

# SENTHIL TODADRI

## *Curriculum Vitae*

Department: Physics  
Address: 77 Massachusetts Ave., Room 6C-313  
Massachusetts Institute of Technology  
Cambridge, MA 02139-4307

Phone: 617-253-6831  
Email: [senthil@mit.edu](mailto:senthil@mit.edu)

### **Professional preparation:**

- Master of Science (1992) in Physics, Indian Institute of Technology, Kanpur (India).
- Ph.D in Physics, Yale University, 1997.  
Thesis advisor: Prof. Subir Sachdev
- September 1997 to Jan 2001, Postdoctoral Fellow, Kavli Institute for Theoretical Physics, University of California, Santa Barbara.  
Postdoctoral Supervisor: Prof Matthew P. A. Fisher.

### **Employment:**

- January 2001 to December 2004, Assistant Professor of Physics, Massachusetts Institute of Technology, Cambridge, MA.
- January 2005 to January 2007 (on leave from MIT): Associate Professor of Physics, Indian Institute of Science, Bangalore (India).
- January 2007 to June 2011: Associate Professor of Physics, Massachusetts Institute of Technology, Cambridge, Massachusetts.
- July 2011- present: Professor of Physics, Massachusetts Institute of Technology, Cambridge, Massachusetts.

### **Honors and awards:**

1. Josiah Willard Gibbs Fellowship for the year 1992, Yale University
2. NEC Fund Award from the MIT Research Support Committee, July 2002
3. Alfred P. Sloan Research Fellow, Sept. 2002- Sept. 2006.
4. Research Innovation Award from The Research Corporation, May 2003.
5. Outstanding Investigator Award from the Science Research Council of the Department of Atomic Energy, India, Aug 2005.

6. Outstanding Young Physicist Award from the American chapter of the Indian Physics Association, March 2009
7. Kavli Frontiers Fellow, The Kavli Foundation, 2011.
8. Distinguished Visiting Research Chair, Perimeter Institute for Theoretical Physics, Waterloo, Canada, 2011-2024.
9. Simons Theoretical Physics Fellowship, 2012-2013.
10. Simons Investigator Award, 2013-2023.
11. Fellow, American Physical Society, 2013.
12. Subrahmanyam Chandrasekhar Lecturer, International Center for Theoretical Sciences, 2015.

**Membership:**

1. General Member, Aspen Center for Physics, 2010-2020
2. Member, International Advisory Board, International Center for Theoretical Sciences, India, 2015-present.

**Service :**

1. Co-organizer, Aspen summer workshop on "Quantum Spin Liquids", June-July, 2019.
2. Co-organizer, KITP conference on "Closing the entanglement gap: Quantum information, quantum matter, and quantum fields", June 2015.
3. Co-organizer, Boulder summer school on "Superconductivity", July 2014.
4. Co-organizer, Aspen winter conference on "Beyond quasiparticles: new paradigms for quantum fluids", Jan 2014.
3. Co-organizer, Indian condensed matter program, Goa, India, 2007; conference on "Physics near the Mott Transition", Bangalore 2006;
4. Regular referee for Physical Review Letters, Physical Review B, Nature, Nature Physics, Science, and other journals.
5. Referee for grants submitted to US National Science Foundation, Department of Energy.

**Ph.D students:**

1. Nikolic, Predrag, 2004.  
Thesis title: Geometrically frustrated quantum magnets  
Subsequent position: Postdoctoral Fellow, Harvard University

Current position: Associate Professor, Dept of Physics, George Mason University.

2. Ghaemi, Pouyan, 2008

Thesis title: Phases and phase transitions of strongly correlated electron systems

Subsequent position: Postdoctoral Fellow, UC Berkeley

Current position: Assistant Professor, Dept of Physics, City University of New York

3. Grover, Tarun, 2010

Thesis title: Applied fractionalization: Quantum phases and phase transitions of strongly interacting systems.

Subsequent position: Postdoctoral Fellow, UC Berkeley.

Current position: Assistant Professor, Dept of Physics, UC San Diego

4. Mross, David, 2013

Thesis title: Exotic phases and quantum criticality in gapless correlated electron systems

Subsequent position: IQIM Post-doctoral Fellow, Caltech.

Current position: Assistant Professor, Dept of Physics, Weizmann Institute of Science

5. Wang, Chong, 2015

Thesis title: Entangling symmetry and topology in correlated electrons

Subsequent position: Junior Fellow, Society of Fellows, Harvard.

Current position: Assistant Professor, Perimeter Institute for Theoretical Physics, Canada

6. Pretko, Michael, 2017

Thesis title: Subdimensional Particles and Higher Rank Quantum Phases of Matter

Current position: Postdoctoral Fellow, University of Colorado, Boulder

7. Zou, Liujun, 2019

Thesis title: An odyssey in modern quantum many body physics

Current position: Postdoctoral Fellow, Perimeter Institute, Canada

8. Zhang, Yahui, 2019

Thesis title: Bridging Hubbard model physics and quantum Hall physics in graphene moire superlattices

Current position: Postdoctoral Fellow, Harvard University

9. Mao, Dan, current

10. Lake, Ethan, current

11. Dong, Zhihuan, current

12. Musser, Seth, current

**Postdoctoral Fellows:**

1. Motrunich, Olexei, 2001-2003 (joint with P.A. Lee)

Current position: Professor of Physics, Caltech.

2. Vishwanath, Ashvin, 2001-2004 (Pappalardo Fellow)

Current position: Professor of Physics, Harvard University.

3. Hermele, Michael, 2005 – 2007 (joint with P.A. Lee and X.G. Wen)

Current position: Associate Professor of Physics, University of Colorado, Boulder.

4. Wang, Fa, 2009 – 2012 (Pappalardo Fellow)

Current position: Associate Professor of Physics, Beijing University, China.

5. Flint, Rebecca, 2010 – 2013 (Simons Fellow)

Current position: Assistant Professor of Physics, Iowa State University

6. Nahum, Adam, 2013-2016 (Moore Fellow)

Current position: Royal Society Fellow, Oxford, UK

7. Savary, Lucile, 2014 - 2017 (Moore Fellow)

Current position: Assistant Professor, ENS, Lyon, France

8. Sodemann, Inti, 2014 - 2017 (Pappalardo Fellow)

Current position: Assistant Professor, UC Irvine

9. Kimchi, Itamar, 2015 - 2018 (Pappalardo Fellow)

Current position: Assistant Professor, Georgia Tech

10. Lederer, Sam, 2015 - 2018 (Moore Fellow)

Current position: Postdoctoral Fellow, Cornell University

11. Chowdhury, Debanjan, 2016-2019 (Moore Fellow)

Current position: Assistant Professor, Cornell University

12. Repellin, Cecile (Marie Curie Fellow), 2017-2019

Current position: Assistant Professor, Univ. Grenoble-Alpes, CNRS, France

13. Bi, Zhen, (Pappalardo Fellow), 2017-2020

Current position: Assistant Professor, PennState University

14. Po, Hoi-Chun (Pappalardo Fellow), 2018-2021

Current position: Assistant Professor, Hong Kong University of Science and Technology

15. Else, Dominic (Moore Fellow), 2018-2021

16. Shapouriyan, Hassan (joint with M. Metlitski and A. Vishwanath), 2019-2020

Current position: Postdoc, Microsoft Station Q, Santa Barbara

17. Goldman, Hart (Moore Fellow), 2020-2023

18. Devkul, Trithep (joint with Liang Fu)

## Senthil Todadri: Publication list

1. Bose-Luttinger Liquids, Ethan Lake, T. Senthil, Ashvin Vishwanath, <https://arxiv.org/abs/2101.02197>.
2. Quasiperiodicity, band topology, and moiré graphene, Dan Mao, T. Senthil, under review in Phys Rev B, <https://arxiv.org/abs/2011.06034>
3. Strange metals as ersatz Fermi liquids, Dominic V. Else, T. Senthil, under review in PRL, <https://arxiv.org/abs/2010.10523>
4. Non-Fermi liquids as ersatz Fermi liquids: general constraints on compressible metals, Dominic V. Else, Ryan Thorngren, T. Senthil, accepted to Phys Rev X, <https://arxiv.org/abs/2007.07896>
5. Entanglement Clustering for ground-stateable quantum many-body states, Michael Matty, Yi Zhang, T. Senthil, Eun-Ah Kim, under review in Phys Rev Research, <https://arxiv.org/abs/2004.06141>
6. Non-commutative field theory and composite Fermi Liquids in some quantum Hall systems, Zhihuan Dong, T. Senthil, Phys. Rev. B 102, 205126 (2020).
7. Quantum Hall spin liquids and their possible realization in moiré systems, Ya-Hui Zhang, T. Senthil, Phys. Rev. B 102, 115127 (2020)
8. Chern bands of twisted bilayer graphene: fractional Chern insulators and spin phase transition, Cécile Repellin, T. Senthil, Phys. Rev. Research 2, 023238 (2020).
9. Possible quantum paramagnetism in compressed Sr<sub>2</sub>IrO<sub>4</sub>, D. Haskel, G. Fabbris, J. H. Kim, L. S. I. Veiga, J. R. L. Mardegan, C. A. Escanhoela Jr., S. Chikara, V. Struzhkin, T. Senthil, B. J. Kim, G. Cao, J. W. Kim, Phys. Rev. Lett. 124, 067201 (2020).
10. Landau ordering phase transitions beyond the Landau paradigm, Zhen Bi, Ethan Lake, T. Senthil, Phys. Rev. Research 2, 023031 (2020).
11. Ferromagnetism in narrow bands of moiré superlattices, Cécile Repellin, Zhihuan Dong, Ya-Hui Zhang, T. Senthil, Phys. Rev. Lett. 124, 187601 (2020).
12. Modeling the pseudogap metallic state in cuprates: quantum disordered pair density wave, Zhehao Dai, T. Senthil, Patrick A. Lee, Phys. Rev. B 101, 064502 (2020).
13. Quantum Spin Liquids, C. Broholm, R. J. Cava, S. A. Kivelson, D. G. Nocera, M. R. Norman, T. Senthil, Science 17 Jan 2020: Vol. 367, Issue 6475
14. Tunable Correlated Chern Insulator and Ferromagnetism in Trilayer Graphene/Boron Nitride Moiré Superlattice, Guorui Chen, Aaron L. Sharpe, Eli J. Fox, Ya-Hui Zhang, Shaoxin Wang, Lili Jiang, Bosai Lyu, Hongyuan Li, Kenji Watanabe, Takashi Taniguchi, Zhiwen Shi, T. Senthil, David Goldhaber-Gordon, Yuanbo Zhang, Feng Wang, Nature, volume 579, pages56–61(2020).
15. Landau Level Degeneracy in Twisted Bilayer Graphene: Role of Symmetry Breaking, Ya-Hui Zhang, Hoi Chun Po, T. Senthil, Phys. Rev. B 100, 125104 (2019).
16. Slow scrambling and hidden integrability in a random rotor model, Dan Mao, Debanjan Chowdhury, T. Senthil, Phys. Rev. B 102, 094306 (2020).

## Senthil Todadri: Publication list

17. Twisted Bilayer Graphene Aligned with Hexagonal Boron Nitride: Anomalous Hall Effect and a Lattice Model, Ya-Hui Zhang, Dan Mao, T. Senthil, *Phys. Rev. Research* 1, 033126 (2019).
18. Strange metal in magic-angle graphene with near Planckian dissipation, Yuan Cao, Debanjan Chowdhury, Daniel Rodan-Legrain, Oriol Rubies-Bigordà, Kenji Watanabe, Takashi Taniguchi, T. Senthil, Pablo Jarillo-Herrero, *Phys. Rev. Lett.* 124, 076801 (2020).
19. Duality between (2+1)d Quantum Critical Points, T. Senthil, Dam Thanh Son, Chong Wang, Cenke Xu, *Physics Reports*, Vol. 827 Pages 1-48 (2019).
20. Bridging Hubbard Model Physics and Quantum Hall Physics in Trilayer Graphene/h-BN moiré superlattice, Ya-Hui Zhang, T. Senthil, *Phys. Rev. B* 99, 205150 (2019).
21. An Adventure in Topological Phase Transitions in 3 + 1-D: Non-abelian Deconfined Quantum Criticalities and a Possible Duality, Zhen Bi, T. Senthil, *Phys. Rev. X* 9, 021034 (2019).
22. Faithful Tight-binding Models and Fragile Topology of Magic-angle Bilayer Graphene, Hoi Chun Po, Liujun Zou, T. Senthil, Ashvin Vishwanath, *Phys. Rev. B* 99, 195455 (2019).
23. Nearly Flat Chern Bands in Moiré Superlattices, Ya-Hui Zhang, Dan Mao, Yuan Cao, Pablo Jarillo-Herrero, T. Senthil, *Phys. Rev. B* 99, 075127 (2019).
24. Spin Transport in a Mott Insulator of Ultracold Fermions, Matthew A. Nichols, Lawrence W. Cheuk, Melih Okan, Thomas R. Hartke, Enrique Mendez, T. Senthil, Ehsan Khatami, Hao Zhang, Martin W. Zwierlein, *Science* 363, 383 (2019).
25. Band Structure of Twisted Bilayer Graphene: Emergent Symmetries, Commensurate Approximants and Wannier Obstructions, Liujun Zou, Hoi Chun Po, Ashvin Vishwanath, T. Senthil, *Phys. Rev. B* 98, 085435 (2018).
26. Origin of Mott insulating behavior and superconductivity in twisted bilayer graphene, Hoi Chun Po, Liujun Zou, Ashvin Vishwanath, T. Senthil, *Phys. Rev. X* 8, 031089 (2018).
27. Pair density wave, charge density wave and vortex in high  $T_c$  cuprates, Zhehao Dai, Ya-Hui Zhang, T. Senthil, Patrick Lee, *Phys. Rev. B* 97, 174511 (2018).
28. Translationally invariant non-Fermi liquid metals with critical Fermi-surfaces: Solvable models, Debanjan Chowdhury, Yochai Werman, Erez Berg, T. Senthil, *Phys. Rev. X* 8, 031024 (2018).
29. Valence Bonds in Random Quantum Magnets: Theory and Application to  $\text{YbMgGaO}_4$ , Itamar Kimchi, Adam Nahum, T. Senthil, *Phys. Rev. X* 8, 031028 (2018).
30. Symmetry enriched  $U(1)$  quantum spin liquids, Liujun Zou, Chong Wang, T. Senthil, *Phys. Rev. B* 97, 159126 (2018).
31. Quantum oscillations in insulators with neutral Fermi surfaces, Inti Sodemann, Debanjan Chowdhury, T. Senthil, *Phys. Rev. B* 97, 045152 (2018).

## Senthil Todadri: Publication list

32. Mixed-valence insulators with neutral Fermi surfaces, Debanjan Chowdhury, Inti Sodemann, T. Senthil, Nature Communications 9, 1766 (2018).
33. Deconfined Quantum Critical Points: Symmetries and Dualities, Chong Wang, Adam Nahum, Max A. Metlitski, Cenke Xu, and T. Senthil, Phys. Rev. X 7, 031051 (2017).
34. Emergent particle-hole symmetry in spinful bosonic quantum Hall systems, S. D. Geraedts, C. Repellin, Chong Wang, Roger S. K. Mong, T. Senthil, and N. Regnault, Phys. Rev. B 96, 075148 (2017).
35. Theory of anomalous magnetotransport from mass anisotropy, Liujun Zou, Samuel Lederer, and T. Senthil, Phys. Rev. B 95, 245135 (2017).
36. Composite fermion duality for half-filled multicomponent Landau levels, Inti Sodemann, Itamar Kimchi, Chong Wang, and T. Senthil, Phys. Rev. B 95, 085135 (2017).
37. A Duality Web in 3 Dimensions and Condensed Matter Physics, N. Seiberg, T. Senthil, C. Wang, and E. Witten, Ann. Phys. (Amsterdam) 374, 395 (2016).
38. Composite Fermi liquids in the lowest Landau level, Chong Wang and T. Senthil, Phys. Rev. B 94, 245107 (2016).
39. Entanglement entropy of U(1) quantum spin liquids, Michael Pretko and T. Senthil, Phys. Rev. B 94, 125112 (2016).
40. Dimensional decoupling at continuous quantum critical Mott transitions, Liujun Zou and T. Senthil, Phys. Rev. B 94, 115113 (2016).
41. Half-filled Landau level, topological insulator surfaces, and three-dimensional quantum spin liquids, Chong Wang and T. Senthil, Phys. Rev. B 93, 085110 (2016).
42. Dual Dirac Liquid on the Surface of the Electron Topological Insulator, Chong Wang and T. Senthil, Phys. Rev. X 5, 041031 (2015).
43. Time-Reversal Symmetric U(1) Quantum Spin Liquids, Chong Wang and T. Senthil, Phys. Rev. X 6, 011034 (2016).
44. Phase transition beneath the superconducting dome in  $\text{BaFe}_2(\text{As}_{1-x}\text{P}_x)_2$ , Debanjan Chowdhury, J. Orenstein, Subir Sachdev, and T. Senthil, Phys. Rev. B 92, 081113(R) (2015).
45. Spin- and Pair-Density-Wave Glasses, David F. Mross and T. Senthil, Phys. Rev. X 5, 031008 (2015).
46. Topological Paramagnetism in Frustrated Spin-One Mott Insulators, Chong Wang, Adam Nahum, T. Senthil, Phys. Rev. B 91, 195131 (2015).
47. Fractionalized gapless quantum vortex liquids, Chong Wang and T. Senthil, Phys. Rev. B 91, 195109 (2015).
48. Cooper pairing in non-Fermi liquids, Max A. Metlitski, David F. Mross, Subir Sachdev, and T. Senthil, Phys. Rev. B 91, 115111 (2015).
49. Symmetry Protected Topological phases of Quantum Matter, T. Senthil, Annual Review of Condensed Matter Physics 6, 299 (2015).



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50. Interacting fermionic topological insulators/superconductors in three dimensions, Chong Wang and T. Senthil, *Phys. Rev. B* 89, 195124 (2014).
51. Classification of interacting electronic topological insulators in three dimensions, Chong Wang, Andrew C. Potter, T. Senthil, *Science* 343, 6171 (2014).
52. Gapped Symmetry Preserving Surface-State for the Electron Topological Insulator, Chong Wang, Andrew C. Potter, T. Senthil, *Phys. Rev. B* 88, 115137 (2013).
53. Microscopic model for the boson integer quantum Hall effect, N. Regnault, T. Senthil, *Phys. Rev. B* 88, 161106 (2013).
54. Boson topological insulators: A window into highly entangled quantum phases, Chong Wang, T. Senthil, *Phys. Rev. B* 87, 235122 (2013).
55. Wave Functions of Bosonic Symmetry Protected Topological Phases, Cenke Xu and T. Senthil, *Phys. Rev. B* 87, 174412 (2013).
56. Mechanisms for Sub-Gap Optical Conductivity in Herbertsmithite, Andrew C. Potter, T. Senthil, Patrick A. Lee, *Phys. Rev. B* 87, 245106 (2013).
57. Chiral RKKY interaction in Pr<sub>2</sub>Ir<sub>2</sub>O<sub>7</sub>, Rebecca Flint, T. Senthil, *Phys. Rev. B* 87, 125147 (2013).
58. Overscreened Kondo fixed point in S=1 spin liquid, Maksym Serbyn, T. Senthil, Patrick A. Lee, *Phys. Rev. B* 88, 024419 (2013).
59. Physics of three dimensional bosonic topological insulators: Surface Deconfined Criticality and Quantized Magnetoelectric Effect, Ashvin Vishwanath, T. Senthil, *Phys. Rev. X* 3, 011016 (2013).
60. Universal crossovers between entanglement entropy and thermal entropy, B. Swingle, T. Senthil, *Phys. Rev. B* 87, 045123 (2013).
61. Integer quantum Hall effect for bosons, T. Senthil, Michael Levin, *Phys. Rev. Lett.* 110, 046801 (2013).
62. Paired chiral spin liquid with a Fermi surface in S=1 model on the triangular lattice, Samuel Bieri, Maksym Serbyn, T. Senthil, Patrick A. Lee, *Phys. Rev. B* 86, 224409 (2012).
63. Universal transport near a quantum critical Mott transition in two dimensions, William Witczak-Krempa, Pouyan Ghaemi, T. Senthil, Yong Baek Kim, *Phys. Rev. B* 86, 245102 (2012).
64. Entanglement Structure of Deconfined Quantum Critical Points, B. Swingle, T. Senthil, *Phys. Rev. B* 86, 155131 (2012).
65. Stripe melting and quantum criticality in correlated metals, David F. Mross and T. Senthil, *Phys. Rev. B* 86, 115138 (2012).
66. Quantum Spin Liquids and the Metal-Insulator Transition in Doped Semiconductors, Andrew C. Potter, Maissam Barkeshli, John McGreevy, and T. Senthil, *Phys. Rev. Lett.* 109, 077205 (2012).

## Senthil Todadri: Publication list

67. Orthogonal metals: The simplest non-Fermi liquids, Rahul Nandkishore, Max A. Metlitski, and T. Senthil Phys. Rev. B 86, 045128 (2012).
68. Loop current order and d-wave superconductivity: Some observable consequences, Andrea Allais and T. Senthil, Phys. Rev. B 86, 045118 (2012).
69. Geometric proof of the equality between entanglement and edge spectra, Brian Swingle and T. Senthil, Phys. Rev. B 86, 045117 (2012).
70. Theory of a Continuous Stripe Melting Transition in a Two-Dimensional Metal: A Possible Application to Cuprate Superconductors, David F. Mross and T. Senthil, Phys. Rev. Lett. 108, 267001 (2012).
71. Exotic  $S=1$  spin-liquid state with fermionic excitations on the triangular lattice Maksym Serbyn, T. Senthil, and Patrick A. Lee, Phys. Rev. B 84, 180403 (2011).
72. Decohering the Fermi liquid: A dual approach to the Mott transition, David F. Mross and T. Senthil, Phys. Rev. B 84, 165126 (2011).
73. Non-Abelian Spin Liquid in a Spin-One Quantum Magnet, Tarun Grover and T. Senthil, Phys. Rev. Lett. 107, 077203 (2011).
74. Charge Friedel oscillations in a Mott insulator, David F. Mross and T. Senthil, Phys. Rev. B 84, 041102 (2011).
75. Correlated topological insulators and the fractional magnetoelectric effect, B. Swingle, M. Barkeshli, J. McGreevy, and T. Senthil, Phys. Rev. B 83, 195139 (2011).
76. Twisted Hubbard Model for  $\text{Sr}_2\text{IrO}_4$ : Magnetism and Possible High Temperature Superconductivity, Fa Wang and T. Senthil, Phys. Rev. Lett. 106, 136402 (2011).
77. Unifying Kondo coherence and antiferromagnetic ordering in the honeycomb lattice Saeed Saremi, Patrick A. Lee, and T. Senthil, Phys. Rev. B 83, 125120 (2011).
78. Controlled expansion for certain non-Fermi liquid metals, David F. Mross, John McGreevy, Hong Liu, and T. Senthil, Phys. Rev. B 82, 045121 (2010).
79. Weak Mott insulators on the triangular lattice: Possibility of a gapless nematic quantum spin liquid, Tarun Grover, N. Trivedi, T. Senthil, and Patrick A. Lee, Phys. Rev. B 81, 245121 (2010).
80. Quantum phase transition from an antiferromagnet to a spin liquid in a metal, Tarun Grover and T. Senthil, Phys. Rev. B 81, 205102 (2010).
81. Coherence and pairing in a doped Mott insulator: Application to the cuprates, T. Senthil and Patrick A. Lee, Phys. Rev. Lett., 103, 076402 (2009).
82. Synthesis of the phenomenology of the underdoped cuprates, T. Senthil and Patrick A. Lee, Phys. Rev. B 79, 245116 (2009).
83. Mott Transition between a Spin-Liquid Insulator and a Metal in Three Dimensions, Daniel Podolsky, Arun Paramekanti, Yong Baek Kim, and T. Senthil, Phys. Rev. Lett. 102, 186401 (2009).

## Senthil Todadri: Publication list

84. Fermi Surfaces in General Codimension and a New Controlled Nontrivial Fixed Point, T. Senthil and R. Shankar, Phys. Rev. Lett. 102, 046406 (2009).
85. Lattice models for non-Fermi-liquid metals, Michael Levin and T. Senthil, Phys. Rev. B 78, 245111 (2008).
86. Monopoles in CPN-1 model via the state-operator correspondence, Max A. Metlitski, Michael Hermele, T. Senthil, and Matthew P. A. Fisher, Phys. Rev. B 78, 214418 (2008).
87. Theory of a continuous Mott transition in two dimensions T. Senthil, Phys. Rev. B 78, 045109 (2008).
88. Critical Fermi surfaces and non-fermi liquid metals, T. Senthil, Phys. Rev. B 78, 035103 (2008).
89. Topological spin Hall states, charged skyrmions and superconductivity in two dimensions, Tarun Grover, T. Senthil, Phys. Rev. Lett. 100, 156804 (2008).
90. Angle dependent quasiparticle weights in correlated metals, Pouyan Ghaemi, T. Senthil, P. Coleman, Phys. Rev. B 77, 245108 (2008)
91. Algebraic charge liquids, Ribhu K. Kaul, Yong Baek Kim, Subir Sachdev, and T. Senthil, Nature Physics 4, 28 (2008)
92. Unconventional Transition from Superfluid to Mott Insulator Phase of Hard-Core Bosons on the Checkerboard Lattice, Arnab Sen, Kedar Damle, T. Senthil, Phys. Rev. B 76, 235107 (2007)
93. Hole dynamics in an antiferromagnet across a deconfined quantum critical point, Ribhu K. Kaul, Alexei Kolezhuk, Michael Levin, Subir Sachdev, T. Senthil, Phys. Rev. B 75, 235122 (2007)
94. Quantum spin nematics, dimerization, and deconfined criticality in quasi-one dimensional spin-1 magnets, Tarun Grover, T. Senthil, Phys. Rev. Lett. 98, 247202 (2007)
95. Higher angular momentum Kondo liquids, Pouyan Ghaemi, T. Senthil, Phys. Rev. B 75, 144412 (2007)
96. Amperean Pairing Instability in the U(1) Spin Liquid State with Fermi Surface and Application to  $\kappa$ -BEDT-TTF<sub>2</sub>Cu<sub>2</sub>(CN)<sub>3</sub>, Sung-Sik Lee, Patrick A. Lee, T. Senthil, Phys. Rev. Lett. 98, 067006 (2007)
97. Possible ferro-spin nematic order in NiGa<sub>2</sub>S<sub>4</sub>, Subhro Bhattacharjee, Vijay B. Shenoy, T. Senthil, Phys. Rev. B 74, 092406 (2006).
98. Emergence of Artificial Photons in an Optical Lattice, Sumanta Tewari, V. W. Scarola, T. Senthil, S. Das Sarma, Phys. Rev. Lett. 97, 200401 (2006) .
99. On non-Fermi liquid quantum critical points in heavy fermion metals, T. Senthil, Annals of Physics, 321 (7): 1669-1681 JUL 2006.

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100. Spin nematics and magnetization plateau transition in anisotropic Kagome magnets, Kedar Damle, T. Senthil, Phys. Rev. Lett. 97, 067202 (2006)
101. Competing orders, non-linear sigma models, and topological terms in quantum magnets, T. Senthil, Matthew P.A. Fisher, Phys. Rev. B 74, 064405 (2006)
102. Vortex description of the fractionalized phase in exciton bose condensate, Sung-Sik Lee, T. Senthil, Patrick A. Lee, Phys. Rev. B 74, 115101 (2006)
103. Neel order, quantum spin liquids and quantum criticality in two dimensions, Pouyan Ghaemi and T. Senthil, Phys. Rev. B 73, 054415 (2006).
104. Ordering near the percolation threshold in models of 2D interacting bosons with quenched dilution, N. Bray-Ali, J.E. Moore, T. Senthil, A. Vishwanath, Phys. Rev. B 73, 064417 (2006)
105. Fractionalization, topological order, and quasiparticle statistics, Masaki Oshikawa and T. Senthil, Phys. Rev. Lett. 96, 060601 (2006).
106. Vortices and Quasiparticles near the Superconductor-Insulator Transition in Thin Films, V. M. Galitski, G. Refael, M. P. A. Fisher, and T. Senthil, Phys. Rev. Lett. 95, 077002 (2005).
107. Ordering in Cs<sub>2</sub>CuCl<sub>4</sub>: Possibility of a proximate spin liquid S. V. Isakov, T. Senthil, and Y. B. Kim, Phys. Rev. B 72, 174417 (2005).
108. Algebraic spin liquid as the mother of many competing orders, Michael Hermele, T. Senthil, Matthew P. A. Fisher, Phys. Rev. B 72, 104404 (2005)
109. Finite temperature properties of quantum Lifshitz transitions between valence bond solid phases: An example of 'local' quantum criticality, Pouyan Ghaemi, Ashvin Vishwanath, T. Senthil, Phys. Rev. B 72, 024420 (2005)
110. Origin of artificial electrodynamics in three-dimensional bosonic models, O. I. Motrunich and T. Senthil Phys. Rev. B 71, 125102 (2005)
111. Spontaneous interlayer coherence in bilayer Kondo systems, T. Senthil and M. Vojta Phys. Rev. B 71, 121102 (2005)
112. Quantum matters: Physics beyond Landau's paradigms, T. Senthil, International Journal of Modern Physics B 20 (19): 2603-2611 JUL 30 2006
113. Quantum phase transitions out of the heavy Fermi liquid, T. Senthil, Subir Sachdev, Matthias Vojta, Physica B 359-361, 9 (2005),
114. Theory of the kagome lattice Ising antiferromagnet in weak transverse fields P. Nikolic and T. Senthil, Phys. Rev. B 71, 024401 (2005).
115. Cuprates as doped U(1) spin liquids, T. Senthil and Patrick A. Lee, Phys. Rev. B 71, 174515 (2005)
116. Deconfined quantum criticality and Neel order via dimer disorder, M. Levin and T. Senthil, Phys. Rev. B 70, 220403 (2004).

## Senthil Todadri: Publication list

117. Stability of U (1) spin liquids in two dimensions, M. Hermele, T. Senthil, M. P. A. Fisher, P. A. Lee, N. Nagaosa, and X.-G. Wen, Phys. Rev. B 70, 214437 (2004).
118. Quantum criticality beyond the Landau-Ginzburg-Wilson paradigm, T. Senthil, L. Balents, S. Sachdev, A. Vishwanath, and M. P. A. Fisher, Phys. Rev. B 70, 144407 (2004).
119. Quantum criticality and deconfinement in phase transitions between valence bond solids, A. Vishwanath, L. Balents, and T. Senthil, Phys. Rev. B 69, 224416 (2004).
120. Screening and dissipation at the superconductor-insulator transition induced by a metallic ground plane, A. Vishwanath, J.E. Moore, and T. Senthil Phys. Rev. B 69, 054507 (2004).
121. Deconfined quantum critical points, T. Senthil, A. Vishwanath, L. Balents, S. Sachdev, and Matthew P.A. Fisher, Science 303, 1490 (2004).
122. Weak magnetism and non-Fermi liquids near heavy-fermion critical points, T. Senthil, M. Vojta, and S. Sachdev Phys. Rev. B 69, 035111 (2004)
123. Physics of low-energy singlet states of the Kagome lattice quantum Heisenberg antiferromagnet, P. Nikolic and T. Senthil, Phys. Rev. B 68, 214415 (2003).
124. Fractionalized fermi liquids, T. Senthil, S. Sachdev, and M. Vojta, Phys. Rev. Lett. 90, 216403 (2003)
125. Exotic order in simple models of bosonic systems, O. Motrunich and T. Senthil, Phys. Rev. Lett. 89, 277004 (2002).
126. Projected wavefunctions for fractionalized phases of quantum spin systems, D. Ivanov and T. Senthil, Phys. Rev. B 66, 115111 (2002).
127. Microscopic models for fractionalized phases of strongly correlated systems, T. Senthil and O. Motrunich, Phys. Rev. B 66, 205104 (2002).
128. Fractionalization patterns in strongly correlated systems: Spin-charge separation and beyond, E. Demler, C. Nayak, H.Y. Kee, Y.B. Kim, and T. Senthil, Phys. Rev. B 65, 155103 (2002).
129. The electron spectral function in two dimensional fractionalized phases, C. Lannert, Matthew P.A. Fisher, and T. Senthil, Phys. Rev. B 64, 014518 (2001).
130. Detecting fractions of the electron in the high-Tc materials, T. Senthil and Matthew P.A. Fisher, Phys. Rev. B 64, 214511 (2001).
131. Fractionalization, topological order, and cuprate superconductivity, T. Senthil and Matthew P.A. Fisher, Phys. Rev. B 63, 134521 (2001).
132. Quantum confinement transition in a d-wave superconductor, C. Lannert, Matthew P.A. Fisher, and T. Senthil, Phys. Rev. B 63, 134510 (2001).

## Senthil Todadri: Publication list

133. Fractionalization and confinement in the  $U(1)$  and  $Z_2$  gauge theories of strongly correlated systems, T. Senthil and Matthew P.A. Fisher, *J. Phys.* A34, No. 10, L119 (2001).
134. Fractionalization in the cuprates: Detecting the topological order, T. Senthil and Matthew P.A. Fisher, *Phys. Rev. Lett.* 86, 292 (2001).
135. Luttinger Liquid Physics in the superconductor vortex core, Ashvin Vishwanath and T. Senthil, *Phys. Rev.* B63, 14506 (2001).
136.  $Z_2$  gauge theory of electron fractionalization in strongly correlated systems, T. Senthil and Matthew P.A. Fisher, *Phys. Rev.* B62, 7850 (2000).
137. Quasiparticle localization in superconductors with spin-orbit scattering, T. Senthil and Matthew P.A. Fisher, *Phys. Rev.* B61, 9690 (2000).
138. Superconducting "metals" and "insulators", S. Vishveshwara, T. Senthil, and Matthew P.A. Fisher, *Phys. Rev.* B61, 6966 (2000).
139. The spin quantum Hall effect in unconventional superconductors, T. Senthil, J.B. Marston, and Matthew P.A. Fisher, *Phys. Rev.* B60, 4245 (1999).
140. Quasiparticle density of states in dirty high- $T_c$  superconductors, T. Senthil and Matthew P.A. Fisher, *Phys. Rev.* B60, 6893 (1999).
141. Quasiparticle transport and localization in high- $T_c$  superconductors, T. Senthil, Matthew P.A. Fisher, Leon Balents, Chetan Nayak, *Phys. Rev. Lett.*, 81, 4704 (1998)
142. Properties of the random field Ising model in a transverse magnetic field, T. Senthil, *Phys. Rev.* B57, 8375 (1998)
143. Higher dimensional realizations of activated dynamic scaling at random quantum transitions, T. Senthil and Subir Sachdev, *Phys. Rev. Lett.*, 77, 5292 (1996)
144. Zero temperature phase transitions in quantum Heisenberg ferromagnets, Subir Sachdev and T. Senthil, *Annals of Physics*, 251, 76 (1996)
145. Phase transition of a Bose gas in a harmonic potential, K. Damle, T. Senthil, S.N. Majumdar, and S. Sachdev, *Europhysics Letters*, 36 (1), 7 (1996)
146. Critical properties of random quantum Potts and Clock models, T. Senthil and S.N. Majumdar, *Phys. Rev. Lett.* 76, 3001 (1996)
147. Finite temperature properties of quantum antiferromagnets in an external magnetic field, S. Sachdev, T. Senthil, and R. Shankar, *Phys. Rev.* B50, 258 (1994)
148. Quantum phase transitions in frustrated quantum antiferromagnets, Andrey V. Chubukov, Subir Sachdev, and T. Senthil, *Nucl. Phys. B* 426 FS, 601 (1994)
149. Universal magnetic properties of frustrated quantum antiferromagnets in two dimensions, Andrey V. Chubukov, T. Senthil, and Subir Sachdev, *Phys. Rev. Lett.*, 72, 2089 (1994).

