpinum Zuoz, Switzerland.
- *WE Heraeus Seminar: Network Models in Quantum Physics*, at Jacobs University Bremen, July 21 - 25, 2008.
- *Amsterdam Workshop on Low-Dimensional Quantum Condensed Matter*, 2-7 July, 2007.
- *Stochastic Geometry and Field Theory: From Growth Phenomena to Disordered Systems*, Kavli Institute for Theoretical Physics, University of California, Santa Barbara, Fall 2006.
- *Strongly correlated low dimensional systems*, Ascona, July 2006.

- *Program on Topological Phases and Quantum Computation*, Kavli Institute for Theoretical Physics, University of California, Santa Barbara, Spring 2006.

- *Spectroscopy/Microscopy*, 4rd PSI Summer School on Condensed Matter Research, 14-21 August 2005, Lyceum alpinum, Zuoz, Switzerland.

- *Workshop on Complex Behavior in Correlated Electron Systems*, Lorentz Center, University of Leiden, 01-16 August 2005.

- *Amsterdam Workshop on Low-Dimensional Quantum Condensed Matter*, 25-30 July 2005.

- *YKIS Physics of Strongly Correlated Electron Systems 2004,* Yukawa Institute for Theoretical Physics, Kyoto, Japan, November 2004.

- *Phase transitions and critical phenomena*, 3rd PSI Summer School on Condensed Matter Research, 7-14 August 2004 Lyceum alpinum, Zuoz, Switzerland.

- *Workshop on Quantum Systems out of Equilibrium*, ICTP, Trieste, Italy, June 2004.

- *Interactions and Disorder in Metals and Insulators in Two Dimensions*, Aspen workshop, August 2003.

- *Flux, Charge, Topology, and Statistics*, Amsterdam Summer Workshop, June 30-July 5 2003.

- *Conference on Random Matrix Theory and Related Topics*, Yukawa Institute for Theoretical Physics, Kyoto University, 17-19 December 2002.

- *Magnetism*, 1th PSI Summer School on Condensed Matter Research, 10-17 August 2002 Lyceum alpinum, Zuoz, Switzerland.

- *Program on High Temperature Superconductivity*, Institute for Theoretical Physics, University of California, Santa Barbara, Fall 2000.

- *International seminar on non-perturbative approach to disordered systens and quantum Hall effect*, Max-Planck-Institut für Komplexer Systeme, Dresden, August 2000.

- *Neutron scattering in novel materials*, 8th PSI Summer School on Neutron Scattering, Lyceum alpinum, Zuoz, Switzerland, August 5-11, 2000.
- *Integrable Models in Condensed matter and Non-equilibrium Physics*, extended Workshop, centre de recherche mathématiques, Université de Montréal, May-June 2000.
- *New Theoretical Approaches to Strongly Correlated Systems*, a NATO Advanced Study Institute/EC Summer School, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, April 10-20 2000.
- *8^th International Conference on Muon Spin Rotation, Relaxation and Resonance,* 1999 Les Diablerets, Switzerland, September 1999.
- *Quantum Criticality*, 1999 Aspen Winter Conference on Condensed Matter, January 1999.
- *Critical Problems in Disordered Metals*, University of California, Los Angeles, March 1998 Conference.
- *Defects in Soft Condensed Matter*, 1998 Aspen Winter Conference on Condensed Matter, January 1998.
- *Quantum Field Theory in Low Dimensions: from condensed matter to particle physics*, Workshop, Institute for Theoretical Physics, University of California, Santa Barbara, June-July 1997.
- *Quantum Field Theory in Low Dimensions*, Conference, Institute for Theoretical Physics, University of California, Santa Barbara, June 1997.
- *Strongly interacting electrons in reduced dimensions*, 1997 Aspen Winter Conference on Condensed Matter, January 1997.
- *Non-Perturbative Approach to Chaos in Mesoscopic Systems and Localization*, Max-Planck-Institut Workshop, Dresden, August 1996.
- *Quantum Magnetism*, Aspen Workshop, July 1996.
- *Propriétés Electroniques et Structurales des Conducteurs à Basse Dimension*, Ecole d'été de l'Université de Sherbrooke, May 1996.

- *Correlated Fermions and Transport in Mesoscopic Systems*, XXXI Rencontres de Moriond, Les Arcs, January 1996.
- *The Physics of the 2D Electron Gas*, Nordita Conference, Copenhagen, June 1995.
- *Workshop on Non-Fermi Liquid in 1-D*, University of California, Los Angeles, March 1995.
- *Advanced Quantum Field Theory and Critical Phenomena*, European Research Conference, Ascona, September 1993,
- *Theory of High T_c Superconductivity*, NATO ASI Cargèse Summer School, June 1990.