

Mme Karyn LE HUR: Publications

*135 Articles including 12 Reviews (introduced here with * in publications list), 2 books' chapters*
h-index 45, 6140 citations

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Participation in Books

Participation in a Popular Book on Quantum Mechanics, *Le Plus Grand des Hasards*, Editors Jean-Francois Dars and Anne-Marie Papillaut, 2010, 65 authors

Book on *Understanding Quantum Phase Transitions*, editor L. D. Carr
 Taylor and Francis, Boca Raton, 2010

Chapter on *Quantum Phase Transitions in Spin-Boson Systems: Dissipation and Light phenomena*,
 by Karyn Le Hur (26 pages, also accessible at arXiv:09094822)

Reviews

1. *Topological Matter and Fractional Entangled Geometry*,
 arXiv:2209.15381, 74 pages

2. *Phase-Coherent Dynamics of Quantum Devices With Local Interactions*,
 Michele Filippone, Arthur Marguerite, Karyn Le Hur, Gwendal Fève, Christophe Mora,
 Entropy 2020, **22**(8), 847

3. *Driven dissipative dynamics and topology of quantum impurity systems*,
 Karyn Le Hur, Loïc Henriët, Loïc Herviou, Kirill Plekhanov, Alexandru Petrescu, Tal Goren, Marco
 Schiro, Christophe Mora, Peter P. Orth, arXiv:1702.05135
 Comptes Rendus Académie des Sciences, Special Issue on Quantum Simulators, **19**, 451-483 (2018).

4. *Many-Body Quantum Electrodynamics Networks: Non-Equilibrium Condensed Matter Physics
 with Light*, Karyn Le Hur, Loïc Henriët, Alexandru Petrescu, Kirill Plekhanov, Guillaume Roux,
 Marco Schiró, arXiv:1505.00167, C. R. Physique **17** (2016) 808-835.

5. *Fluctuations and Entanglement spectrum in quantum Hall states*,
 Alexandru Petrescu, H. Francis Song, Stephan Rachel, Zoran Ristivojevic, Christian Flindt, Nicolas
 Laflorencie, Israel Klich, Nicolas Regnault, Karyn Le Hur J. Stat. Mech. (2014) P10005.

6. *Correlated Topological Phases and Exotic Magnetism with Ultracold Fermions*
 Peter P. Orth, Daniel Cocks, Stephan Rachel, Michael Buchhold, Karyn Le Hur, Walter Hofstetter,
 arXiv:1212.5607
 Contribution to J. Phys. B special issue on non-Abelian gauge fields, J. Phys. B: At. Mol. Opt.
 Phys. **46** (2013) 134004. and D. Cocks *et al.* Phys. Rev. Lett. **109**, 205303 (2012).

7. *Non-perturbative stochastic method for driven spin-boson model*
 Peter P. Orth, Adilet Imambekov, Karyn Le Hur Phys. Rev. B **87**, 014305 (2013).
 See also Loïc Henriët, Zoran Ristivojevic, Peter P. Orth, Karyn Le Hur, Phys. Rev. A **90**, 023820
 (2014).

8. *Bipartite Fluctuations as a Probe of Many-Body Entanglement*

H. Francis Song, Stephan Rachel, Christian Flindt, Israel Klich, Nicolas Laflorencie, Karyn Le Hur, arXiv:1109.1001, 30 pages+25 pages Supplementary Material
Phys. Rev. B **85**, 035409 (2012), Editors' Suggestion.

9. Survey on *Effective Equilibrium Theory in NonEquilibrium Quantum Transport*, by Prasenjit Dutt, Jens Koch, J. Han and Karyn Le Hur, arXiv:1101.1526, 53 pages
Annals of Physics **326**, (2011) 2963-2999

10. *Superconductivity close to the Mott state: From condensed-matter systems to Superfluidity in optical lattices*, K. Le Hur and T. Maurice Rice, review article,
Annals of Physics **324**, 1452-1515 (2009), Special Issue July, arXiv:0812.1581, 98 pages

11. *Entanglement Entropy, decoherence, quantum phase transition of a dissipative two-level system*, Karyn Le Hur, Annals of Physics **323**, 2208-2240 (2008) (34 pages).

12. *Review Article on heavy fermions initiated by B. Coqblin:*
B. Coqblin, J. Arispe, J. R. Iglesias, C. Lacroix, and Karyn Le Hur, J. Phys. Soc. Jpn. **65**, 64 (1996).

[List of Publications](#)

Publications 2022

135 *Fractional Topology in interacting 1D Superconductors*,
Frederick del Pozo, Loïc Herviou, Karyn Le Hur, arXiv:2210.05024, 32 pages.

134* *Topological Matter and Fractional Entangled Geometry*,
Karyn Le Hur, arXiv:2209.15381, 74 pages.

133 *A topologically protected quantum dynamo effect in a driven spin-boson model*,
Ephraim Bernhardt, Cyril Elouard, Karyn Le Hur, arXiv:2208.01707, 27 pages.

132 *Hubbard model on the Kagome lattice with time-reversal invariant flux and spin-orbit coupling*,
Irakli Titvindze, Julian Legendre, Karyn Le Hur, Walter Hofstetter, Phys. Rev. B **105**, 235102 (2022).

131 *Global and Local Topological Quantized Responses from Geometry, Light and Time*,
Karyn Le Hur, Phys. Rev. B **105**, 125106 (2022).

130 *Doping a topological insulator: a promising strategy to find topological superconductors?*
Sebastian Wolf, Tyler Gardener, Karyn Le Hur, Stephan Rachel, Phys. Rev. B **105**, L100505 (2022).

Publications 2021

129 *Kondo induced π -phase shift of microwave photons in a circuit quantum electrodynamics architecture*,
Guang-Wei Deng, Loic Henriot, Da Wei, Shu-Xiao Li, Hai-Ou Li, Gang Cao, Ming Xiao, Guang-Can Guo, Marco Schiro, Karyn Le Hur, Guo-Ping Guo,
Phys. Rev. B **104**, 125407 (2021)

128 *Interacting Stochastic Topology and Mott Transition from Light Response*,
Philipp W. Klein, Adolfo G. Grushin, Karyn Le Hur, Phys. Rev. B **103**, 035114 (2021)

127 *Quantum Entangled Fractional Topology and Curvatures*,
Joel Hutchinson, Karyn Le Hur, Communication Physics **4**, 144 (2021).

126 *Quantum system dynamics with a weakly nonlinear Josephson junction bath*,
Jing Yang, Étienne Jussiau, Cyril Elouard, Karyn Le Hur, Andrew N. Jordan
Phys. Rev. B **103**, 085402 (2021)

125 *Localization Dynamics from Static and Mobile Impurities*,

- Ephraim Bernhardt, Fan Yang, Karyn Le Hur, Phys. Rev. B **104**, 115113 (2021)
124 *Spin-orbit coupling in the kagome lattice with flux and time-reversal symmetry*,
 Irakli Titvinidze, Julian Legendre, Maarten Grothuis, Bernhard Irsigler, Karyn Le Hur, Walter Hofstetter, Phys. Rev. B **103**, 195105 (2021)
123 *Analytical approach for the Mott transition in the Kane-Mele-Hubbard model*,
 Joel Hutchinson, Philipp W. Klein, Karyn Le Hur, Phys. Rev. B **104**, 075120 (2021)

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- 122*** *Phase-Coherent Dynamics of Quantum Devices With Local Interactions*,
 Michele Filippone, Arthur Marguerite, Karyn Le Hur, Gwendal Fève, Christophe Mora
 Entropy 2020, **22**(8), 847
121 *Valence bond fluctuations in the Kitaev spin model*,
 Fan Yang, Kirill Plekhanov, Karyn Le Hur, Phys. Rev. Research **2**, 013005 (2020)
120 *Magnetic Topological Kagome Systems*,
 Julian Legendre and Karyn Le Hur, Phys. Rev. Research **2**, 022043 (2020)
119 *From Topological Superconductivity to Quantum Hall States in Coupled Wires*,
 Fan Yang, Vivien Perrin, Alexandru Petrescu, Ion Garate, Karyn Le Hur, Phys. Rev. B **101**,
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118 *Fluctuating Forces Induced by Non Equilibrium and Coherent Light Flow*,
 Ariane Soret, Karyn Le Hur, Eric Akkermans, Phys. Rev. Lett. **124**, 136803 (2020)

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- 117** *Topological proximity effects in a Haldane-graphene bilayer system*,
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116 *Mechanical resonances of mobile impurities in a one-dimensional quantum fluid*,
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115 *Real-Time Ramsey Interferometry in Fractional Quantum Hall States*,
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114 *Quench-induced dynamical phase transitions and π -synchronization in the Bose-Hubbard Model*,
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113 *Bipartite Fluctuations and Topology of Dirac and Weyl Systems*,
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- 112** *Engineering Quantum Spin Liquids and Many-Body Majorana States with a Driven Superconducting Box Circuit*,
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111 *Emergent Chiral Spin State in the Mott Phase of a Bosonic Kane-Mele-Hubbard Model*, Kirill Plekhanov, Ivana Vasic, Alexandru Petrescu, Rajbir Nirwan, Guillaume Roux, Walter Hofstetter, Karyn Le Hur, Phys. Rev. Lett. **120**, 157201 (2018).
110* *Driven dissipative dynamics and topology of quantum impurity systems* Karyn Le Hur, Loïc Henriët, Loïc Herviou, Kirill Plekhanov, Alexandru Petrescu, Tal Goren, Marco Schiro, Christophe Mora, Peter P. Orth, 39 pages, arXiv:1702.05135,
 Comptes Rendus Académie des Sciences, Special Issue on Quantum Simulators, **19**, 451-483 (2018).
109 *Topological Zak Phase in Strongly-Coupled LC Circuits*

Tal Goren, Kirill Plekhanov, Félicien Appas, Karyn Le Hur, Phys. Rev. B **97**, 041106 (2018).
108 *Ramsey Interferometry of Particle-Hole Pairs in Tunnel Junctions*
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106 *Bipartite charge fluctuations in one-dimensional Z_2 superconductors and insulators*
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105 *Precursor of Laughlin state of hard core bosons on a two leg ladder* Alexandru Petrescu, Marie Piraud, Guillaume Roux, I. P. McCulloch, Karyn Le Hur, Phys. Rev. B **96**, 014524 (2017).
104 *Topology of a dissipative spin: dynamical Chern number, bath induced non-adiabaticity and a quantum dynamo effect* Loïc Henriët, Antonio Sclocchi, Peter P. Orth, Karyn Le Hur, Phys. Rev. B **95**, 054307 (2017).
103 *Floquet Engineering of Haldane Chern Insulators and Chiral bosonic phase transitions*, Kirill Plekhanov, Guillaume Roux, Karyn Le Hur Phys. Rev. B **95**, 045102 (2017).

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101 *Triplet FFLO Superconductivity in the doped Kitaev-Heisenberg Honeycomb Model*, Tianhan Liu, Cécile Repellin, Benoît Douçot, Nicolas Regnault, Karyn Le Hur, Phys. Rev. B **94**, 180506 (2016).
100* *Many-Body Quantum Electrodynamics Networks: Non-Equilibrium Condensed Matter Physics with Light*, Karyn Le Hur, Loïc Henriët, Alexandru Petrescu, Kirill Plekhanov, Guillaume Roux, Marco Schiró, arXiv:1505.00167, C. R. Physique **17** (2016) 808-835.
99 *Realizing Topological Mott Insulators from the RKKY Interaction*,
 Tianhan Liu, Benoît Douçot, Karyn Le Hur Phys. Rev. B **93**, 195153 (2016).
98 *Phase Diagram and Entanglement of two interacting topological Kitaev chains*
 Loïc Herviou, Christophe Mora, Karyn Le Hur, Phys. Rev. B **93**, 165142 (2016), 24 pages.
97 *Entanglement structure of the two-channel Kondo model*
 Bedoor Alkurtass, Abolfazl Bayat, Ian Affleck, Sougato Bose, Henrik Johannesson, Pasquale Sodano, Erik S. Sorensen, Karyn Le Hur, Phys. Rev. B **93**, 081106 (2016).
96 *Quantum sweeps, synchronization, and Kibble-Zurek physics in dissipative quantum spin systems*, Loïc Henriët, Karyn Le Hur, Phys. Rev. B **93**, 064411 (2016) (24 pages).

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95 *Condensed-matter physics: Quantum dots and the Kondo effect*,
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94 *Electrical Current from Quantum Vacuum Fluctuations in Nano-engines*
 Loïc Henriët, Andrew N. Jordan, Karyn Le Hur, Phys. Rev. B **92**, 125306 (2015).
93 *Topological Superconductivity in Two Dimensions with Mixed Chirality*
 A. M. Black-Schaffer, K. Le Hur, Phys. Rev. B **92**, 140503(R) (2015).
92 *Chiral Mott Insulators, Meissner Effect, and Laughlin States in Quantum Ladders*
 Alexandru Petrescu, Karyn Le Hur, Phys. Rev. B **91**, 054520 (2015).
91 *Chiral Bosonic Phases on the Haldane Honeycomb Lattice*,

Ivana Vasic, Alexandru Petrescu, Karyn Le Hur, Walter Hofstetter, Phys. Rev. B **91**, 094502
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- 90** *Chiral d-wave superconductivity on the honeycomb lattice close to the Mott state*,
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88 *Quantum Dynamics of the Driven and Dissipative Rabi Model*,
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87 *Tunable Hybrid Quantum Electrodynamics from Non-Linear Electron Transport*,
Marco Schiró, Karyn Le Hur, Phys. Rev. B **89**, 195127 (2014).

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- 86** *Anisotropic Quantum Spin Hall Effect, Spin-Orbital Textures and Mott Transition*,
Tianhan Liu, Benoît Douçot, Karyn Le Hur Phys. Rev. B **88**, 245119 (2013), 24 pages
85 *Strongly-Correlated Thermoelectric Transport beyond Linear Response*,
Prasenjit Dutt and Karyn Le Hur Phys. Rev. B **88**, 235133 (2013).
84 *Bosonic Mott Insulator with Meissner Currents*,
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83 *Admittance of the SU(2) and SU(4) Anderson quantum RC circuits*,
Michele Filippone, Karyn Le Hur, Christophe Mora, Phys. Rev. B **88**, 045302 (2013).
82 *Strongly correlated dynamics in multichannel quantum RC circuits*,
Prasenjit Dutt, Thomas Schmidt, Christophe Mora, Karyn Le Hur Phys. Rev. B **87**, 155134 (2013).
81 *Correlated Dirac particles and Superconductivity on the Honeycomb Lattice*,
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80* *Correlated Topological Phases and Exotic Magnetism with Ultracold Fermions*
Peter P. Orth, Daniel Cocks, Stephan Rachel, Michael Buchhold, Karyn Le Hur, Walter Hofstetter,
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79 *Low Frequency Admittance as a Probe of Majorana Fermions*
Christophe Mora, Karyn Le Hur Phys. Rev. B **88**, 241302 (2013).
78 *Non-equilibrium Quantum Transport through a dissipative resonant level model*
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77* *Non-perturbative stochastic method for driven spin-boson model*
Peter P. Orth, Adilet Imambekov, Karyn Le Hur Phys. Rev. B **87**, 014305 (2013).
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- 75** *Kondo resonance of a microwave photon*
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74* *Bipartite Fluctuations as a Probe of Many-Body Entanglement* H. Francis Song, Stephan Rachel,
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73 *Quantum Spin Hall Insulators with Interactions and Lattice Anisotropy*, Wei Wu, Stephan Rachel, Wu-Ming Liu and Karyn Le Hur, arXiv:1106.0943 and published Phys. Rev. B **85**, 205102 (2012).

72 *Anomalous Hall Effects of Light and Chiral Edge Modes on the Kagome Lattice* Alexandru Petrescu, Andrew Houck, Karyn Le Hur, Phys. Rev. A **86**, 053804 (2012).

71 *Time-reversal invariant Hofstadter-Hubbard model with Ultracold Fermions* Daniel Cocks, Peter P. Orth, Stephan Rachel, Michael Buchhold, Karyn Le Hur, Walter Hofstetter, Phys. Rev. Lett. **109**, 205303 (2012)

70 *Detecting Quantum Critical Points using Bipartite Fluctuations*, Stephan Rachel, Nicolas Laflorencie, H. Francis Song, Karyn Le Hur, Phys. Rev. Lett. **108**, 116401 (2012)

69 *Heisenberg Uncertainty Principle as a Probe of Entanglement Entropy: Application to Superradiant Quantum Phase Transitions* Pierre Nataf, Mehmet Dogan, Karyn Le Hur Phys. Rev. A **86**, 043807 (2012)

68 *Noninvasive Probes of Charge Fractionalization in Quantum Spin-Hall Insulators*, Ion Garate and Karyn Le Hur, Phys. Rev. B **85**, 195465 (2012)

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66* *Effective Equilibrium Theory in NonEquilibrium Quantum Transport*, by Prasenjit Dutt, Jens Koch, J. Han and Karyn Le Hur, arXiv:1101.1526, 53 pages Annals of Physics **326** 2963-2999 (2011).

65 *Giant Charge Relaxation Resistance in the Anderson Model*, Michele Filippone, Karyn Le Hur and Christophe Mora, Phys. Rev. Lett. **107**, 176601 (2011).

64 *Entanglement Entropy of the Two-Dimensional Heisenberg Antiferromagnet*, H. Francis Song, Nicolas Laflorencie, Stephan Rachel, Karyn Le Hur, Phys. Rev. B **83**, 224410 (2011).

63 *Entanglement from Charge Statistics: Exact Relations for Many-Body Systems*, H. Francis Song, Christian Flindt, Stephan Rachel, Israel Klich, Karyn Le Hur, Phys. Rev. B **83**, 161408(R) (2011).

62 *Designing Heterostructures with Higher Temperature Superconductivity*, Karyn Le Hur, Chung-Hou Chung, I. Paul, Phys. Rev. B **84**, 024526 (2011).

61 *Effective Thermodynamics of a coupled Two-level system*, N. S. Williams, K. Le Hur and A. Jordan, J. Phys. A: Math. Theor. **44** (2011) 385003.

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59 *Dynamics, Synchronization and Quantum Phase Transitions of Two Dissipative Spins*, Peter P. Orth, David Roosen, Walter Hofstetter and Karyn Le Hur, Phys. Rev. B **82**, 144423 (2010) (Editors' Suggestion).

58 *Topological Insulators and Mott physics from the Hubbard Interaction*, Stephan Rachel and Karyn Le Hur, Phys. Rev. B **82**, 075106 (2010).

57 *Tunable Kondo-Luttinger systems far from equilibrium*, C.-H. Chung, K.V.P. Latha, K. Le Hur, M. Vojta and P. Wölfle, Phys. Rev. B **82**, 115325 (2010).

56 *General Relation between Entanglement and Fluctuations in One Dimension*, Francis Song, Stephan Rachel and Karyn Le Hur, Phys. Rev. B **82**, 012405 (2010).

55 *Universal Resistances of the Quantum RC circuit*, Christophe Mora and Karyn Le Hur, *Nature Physics*, **6** 697 (2010).

54 *Universality in dissipative Landau-Zener transitions*, Peter P. Orth, Adilet Imambekov and

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53 *Electric field Tuned Dimensional Crossover in Ar-Irradiated SrTiO₃*, J. H. Ngai, Y. Segal, F. J. Walker, S. Ismail-Beigi, K. Le Hur and C. H. Ahn, Phys. Rev. B **81**, 241307(R) (2010).

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51 *Theory of non-equilibrium transport in the SU(N) Kondo regime*, Christophe Mora, Pavel Vitushinsky, Xavier Leyronas, Aashish A. Clerk, Karyn Le Hur, arXiv:0906.2791, 17 pages.

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50 *Superfluid-Mott Insulator Transition of Light in the Jaynes-Cummings Lattice*, Jens Koch and Karyn Le Hur, Phys. Rev. A **80**, 023811 (2009), 13 pages.

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46 *Entanglement, decoherence, and dynamics of a two-state system*, Karyn Le Hur

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44 *Charge Fractionalization in nonchiral Luttinger systems*,

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30 *Transport in a Spin-Incoherent Luttinger liquid,*

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28 *Hidden Caldeira-Leggett dissipation in a Bose-Fermi Kondo model,*

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27 *Unification of electromagnetic noise and Luttinger liquid via a resonant level,*

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25 *Quantum Dot in the pseudogap Kondo state,*

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