Curriculum Vitae

Christopher Marc MUDRY

April 4, 2018

Address

Paul Scherrer Institute
Condensed Matter Theory
WHGA/128
CH-5232 Villigen PSI
Switzerland

Tel: +41 56 310 42 47
FAX: +41 56 310 31 31
E-mail: christopher.mudry@psi.ch
Webb: https://www.psi.ch/lsm/christopher-mudry

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

2014-present	Member of the Forschung Kommission (FOKO) of PSI.
2009-present	Head Condensed Matter Theory Group at the Paul Scherrer Institute, Switzerland.
2002-2009	Senior Scientist at the Paul Scherrer Institute, Switzerland.
1999-2002	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.*

2016 Graduate School at EPFL:

- *Abelian bosonization.*

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

2012-2013 Member of the Advanced Study Group (ASG) on "*Topological Band Insulators and their Instabilities*" at the MPI-PKS in Dresden.

2011 Fellow of the American Physical Society.
Citation: *"For contributions to the theory of spin-charge separation in strongly correlated systems and to disorder-induced quantum criticality in metals and topological insulators".*

2008-present Visiting Scientist, RIKEN, Japan.

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

2004-present Visiting Scientist, Boston University, USA.

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

- 2014-2017: Research Grant from the Swiss National Science Foundation for the project *"Strong frustration in magnetism and for itinerant electrons"*.
- 2010-2013: Research Grant from the Swiss National Science Foundation for the project *"Effects of strong spin-orbit coupling in noncentrosymmetric two-dimensional metals"*.
- 2007-2011: 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"*.

Supervised PhD Students

- Jyong-Hao Chen, 2015-present.
- Titus Neupert, 2010-2013. (Titus Neupert was awarded the Swiss Physical Society (SPS) 2013 Prize in General Physics and the ETH medal for his pioneering PhD work.)
- Sebastian Guerrero, 2007-2013.

- Andreas Schnyder, 2003-2006. (Andreas Schnyder is the 2015 co-recipient of the Walter-Schottky price from the Deutsche Physikalische Gesellschaft for his work on "the classification of topological insulators and superconductor".)

Books

2. Chapter 7, *Fractional Abelian topological phases of matter for fermions in two-dimensional space*, by Christopher Mudry in: Les Houches 2014 Session CIII, *Topological Aspects of Condensed Matter Physics*, First Edition, edited by C. Chamon et al., Oxford University Press 2017.

1. *Lecture Notes on Field Theory in Condensed Matter Physics*, Christopher Mudry, World Scientific (Singapore 2014).

Publications

Peer-reviewed

83. *Multiferroic magnetic spirals induced by random magnetic exchanges,* Andrea Scaramucci, Hiroshi Shinaoka, Maxim V. Mostovoy, Markus Mller, Christopher Mudry, Matthias Troyer, and Nicola A. Spaldin, Phys. Rev. **8**, 011005 (2018).

82. *Model of chiral spin liquids with Abelian and non-Abelian topological phases,* Jyong-Hao Chen, Christopher Mudry, Claudio Chamon, and A. M. Tsvelik, Phys. Rev. B **96**, 224420 (2017).

81. *Weyl-type topological phase transitions in fractional quantum Hall like systems,* Stefanos Kourtis, Titus Neupert, Christopher Mudry, Manfred Sigrist, and Wei Chen, Phys. Rev. B **96**, 205117 (2017).

80. *Coupled spin-1/2 ladders as microscopic models for non-Abelian chiral spin liquids,* Po-Hao Huang, Jyong-Hao Chen, Adrian E. Feiguin, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **95**, 144413 (2017).

79. *Wire constructions of Abelian topological phases in three or more dimensions,* Thomas Iadecola, Titus Neupert, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **93**, 195136 (2016).

78. *Non-Abelian topological spin liquids from arrays of quantum wires or spin chains,* Po-Hao Huang, Jyong-Hao Chen, Pedro R. S. Gomes, Titus Neupert, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **93**, 205123 (2016). **(Editors' Suggestion)**

77. *Breakdown of the topological classification $\mathbb{Z}$ for gapped phases of non-interacting fermions by quartic interactions,* Takahiro Morimoto, Akira Furusaki, and Christopher Mudry, Phys. Rev. B **92**, 125104 (2015).

76. *Anderson localization and the topology of classifying spaces,* Takahiro Morimoto, Akira Furusaki, and Christopher Mudry, Phys. Rev. B **91**, 235111 (2015). **(Editors' Suggestion)**

75. *Topological BF theory of the quantum hydrodynamics of incompressible polar fluids,* Apoorv Tiwari, Xiao Chen, Titus Neupert, Luiz Santos,

Shinsei Ryu, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **90**, 235118 (2014).

74. *Accessing topological order in fractionalized liquids with gapped edges*, Thomas Iadecola, Titus Neupert, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **90**, 205115 (2014).

73. *Wire deconstructionism and classification of topological phases,* Titus Neupert, Claudio Chamon, Christopher Mudry, and Ronny Thomale, Phys. Rev. B **90**, 205101 (2014). **(Editors' Suggestion)**

72. *Effective field theory for the bulk-edge correspondence in a two-dimensional $\mathbb{Z}_2$ topological insulator with Rashba interactions,* Pedro R. S. Gomes, Po-Hao Huang, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **90**, 115144 (2014).

71. *Symmetry-protected entangling boundary zero modes in crystalline topological insulators,* Po-Yao Chang, Christopher Mudry, and Shinsei Ryu, J. Stat. Mech. P09014 (2014).

70. *Spin-directed network model for the surface states of weak three-dimensional $\mathbb{Z}_2$ topological insulators,* Hideaki Obuse, Shinsei Ryu, Akira Furusaki, and Christopher Mudry, Phys. Rev. B **89**, 155315 (2014). **(Editors' Suggestion)**

69. *Fractional Chern insulators with strong interactions far exceeding bandgaps,* Stefanos Kourtis, Titus Neupert, Claudio Chamon, and Christopher Mudry, Phys. Rev. Lett. **112**, 126806 (2014).

68. *Reply to "Comment on Elementary formula for the Hall conductivity of interacting system",* Titus Neupert, Luiz Santos, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **89**, 127102, (2014).

67. *Measuring the Quantum Geometry of Bloch Bands,* Titus Neupert, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **87**, 245103 (2013).

66. *Enhancing the stability of fractional Chern insulators against competing phases,* Adolfo G. Grushin, Titus Neupert, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **86**, 205125 (2012).

65. *Magnetic translation algebra with or without magnetic field,* Claudio Chamon, and Christopher Mudry, Phys. Rev. B **86**, 195125 (2012).

64. *Elementary formula for the Hall conductivity of interacting systems,* Titus Neupert, Luiz Santos, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **86**, 165133 (2012).

63. *Noncommutative geometry for three-dimensional topological insulators,* Titus Neupert, Luiz Santos, Shinsei Ryu, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **86**, 035125 (2012).

62. *Global phase diagram of two-dimensional Dirac fermions in random potentials,* Shinsei Ryu, Christopher Mudry, Akira Furusaki, and Andreas Ludwig, Phys. Rev. B **85**, 235115 (2012).

61. *Topological Hubbard model and its high-temperature quantum Hall effect,* Titus Neupert, Luiz Santos, Shinsei Ryu, Claudio Chamon, and Christopher Mudry, Phys. Rev. Lett. **108**, 046806 (2012).

60. *Time-reversal symmetric hierarchy of fractional incompressible liquids,* Luiz Santos, Titus Neupert, Shinsei Ryu, Claudio Chamon, and Christopher Mudry Phys. Rev. B **84**, 165138 (2011).

59. *Fractional topological liquids with time-reversal symmetry and their lattice realization,* Titus Neupert, Luiz Santos, Shinsei Ryu, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **84**, 165107 (2011).

58. *Fractional Quantum Hall States at Zero Magnetic Field,* Titus Neupert, Luiz Santos, Claudio Chamon, and Christopher Mudry, Phys. Rev. Lett. **106**, 236804 (2011). (**With accompanying Viewpoint**)

57. *Counting Majorana zero modes in superconductors*, Luiz Santos, Yusuke Nishida, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **83**, 104522 (2011).

56. *Topological qubits in graphene-like systems,* Luiz Santos, Shinsei Ryu, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **82**, 165101 (2010).

55. *High-gradient operators in perturbed Wess-Zumino-Witten field theories in two dimensions*, S. Ryu, C. Mudry, A. W. W. Ludwig, and A. Furusaki, Nucl. Phys. **B839**, 341 (2010).

54. *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, New J. Phys. **12**, 065005 (2010).

53. *Superconductivity on the surface of topological insulators and in two-dimensional noncentrosymmetric materials*, Luiz Santos, Titus Neupert, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **81**, 184502 (2010).

52. *Deconfined fractional electric charges in graphene at high magnetic fields*, Chang-Yu Hou, Claudio Chamon, and Christopher Mudry, Phys. Rev. B **81**, 075427 (2010).

51. *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)**

50. *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).

49. *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. **B822**, 424 (2009).

48. *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)**

47. *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).

46. *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).

45. *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).

44. *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). **(Editors' Suggestion)**

43. *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).

42. *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).

41. *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).

40. *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).

39. $\mathbb{Z}_2$ *topological term, the global anomaly, and the two-dimensional symplectic symmetry class of Anderson localization*, Shinsei Ryu, Christo-

pher Mudry, Hideaki Obuse, and Akira Furusaki, Phys. Rev. Lett. **99**, 116601 (2007).

38. *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).

37. *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).

36. *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).

35. *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).

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

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

32. *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).

31. *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).

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

29. *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).

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

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

26. *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).

25. *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).

24. *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).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Preprints

4. *Non-Abelian topological phases in three spatial dimensions from coupled wires,* Thomas Iadecola, Titus Neupert, Claudio Chamon, and Christopher Mudry, arxiv:1703.03418.

3. *Spiral order from orientationally correlated random bonds in classical XY models,* Andrea Scaramucci, Hiroshi Shinaoka, Maxim V. Mostovoy, Markus Mller, and Christopher Mudry, arXiv:1610.00784.

2. *Giant pressure dependence and dimensional crossover in a metal-organic Heisenberg antiferromagnet,* Bjoern Wehinger, Christoph Fiolka, David Graf, William A. Coniglio, Audrey Grockowiak, Jyong-Hao Chen, Jan Gukelberger, Markos Skoulatos, Karl Kraemer, Stan Tozer, Christopher Mudry, and Christian Rueegg, arXiv:1606.08344.

1. *Magnetic nano-fluctuations in a frustrated magnet,* Krunoslav Prsa, Mark Laver, Martin Mansson, Sebastian Guerrero, Peter M Derlet, Ivica Zivkovic, Hee Taek Yi, Lionel Porcar, Oksana Zaharko, Sandor Balog, Jorge L Gavilano, Joachim Kohlbrecher, Bertrand Roessli, Christof Niedermayer, Jun Sugiyama, Cecile Garcia, Henrik M Ronnow, Christopher Mudry, Michel Kenzelmann, Sang Wook Cheong, and Joel Mesot, arXiv:1404.7398.

Non-peer-reviewed

11. *Two-dimensional materials: Heavy going,* Christopher Mudry, Nature Physics **12 (News and Views)**, 895 (2016) doi:10.1038/nphys3798.

10. *Erratum: Wire deconstructionism of two-dimensional topological phases [Phys. Rev. B 90, 205101 (2014)],* Titus Neupert, Claudio Chamon, Christopher Mudry, and Ronny Thomale, Phys. Rev. B **93**, 039905 (2016).

9. *Fractional (Chern and topological) insulators,* Titus Neupert, Claudio Chamon, Thomas Iadecola, Luiz H. Santos, and Christopher Mudry, Nobel Symposium 156: "New forms of matter: topological insulators and superconductors," Phys. Scr. **T164**, 014005 (2015).

8. *Masses and Majorana fermions in graphene,* Claudio Chamon, Chang-Yu Hou, Christopher Mudry, Shinsei Ryu, and Luiz Santos, Nobel Symposium on Graphene and Quantum Matter; Saltsjobaden, Sweden May 27-31 2010; Phys. Scripta **T146**, 014013 (2012).

7. *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,
see http://www.condmatjournalclub.org.

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

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

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

3. *Erratum: Random Dirac Fermions and Non-Hermitian Quantum Mechanics*, by Christopher Mudry, B. D. Simons, and Alexander Altland, Phys. Rev. Lett. **85**, 3334 (2000).

2. *Dirac fermions with random vector potentials: instability and multifractality*, 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.

1. *Absence of slave-spinons in the spin-1/2 Heisenberg chain*, 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.

Books

2. Chapter 7, *Fractional Abelian topological phases of matter for fermions in two-dimensional space*, by Christopher Mudry in: Les Houches 2014 Session CIII, *Topological Aspects of Condensed Matter Physics*, First Edition, edited by C. Chamon et al., Oxford University Press 2017.

1. *Lecture Notes on Field Theory in Condensed Matter Physics*, Christopher Mudry, World Scientific (Singapore 2014).

Organization of workshops/conferences

- *Trends in Theory of Correlated Materials 2017,* The Japan-Swiss bilateral conference, Tsukuba, September 10-13, 2017.
- *Celebrating Physics with a Good Excuse,* Paul Scherrer Institute, Switzerland July 3-6, 2017.
- *Trends in Theory of Correlated Materials 2016,* The Japan-Swiss bilateral conference, Paul Scherrer Institute, Switzerland May 22-25, 2016.
- *Topological Band Structures and Their Instabilities,* Advanced Study Groups at the Max-Planck-Institut fuer Physik komplexer Systeme, Dresden, 2012-2013. Members: Fakher Assaad, Balasz Dora, Lars Fritz, Ken-Ichiro Imura, Igor Herbut, Christopher Mudry, and Ronny Thomale.
- *Probing Phase Transitions using Photons, Muons and Neutrons*, 10th PSI summer school on condensed matter physics, August 2011.
- *Magnetic phenomena*, 9th PSI summer school on condensed matter physics, August 2010.
- *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, Symposiums, Workshops, Summer Schools, etc

Invited talks

- *A constructive approach to non-Abelian long-range entanglement in 2 and 3 dimensional spaces,* International workshop "Variety and universality of Bulk-Edge Correspondence in topological phases: From solid state physics to transdisciplinary concepts" (BEC2018), Tsukuba, Japan, January 5-8 2018.

- *Topological order in three spatial dimensions from coupled wires,* The Japan-Swiss bilateral conference "Trends in Theory of Correlated Materials", Tsukuba, Japan, September 10-13, 2017.

- *Topological order in three spatial dimensions from coupled wires,* Workshop on Topological Properties in Quantum Magnets, Budapest, August 30-September 1 2017.

- *Non-Abelian chiral spin liquids in two-dimensional spin models,* MaNEP Workshop on Topological Quantum Phenomena, University of Zurich, November 2016.

- *A constructive approach to topological insulators and topological order,* Conference on Interactions and Topology in Dirac Systems, ICTP, Trieste, Italy, August 3-10 2016.

- *A constructive approach to topological insulators and topological order,* 20th Symposium on Topological Quantum Information, Athens, Greece, May 25-27 2016.

- *Interactions in Topological Matter,* School on Topological Quantum Matter, Harish-Chandra Research Institute, Allahabad, February 9-21, 2015.

- *Wire deconstructionism of two-dimensional topological phases,* The Japan-Swiss bilateral conference "Trends in Theory of Correlated Materials", Aoyama Gakuin University, Japan, October 6-8, 2014.

- *Three lectures on fractional topological insulators,* Aspects topologiques en physique de la matière condensée, École de Physique des Houches, 04-29 août 2014.

- *Topological insulators: a review:* International Workshop "Quantum Disordered Systems: Whats Next?, Toulouse (France), 24-27 June, 2014.

- *Spin-directed network model for the surface states of weak three-dimensional $\mathbb{Z}_2$ topological insulators,* Recent Progress and Perspectives in Scaling, Multifractality, Interactions, and Topological Effects Near Anderson Transitions, International Focus Workshop: March 11 - 14, 2014, MPIPKS Dresden, Germany.

- *Spin-directed network model for the surface states of weak three-dimensional $\mathbb{Z}_2$ topological insulators,* The Japan-Swiss bilateral conference "Trends in Theory of Correlated Materials", EPFL, Switzerland October 2-5, 2013.

- *Fractional topological insulators: a progress report,* International Focus Workshop on Flat Bands: *Design, Topology, and Correlations*, March 06 - 09 2013, Max-Planck-Institut fuer Physik komplexer Systeme, Dresden.

- *Graphene and fundamental concepts in theoretical physics,* Workshop on Advances in Quantum Technologies: From Quantum Information to Quantum Devices. August 20 - August 31 2012, International Institute of Physics in Natal (Brazil).

- *Fractional topological insulators*, Workshop on Novel Quantum States in Condensed Matter: Correlation, Frustration and Topology, November 7 - December 9, 2011, Yukawa Institute for Theoretical Physics (YITP), Kyoto University, Japan.

- *Fractional topological insulators*, Workshop on Topological Insulators and Superconductors, KITP, September 19 - December 16, 2011.

- *Fractional topological insulators*, Workshop on Quantum Field Theory aspects of Condensed Matter Physics, 6-9 September 2011 INFN - Laboratori Nazionali di Frascati, Italy,

- *Quantum phase transitions: an overview*, 10th PSI Summer School on Condensed Matter Research, 13-22 August 2011 Institut Montana Zugerberg in Zug, Switzerland.

- *Point defects in topological Bloch insulators or superconductors,* "Topological Properties of Electronic Materials", MaNEP topical meeting, University of Geneva, May 6 2011.

- *Topological aspects in superconducting materials,* "Advanced Working Group on Experimental Probes for Topological Materials", Royal Holloway College, University of London, February 18-19 2011.

- *Deconfined fractional electric charges in graphene at high magnetic fields*, The Japan-Swiss bilateral conference "New Trends in Theory

of Correlated Materials (NTTCM)", Chiba, Japan, September 8-10, 2010.

- *High-gradient operators and Anderson localization*, Advanced workshop on "Anderson localization, nonlinearity and turbulence: a cross-fertilization", ICTP, Trieste, Italy, 23 August - 3 September 2010.

- *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, November 2008.

- *Electron fractionalization in two-dimensional graphene-like structures*, National Seminar Condensed Matter Physics, Dutch Research School of Theoretical Physics, October 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, September 2008.

- *Introduction to the physics of graphene*, 7th PSI Summer School on Condensed Matter Research, 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, August 7 - December 15 2006.

- *The quantum three-coloring dimer model and quantum glassiness*, Workshop on Complex Behavior in Correlated Electron Systems, Lorentz Center, University of Leiden, August 2 2005.

- *Freezing transition in a problem of Anderson localization*, Workshop on Quantum Systems out of Equilibrium, ICTP, Trieste, Italy, 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, 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 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

- *Coupled spin-1/2 ladders as microscopic models for non-Abelian chiral spin liquids,* APS March Meeting, New-Orleans, March 2017.
- *Non-Abelian fractional topological insulators in three spatial dimensions from coupled wires,* APS March Meeting, New-Orleans, March 2017.
- *Construction of non-Abelian topological insulators using non-Abelian bosonization,* APS March Meeting, Baltimore, March 2016.
- *Topological BF theory of the quantum hydrodynamics of incompressible polar fluids,* APS March Meeting, San Antonio, March 2015.
- *Accessing topological order in fractionalized liquids with gapped edges,* APS March Meeting, San Antonio, March 2015.
- *Wire deconstructionism of two-dimensional topological phases,* APS March Meeting, San Antonio, March 2015.
- *Topological order in lattice models of strongly interacting electrons,* APS March Meeting, Denver, March 2014.
- *Magnetic translation algebra with or without magnetic field,* APS March Meeting, Baltimore, March 2013.
- *Elementary formula for the Hall conductivity of interacting systems,* APS March Meeting, Baltimore, March 2013.
- *The topological Hubbard model and its high-temperature quantum Hall effect,* APS March Meeting, Boston, March 2012.
- *Time-reversal symmetric hierarchy of fractional incompressible liquids,* APS March Meeting, Boston, March 2012.
- *Counting Majorana zero modes in superconductors*, APS March Meeting, Dallas, March 2011.
- *Masses, topological phase transitions and fractionalized particles in graphene*, APS March Meeting, Portland, March 2010.
- *Deconfined fractional electric charges in graphene at high magnetic fields*, APS March Meeting, Portland, March 2010.

- *Superconductivity on the surface of topological insulators and in two-dimensional noncentrosymmetric materials*, APS March Meeting, Portland, March 2010.
- *Topological qubits in graphene-like systems*, APS March Meeting, Portland, March 2010.
- *Quantum Hall effect of massless Dirac fermions in a vanishing magnetic field*, APS March Meeting, Pittsburg, March 2009.
- *Network Model for Z_2 Quantum Spin-Hall Effects with Disorder*, APS March Meeting, New Orleans, March 2008.
- *Quantum transport of 2D Dirac fermions: the 2D symplectic symmetry class of Anderson localization and the Z2 topological term*, APS March Meeting, New Orleans, March 2008.
- *Irrational vs. rational charge and statistics in graphene-like system*, APS March Meeting, New Orleans, March 2008.
- *Landauer conductance and twisted boundary conditions for Dirac fermions*, APS March Meeting, Denver, March 2007.
- *Electron fractionalization in two-dimensional graphene-like structures*, APS March Meeting, Denver, March 2007.
- *Theoretical Study of Orthorhombic Distortions in High-Temperature Superconductors*, APS March Meeting, Baltimore, March 2006.
- *High-Temperature Criticality in Strongly Constrained Quantum Systems*, APS March Meeting, Baltimore, March 2006.
- *Introducing interactions in quantum dimer, vertex and loop models at the RK point*, APS March Meeting, Los Angeles, March 2005.
- *Mesoscopic fluctuations in disordered superconductors with broken time-reversal symmetry*, APS March Meeting, Los Angeles, March 2005.
- *The role of Higher-Harmonics in the Superconducting Gap on the Magnetic Susceptibility of High-T_c Materials*, APS March Meeting, Montreal, March 2004.

- *Full distribution function of the local density of states in a 1D disordered quantum wire and its crossover from the chiral to standard universality class*, APS March Meeting, Montreal, March 2004.
- *Density of states for dirty d-wave superconductors: A unified and dual approach for different types of disorder*, APS March Meeting, 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

- *Topological order: an attempt at demystification,* Colloquium of the Chinese University of Hong Kong, September 2017.
- *Nobel Prize 2016: Topology in condensed matter physics,* Condensed Matter PSI Colloquium, February 2017.
- *Topology in condensed matter physics,* Colloque de Physique, December 2016, Université de Fribourg.
- *Anderson localization and the topology of classifying spaces,* Theoretisch-Physikalisches Kolloquium, University of Cologne, January 2015.
- *Fractional topological insulators,* Dahlem Center Colloquium, Freie Universität Berlin, June 2011.
- *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, Italy, 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

2018

- *A constructive approach to non-Abelian long-range entanglement in 2 and 3 dimensional spaces*, University of Illinois at Urbana-Champaign, March 2018.

2017

- *Abelian topological order in three-dimensional space*, University of Tsukuba, December 2017.
- *A model of chiral spin liquids with tunable edge states,* Brookhaven National Laboratory, June 2017.
- *A model of chiral spin liquids with tunable edge states,* RIKEN, April 2017.

2016

- *Non-Abelian chiral spin liquids in two-dimensional spin models,* Oxford University, November 2016.
- *Non-Abelian topological spin liquids from arrays of quantum wires or spin chains,* RIKEN, January 2016.

2015

- *Breakdown of the topological classification $\mathbb{Z}$ for gapped phases of non-interacting fermions by quartic interactions,* University of Illinois at Urbana-Champaign, October 2015.
- *Breakdown of the topological classification $\mathbb{Z}$ for gapped phases of non-interacting fermions by quartic interactions,* Boston University, October 2015.

2014

- *Wire deconstructionism and classification of topological phases,* RIKEN, April 2014.
- *From incompressible fluids in* $(3+1)$*-dimensional space and time to* $(3+1)$*-dimensional BF quantum field theories,* RIKEN, April 2014.
- *Fractional topological insulators: a progress report,* Blackboard Seminar of the Wolfgang Pauli Centre, University of Hamburg and DESY, February 2014.
- *Spin-Directed Network Model for the Surface States of Weak Three-Dimensional* $\mathbb{Z}_2$ *Topological Insulators,* Northeastern University, January 2014.
- *Fractional topological insulators: a progress report,* Florida State University, January 2014.

2013

- *Fractional topological insulators: a progress report,* ICTP, November 2013.
- *The Fubini-Study metric of band insulators and the magnetic translation algebra with or without magnetic field*, RIKEN, April 2013.
- *Fractional topological insulators: a progress report,* Dresden, March 2013.

2012

- *A route to fractional topological insulators in two and three dimensions,* Kobe University, April 2012.
- *A route to fractional topological insulators in two and three dimensions,* Yukawa Institute for Theoretical Physics, Kyoto University, April 2012.
- *A route to fractional topological insulators in two and three dimensions,* RIKEN, April 2012.

2011

- *Fractional topological insulators,* Boston College, October 2011.
- *Fractional topological insulators,* University of Illinois at Urbana-Champaign, October 2011.
- *Fractional quantum Hall states at zero magnetic field*, RIKEN, April 2011.
- *Topological aspects in superconducting materials*, Hong-Kong University of Science and Technology, April 2011.

2010

- *Topological qubits in graphene-like systems*, University of Illinois at Urbana-Champaign, October 2010.
- *Deconfined fractional electric charges in graphene at high magnetic fields*, Université de Toulouse, May 2010.
- *Topological qubits in graphene-like systems*, RIKEN, April 2010.

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, Italy, 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, Italy, 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* 2*d conformal field theories describing disordered systems: The random phase XY model*, Yukawa Institute for Theoretical Physics, Kyoto University, February 2002.

- *Unusual aspects of* 2*d conformal field theories describing disordered systems: From multifractal zero modes to Liouville field theory*, Yukawa Institute for Theoretical Physics, 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

- *AJL@80: Challenges in Quantum Foundations, Condensed Matter, and Beyond,* University of Illinois at Urbana-Champaign, March 2018.
- *School on Topological Quantum Matter,* Harish-Chandra Research Institute, Allahabad, 9-21 February 2015.

- *Wire deconstructionism of two-dimensional topological phases,* The Japan-Swiss bilateral conference "Trends in Theory of Correlated Materials", Aoyama Gakuin University, Japan October 6-8, 2014.

- *Aspects topologiques en physique de la matière condensée,* École de Physique des Houches, 04-29 août 2014.

- *New Forms of Matter - Topological Insulators and Superconductors,* Nobel Symposia, June 13-15, 2014.

- *Symmetry in Topological Phases*, Princeton Center for Theoretical Science, March 17-20, 2014.

- *Recent Progress and Perspectives in Scaling, Multifractality, Interactions, and Topological Effects Near Anderson Transitions,* International Focus Workshop: March 11 - 14, 2014, MPIPKS Dresden, Germany.

- *Trends in Theory of Correlated Materials,* The Japan-Swiss bilateral conference EPFL, Switzerland October 2-5, 2013.

- *Design, Topology, and Correlations*, International Focus Workshop on Flat Bands: March 06 - 09 2013, Max-Planck-Institut fuer Physik komplexer Systeme, Dresden.

- *Workshop on Advances in Quantum Technologies: From Quantum Information to Quantum Devices*. August 20-31 2012, International Institute of Physics in Natal (Brazil).

- *Novel Quantum States in Condensed Matter: Correlation, Frustration and Topology,* November 7-9, 2011, Yukawa Institute for Theoretical Physics (YITP), Kyoto University, Japan.

- *Topological Insulators and Superconductors*, KITP, September 19 - December 16, 2011.

- *Quantum Field Theory aspects of Condensed Matter Physics,* 6-9 September 2011 INFN - Laboratori Nazionali di Frascati, Italy,

- *Probing Phase Transitions using Photons, Muons and Neutrons*, 10th PSI Summer School on Condensed Matter Research, Zug, Switzerland, August 2011.

- *Magnetic phenomena*, 9th PSI summer school on condensed matter physics, August 2010.
- *SLS symposium on graphene, September 2009*, September 01 2009.
- *2009 Swiss Workshop on materials with novel electronic properties*, les Diablerets, 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, Lyceum Alpinum Zuoz, Switzerland, August 2008.
- *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.
- *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.
- *$8^{t}h$ 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.