Ashvin Vishwanath
Professor, Department of Physics, Harvard University,
17 Oxford Street, Cambridge MA 02138.
Email: avishwanath@g.harvard.edu

Research Area: Condensed Matter Theory: Research interests - magnetism, superconductivity and topology in quantum materials. Classifying and characterizing novel phases and phase transitions. Theory of topological phases and their realization in solids and synthetic matter.

Education/Training:

Indian Institute of Technology, Kanpur	MSc.	1996	Physics
Princeton University [Thesis Advisor: F. D. M. Haldane]	Ph.D.	2001	Physics

Research and Professional Experience:

2016 – present Professor, Department of Physics, Harvard University.
2012 – 2016 Professor, Physics, UC Berkeley.
2008 – 2012 Associate Professor, Physics, UC Berkeley.
2004 – 2008 Assistant Professor, Physics, UC Berkeley.
2001 - 2004 Pappalardo Postdoctoral Fellow. MIT, USA.

Honors and Awards:

- Elected member of the American Academy of Arts and Sciences. 2021
- ICTS-Infosys Chandrasekhar Lecturer 2020
- Distinguished Alumnus Award, IIT Kanpur 2018
- Europhysics Prize 2016
  - Citation: *"for the theoretical prediction of a magnetic skyrmion phase in MnSi, a new state of matter."*
- Clarivate Analytics Highly Cited Researcher 2017-2022
- Simons Investigator Award 2015-2025
- Guggenheim Fellowship 2014
- APS Fellow 2013
- A. P. Sloan Fellowship, 2004

Significant Professional Activities:

1. **Director**: Simons Collaboration on Ultra Quantum Matter 2019-.

2. **Member,** Advisory Board, KITP Santa Barbara 2021-

3. **Conferences Organized:**
   a. Boulder School for Condensed Matter Physics 2008*, 'Strongly Correlated Systems',*
   b. KITP Workshop on *"Quantum Spin Liquids and Frustrated Magnetism",* Fall 2012.
   c. KITP Workshop on *"Topological Quantum Matter", Fall 2016.*
   d. Winter Conference at Aspen (2018) *"Dualities"*.
   e. Simons Conferences on *Ultra Quantum Matter* (Feb 2018, August 2018).

Mentoring:

Graduate students (current):

Ruihua Fan, Patrick Ledwith, Saranesh Prembabu, Rahul Sahai, Junkai Dong.

Postdocs (current - including joint):

Ruben Verresen, Dan Parker, Xueda Wen, Junyeong Ahn, Brendon Roberts, Zhu-Xi Luo, Pavel Volkov, Jie Wang.

Former Graduate Students:

Fa Wang (Pappalardo Fellow, MIT. => Associate Professor, Peking U.)
Thesis: Geometrical frustration in quantum and classical antiferromagnets.

Frank Yi Zhang (Stanford=> Bethe Fellow, Cornell=> Assistant Professor, PKU)
Thesis: Theory of Topological Phenomena in Condensed Matter Systems

Pavan Hosur (Stanford=> Assistant Professor U. of Houston)
Thesis: Consequences of non-trivial band topology in condensed matter systems

Haruki Watanabe (Pappalardo Fellow, MIT => Assistant Prof. U. of Tokyo)
Thesis: Spontaneous Symmetry Breaking in Nonrelativistic Systems

Itamar Kimchi (Pappalardo Fellow, MIT => Boulder=> Assistant Professor, GeorgiaTech)
Thesis: Spin-Orbit Coupled Quantum Magnetism in the 3D-Honeycomb Iridates

Philipp Dumitrescu (UTAustin=>Postdoc Flatiron Institute)
Thesis: Strongly Correlated Electron Systems Near Criticality: From Nodal Semimetals to High-Temperature Superconductors

Yasaman Bahri (Google Brain)
Thesis: Quantum Phenomena in Interacting Many-Body Systems: Topological Protection, Localization, and Non-Fermi Liquids

Hoi Chun Adrian Po (Pappalardo Fellow: MIT)
Thesis: Keeping it Real: An Alternative Picture for Symmetry and Topology in Condensed Matter Systems

Charles Zhaoxi Xiong (Voleon Group)
Thesis: Classification and Construction of Topological Phases of Quantum Matter

Jong Yeon Lee (Postdoc: KITP Santa Barbara)
Thesis: Fractionalization, Emergent Gauge Dynamics and Topology in Quantum Matter

Xue Yan Song (Moore Fellowship Postdoc: MIT)
Thesis: Emergent and topological phenomena in many-body systems: Quantum spin liquids and beyond

Shang Liu (Postdoc: KITP Santa Barbara)
Thesis: Symmetry, Topology and Entanglement in Quantum Many-Body Systems

Nathanan Tantivasadakarn (Sherman Fairchild Postdoctoral Scholar, Caltech)
Thesis: Exploring exact dualities in lattice models of topological phases of matter

Dan Borgnia (Postdoc: UC Berkeley)
Thesis: The Measure of a Phase

Former Postdocs (including joint):

Daniel Podolski (Associate Professor, Technion, Haifa)
Arun Paramekanti (Associate Professor, U. Toronto)
Benedikt Binz (Senior Specialist at FINMA)
Ying Ran (Associate Professor, Boston College)
Shinsei Ryu (Professor, Princeton University)

Pouyan Ghaemi (Assistant Professor, CUNY)
Ari Turner (Assistant Professor, Technion)
Tarun Grover (Assistant Professor, UC San Diego)
Lukasz Fidkowski (Associate Professor, University of Washington)
Sid Parameswaran (Assistant Professor, Oxford)

Xie Chen (Associate Professor, Caltech)
Yuan Ming Lu (Associate Professor, Ohio State)
Andrew Potter (Assistant Professor, UT Austin)
Maksym Serbyn (Assistant Professor IST, Austria)
Snir Gazit (Assistant Professor, Jerusalem)

Norman Yao (Assistant Professor, UC Berkeley)
Yi Zhuang You (Assistant Professor, UC San Diego)
Yinchen He (Assistant Professor, Perimeter)
Chong Wang (Assistant Professor, Perimeter)
Vedika Khemani (Assistant Professor, Stanford University)

Sagar Vijay (Assistant Professor, UC Santa Barbara)
Zheng Zhu (Assistant Professor, KITS Beijing)
Hassan Shapourian (Postdoctoral Researcher, Microsoft Station Q)
Yingfei Gu (IFQ Postdoctoral Scholar, Caltech)
Robert Jan Slager (Group Leader, University of Cambridge)

Grisha Tarnopolski (Assistant Professor, CMU)
Eslam Khalaf (Assistant Professor, UT Austin)
Yahui Zhang (Assistant Professor, Johns Hopkins University)

Publications:

219. Ahn, J., Xu, S.-Y., & Vishwanath, A. *Theory of optical axion electrodynamics and application to the Kerr effect in topological antiferromagnets.* Nature Communications, 13(1) (2022).

218. Verresen, R., & Vishwanath, A. *Unifying Kitaev magnets, kagomé dimer models, and ruby Rydberg spin liquids.* Phys. Rev. X, 12, (2022).

217. Balasubramanian, S., Galitski, V., & Vishwanath, A. *Classical vertex model dualities in a family of two-dimensional frustrated quantum antiferromagnets.* Phys. Rev. B, 106, 195127 (2022).

216. Borgnia, D. S., Vishwanath, A., & Slager, R.-J. *Rational approximations of quasiperiodicity via projected Green's functions.* Phys. Rev. B, 106, 054204, (2022).

215. Tantivasadakarn, N., & Vishwanath, A. *Symmetric finite-time preparation of cluster states via quantum pumps.* Phys. Rev. Lett., 129, 090501, (2022).

214. Gül, Ö., Ronen, Y., Lee, S. Y., Shapourian, H., Zauberman, J., Lee, Y. H., . . . Kim, P. *Andreev reflection in the fractional quantum Hall state.* Phys. Rev. X, 12, 021057 (2022).

213. Khalaf, E., Ledwith, P., & Vishwanath, A. *Symmetry constraints on superconductivity in twisted bilayer graphene: Fractional vortices, 4e condensates, or nonunitary pairing.* Phys. Rev. B, 105, 224508 (2022).

212. Song, X.-Y., Zhang, Y.-H., & Vishwanath, A. *Doping a moiré Mott insulator: A $t-j$ model study of twisted cuprates.* Phys. Rev. B, 105, L201102 (2022).

211. Zhu, Z., Sheng, D. N., & Vishwanath, A. *Doped Mott insulators in the triangular-lattice Hubbard model.* Phys. Rev. B, 105, 205110 (2022).

210. Ledwith, P. J., Vishwanath, A., & Khalaf, E. , *Family of ideal Chern flatbands with arbitrary Chern number in chiral twisted graphene multilayers.* Phys. Rev. Lett., 128, 176404 (2022).

209. You, Y.-Z., & Vishwanath, A. *Kohn-Luttinger superconductivity and intervalley coherence in rhombohedral trilayer graphene.* Phys. Rev. B, 105, 134524 (2022).

208. Hofmann, J. S., Khalaf, E., Vishwanath, A., Berg, E., & Lee, J. Y. *Fermionic Monte-Carlo study of a realistic model of twisted bilayer graphene.* Phys. Rev. X, 12, 011061 (2022).

207. Ahn, J., Guo, G.-Y., Nagaosa, N., & Vishwanath, A. *Riemannian geometry of resonant optical responses.* Nature Physics, 18(3), 290–295 (2022).

206. Finney, J., Sharpe, A. L., Fox, E. J., Hsueh, C. L., Parker, D. E., Yankowitz, M., . . . Goldhaber-Gordon, D. *Unusual magnetotransport in twisted bilayer graphene*. Proceedings of the National Academy of Sciences, 119(16), e2118482119 (2022).

205. Khalaf, E., & Vishwanath, A. *Baby skyrmions in chern ferromagnets and topological mechanism for spin-polaron formation in twisted bilayer graphene.* Nature Communications, 13(1), 6245 (2022).

204. Polshyn, H., Zhang, Y., Kumar, M. A., Soejima, T., Ledwith, P., Watanabe, K., . . . Vishwanath, A, Zaletel, M. P., Young, A. F. *Topological charge density waves at half-integer filling of a moiré superlattice.* Nature Physics, 18(1), 42–47 (2022).

203. Wen, X., Gu, Y., Vishwanath, A., & Fan, R. *Periodically, Quasi-periodically, and Randomly Driven Conformal Field Theories (II): Furstenberg's Theorem and Exceptions to Heating Phases.* SciPost Phys., 13, 082 (2022).

202. Shapourian, H., Liu, S., Kudler-Flam, J., & Vishwanath, A. *Entanglement negativity spectrum of random mixed states: A diagrammatic approach.* PRX Quantum, 2(3), 030347 (2021).

201. Verresen, R., Lukin, M. D., & Vishwanath, A. *Prediction of toric code topological order from Rydberg blockade.* Physical Review X, 11(3), 031005 (2021).

200. Thorngren, R., Vishwanath, A., & Verresen, R. *Intrinsically gapless topological phases.* Physical Review B, 104(7), 075132 (2021).

199. Wang, L.-L., Po, H. C., Slager, R.-J., & Vishwanath, A. *Topological descendants of a multicritical Dirac semimetal with magnetism and strain.* Physical Review B, 104(16), 165107 (2021).

198. Liu, X., Chiu, C.-L., Lee, J. Y., Farahi, G., Watanabe, K., Taniguchi, T., . . . Yazdani, A. Spectroscopy of a tunable moiré system with a correlated and topological band. Nature communications, 12(1), 1–7. (2021).

197. Krishnan, A., Vishwanath, A., & Po, H. C. (2021). *Topological invariants of a filling-enforced quantum band insulator. Physical* Review B, 104(8), 085128.

196. Lake, E., Senthil, T., & Vishwanath, A. *Bose-Luttinger liquids*. Physical Review B, 104(1), 014517.(2021).)

195. Fan, R., Vijay, S., Vishwanath, A., & You, Y.-Z. *Self-organized error correction in random unitary circuits with measurement.* Physical Review B, 103(17), 174309 (2021).

194. Khalaf, E., Chatterjee, S., Bultinck, N., Zaletel, M. P., & Vishwanath, A. *Charged skyrmions and topological origin of superconductivity in magic-angle graphene.* Science Advances, 7(19) (2021).

193. Song, X.-Y., He, Y.-C., Vishwanath, A., & Wang, C. *Electric polarization as a non-quantized topological response and boundary Luttinger theorem*. Phys. Rev. Research, 3, 023011(2021).

192. Song, X.-Y., Vishwanath, A., & Zhang, Y.-H. *Doping the chiral spin liquid: Topological superconductor or chiral metal?* Phys. Rev. B, 103, (2021).

191. Wen, X., Fan, R., Vishwanath, A., & Gu, Y. *Periodically, quasi-periodically, and randomly driven conformal field theories*. Phys. Rev. Research, 3, 023044, (2021).

190. Hao, Z., Zimmerman, A., Ledwith, P., Khalaf, E., Najafabadi, D. H., Watanabe, K., . . . Vishwanath, A., Kim, P. *Electric field–tunable superconductivity in alternating-twist magic-angle trilayer graphene.* Science 371(6534) 1133–1138 (2021).

189. Liu, S., Khalaf, E., Lee, J. Y., & Vishwanath, A. *Nematic topological semimetal and insulator in magic-angle bilayer graphene at charge neutrality.* Physical Review Research 3(1), 013033 (2021).

188. Riberolles, S. X., Trevisan, T. V., Kuthanazhi, B., Heitmann, T., Ye, F., Johnston, D. C., . . . Kreyssig, A.et al. *Magnetic crystalline-symmetry-protected axion electrodynamics and field-tunable unpinned Dirac cones in EuIn2As2.* Nature Communications,12(1), 1–7 (2021).

187. Song, X.-Y., He, Y.-C., Vishwanath, A., & Wang, C. *Electric polarization as a nonquantized topological response and boundary Luttinger theorem.* Physical Review Research 3(2), 023011(2021).

186. Bultinck, N., Khalaf, E., Liu, S., Chatterjee, S., Vishwanath, A., & Zaletel, M. P. *Ground state and hidden symmetry of magic-angle graphene at even integer filling.* Physical Review X,10(3), 031034 (2020).

185. Fan, R., Gu, Y., Vishwanath, A., & Wen, X. *Emergent spatial structure and entanglement localization in Floquet conformal field theory.* Physical Review X,10(3), 031036 (2020).

184. Jo, N. H., Wang, L.-L., Slager, R.-J., Yan, J., Wu, Y., Lee, K., . . . Kaminski, A. *Intrinsic axion insulating behavior in antiferromagnetic MnBi6Te10.* Physical Review B,102(4), 045130 (2020).

183. Ledwith, P. J., Tarnopolsky, G., Khalaf, E., & Vishwanath, A. *Fractional Chern insulator states in twisted bilayer graphene: An analytical approach.* Physical Review Research, 2(2), 023237 (2020).

182. Liu, X., Hao, Z., Khalaf, E., Lee, J. Y., Ronen, Y., Yoo, H., . . . Vishwanath, A. et al. *Tunable spin-polarized correlated states in twisted double bilayer graphene*. Nature, 583(7815), 221–225 (2020).

181. Y.-H. Zhang & A. Vishwanath, *Type-II t-J model in superconducting nickelate* $Nd_{1-x}Sr_xNiO_2$, Physical Review Research, 2 pp. 023112 (2020).

180. D. Wang, F. Tang, H. C. Po, A. Vishwanath and X. G. Wan, XFe_4Ge_2 *(X = Y, Lu) and Mn3Pt: Filling-enforced magnetic topological metals*, Physical Review B, 101 (2020).

179. X. Y. Song, Y. C. He, A. Vishwanath and C. Wang, *From Spinon Band Topology to the Symmetry Quantum Numbers of Monopoles in Dirac Spin Liquids*, Physical Review X, 10 (2020).

178. Y. Z. You and A. Vishwanath, *Superconductivity from valley fluctuations and approximate SO(4) symmetry in a weak coupling theory of twisted bilayer graphene*, NPJ Quantum Materials, 4 (2019).

177. D. Wang, F. Tang, J. L. Ji, W. Q. Zhang, A. Vishwanath, H. C. Po and X. G. Wan, *Two-dimensional topological materials discovery by symmetry-indicator method*, Physical Review B, 100 (2019).

176. G. Tarnopolsky, A. J. Kruchkov and A. Vishwanath, *Origin of Magic Angles in Twisted Bilayer Graphene*, Physical Review Letters, 122 (2019).

175. F. Tang, H. C. Po, A. Vishwanath and X. G. Wan, *Comprehensive search for topological materials using symmetry indicators*, Nature, 566 (2019), pp. 486-+.

174. F. Tang, H. C. Po, A. Vishwanath and X. G. Wan, *Topological materials discovery by large-order symmetry indicators*, Science Advances, 5 (2019).

173. F. Tang, H. C. Po, A. Vishwanath and X. G. Wan, *Efficient topological materials discovery using symmetry indicators*, Nature Physics, 15 pp. 470-+ (2019),

172. X. Y. Song, C. Wang, A. Vishwanath and Y. C. He, *Unifying description of competing orders in two-dimensional quantum magnets*, Nature Communications, 10 (2019).

171. H. C. Po, L. J. Zou, T. Senthil and A. Vishwanath, *Faithful tight-binding models and fragile topology of magic-angle bilayer graphene*, Physical Review B, 99 (2019).

170. S. Liu, A. Vishwanath and E. Khalaf, *Shift Insulators: Rotation-Protected Two-Dimensional Topological Crystalline Insulators*, Physical Review X, 9 (2019).

169. J. Y. Lee, Y. Z. You, S. Sachdev and A. Vishwanath, *Signatures of a Deconfined Phase Transition on the Shastry-Sutherland Lattice: Applications to Quantum Critical SrCu2(BO3)(2<bold>) </bold>*, Physical Review X, 9 (2019).

168. J. Y. Lee, E. Khalaf, S. Liu, X. M. Liu, Z. Y. Hao, P. Kim and A. Vishwanath, *Theory of correlated insulating behaviour and spin-triplet superconductivity in twisted double bilayer graphene*, Nature Communications, 10 (2019).

167. J. Y. Lee, J. Ahn, H. Y. Zhou and A. Vishwanath, *Topological Correspondence between Hermitian and Non-Hermitian Systems: Anomalous Dynamics*, Physical Review Letters, 123 (2019).

166. E. Khalaf, A. J. Kruchkov, G. Tarnopolsky and A. Vishwanath, *Magic angle hierarchy in twisted graphene multilayers*, Physical Review B, 100 (2019).

165. P. Hosur, S. A. Parameswaran and A. Vishwanath, *Charge Transport in Weyl Semimetals (vol 108, 046602, 2012)*, Physical Review Letters, 123 (2019).

164. L. Fidkowski, H. C. Po, A. C. Potter and A. Vishwanath, *Interacting invariants for Floquet phases of fermions in two dimensions*, Physical Review B, 99 (2019).

163. J. H. Chu, J. Liu, H. Zhang, K. Noordhoek, S. C. Riggs, M. Shapiro, C. R. Serro, D. Yi, M. Mellisa, S. J. Suresha, C. Frontera, E. Arenholz, A. Vishwanath, X. Marti, I. R. Fisher and R. Ramesh, *Possible scale invariant linear magnetoresistance in pyrochlore iridates Bi2Ir2O7*, New Journal of Physics, 21 (2019).

162. L. J. Zou, H. C. Po, A. Vishwanath and T. Senthil, *Band structure of twisted bilayer graphene: Emergent symmetries, commensurate approximants, and Wannier obstructions*, Physical Review B, 98 (2018).

161. Y. Z. You, Y. C. He, C. K. Xu and A. Vishwanath, *Symmetric Fermion Mass Generation as Deconfined Quantum Criticality*, Physical Review X, 8 (2018).

160. Y. Z. You, Y. C. He, A. Vishwanath and C. K. Xu, *From bosonic topological transition to symmetric fermion mass generation*, Physical Review B, 97 (2018).

159. N. Y. Yao, M. P. Zaletel, D. M. Stamper-Kurn and A. Vishwanath, *A quantum dipolar spin liquid*, Nature Physics, 14 (2018), pp. 405-410.

158. X. Yang, S. H. Jiang, A. Vishwanath and Y. Ran, *Dyonic Lieb-Schultz-Mattis theorem and symmetry protected topological phases in decorated dimer models*, Physical Review B, 98 (2018).

157. H. Watanabe, H. C. Poe and A. Vishwanath, *Structure and topology of band structures in the 1651 magnetic space groups*, Science Advances, 4 (2018).

156. C. Wang, A. Vishwanath and B. I. Halperin, *Topological order from disorder and the quantized Hall thermal metal: Possible applications to the v=5/2 state*, Physical Review B, 98 (2018).

155. N. Tantivasadakarn and A. Vishwanath, *Full commuting projector Hamiltonians of interacting symmetry-protected topological phases of fermions*, Physical Review B, 98 (2018).

154. C. Potter, A. Vishwanath and L. Fidkowski, *Infinite family of three-dimensional Floquet topological paramagnets*, Physical Review B, 97 (2018).

153. H. C. Po, L. J. Zou, A. Vishwanath and T. Senthil, *Origin of Mott Insulating Behavior and Superconductivity in Twisted Bilayer Graphene*, Physical Review X, 8 (2018).

152. H. C. Po, H. Watanabe and A. Vishwanath, *Fragile Topology and Wannier Obstructions*, Physical Review Letters, 121 (2018).

151. N. Ma, G. Y. Sun, Y. Z. You, C. K. Xu, A. Vishwanath, A. W. Sandvik and Z. Y. Meng, *Dynamical signature of fractionalization at a deconfined quantum critical point*, Physical Review B, 98 (2018).

150. J. Y. Lee, C. Wang, M. P. Zaletel, A. Vishwanath and Y. C. He, *Emergent Multi-Flavor QED3 at the Plateau Transition between Fractional Chern Insulators: Applications to Graphene Heterostructures*, Physical Review X, 8 (2018).

149. J. Y. Lee, A. M. Turner and A. Vishwanath, *Building symmetry-enriched topological phases from a bipartite lattice construction and anyon condensation*, Physical Review B, 98 (2018).

148. V. Khemani, A. Vishwanath and D. A. Huse, *Operator Spreading and the Emergence of Dissipative Hydrodynamics under Unitary Evolution with Conservation Laws*, Physical Review X, 8 (2018).

147. E. Khalaf, H. C. Po, A. Vishwanath and H. Watanabe, *Symmetry Indicators and Anomalous Surface States of Topological Crystalline Insulators*, Physical Review X, 8 (2018).

146. K. Gotlieb, C. Y. Lin, M. Serbyn, W. T. Zhang, C. L. Smallwood, C. Jozwiak, H. Eisaki, Z. Hussain, A. Vishwanath and A. Lanzara, *Revealing hidden spin-momentum locking in a high-temperature cuprate superconductor*, Science, 362 (2018), pp. 1271-+.

145. S. Gazit, F. F. Assaad, S. Sachdev, A. Vishwanath and C. Wang, *Confinement transition of Z(2) gauge theories coupled to massless fermions: Emergent quantum chromodynamics and SO(5) symmetry*, Proceedings of the National Academy of Sciences of the United States of America, 115 (2018), pp. E6987-E6995.

144. R. Chen, H. C. Po, J. B. Neaton and A. Vishwanath, *Topological materials discovery using electron filling constraints*, Nature Physics, 14 (2018), pp. 55-+.

143. N. P. Armitage, E. J. Mele and A. Vishwanath, *Weyl and Dirac semimetals in three-dimensional solids*, Reviews of Modern Physics, 90 (2018).

142. G. Affeldt, T. Hogan, J. D. Denlinger, A. Vishwanath, S. D. Wilson and A. Lanzara, *Doping-dependent correlation effects in (Sr1-xLax)(3)Ir2O7*, Physical Review B, 97 (2018).

141. J. Zhang, P. W. Hess, A. Kyprianidis, P. Becker, A. Lee, J. Smith, G. Pagano, I. D. Potirniche, A. C. Potter, A. Vishwanath, N. Y. Yao and C. Monroe, *Observation of a discrete time crystal*, Nature, 543 (2017), pp. 217-+.

140. M. P. Zaletel, Y. M. Lu and A. Vishwanath, *Measuring space-group symmetry fractionalization in Z(2) spin liquids*, Physical Review B, 96 (2017).

139. N. Y. Yao, A. C. Potter, I. D. Potirniche and A. Vishwanath, *Discrete Time Crystals: Rigidity, Criticality, and Realizations*, Physical Review Letters, 118 (2017).

138. C. K. Thomas, T. H. Barter, T. H. Leung, M. Okano, G. B. Jo, J. Guzman, I. Kimchi, A. Vishwanath and D. M. Stamper-Kurn, *Mean-Field Scaling of the Superfluid to Mott Insulator Transition in a 2D Optical Superlattice*, Physical Review Letters, 119 (2017).

137. C. Potter, C. Wang, M. A. Metlitski and A. Vishwanath, *Realizing topological surface states in a lower-dimensional flat band*, Physical Review B, 96 (2017).

136. D. Potirniche, A. C. Potter, M. Schleier-Smith, A. Vishwanath and N. Y. Yao, *Floquet Symmetry-Protected Topological Phases in Cold-Atom Systems*, Physical Review Letters, 119 (2017).

135. H. C. Po, A. Vishwanath and H. Watanabe, *Complete theory of symmetry-based indicators of band topology*, Nature Communications, 8 (2017).

134. H. C. Po, A. Vishwanath and H. Watanabe, *Symmetry-based indicators of band topology in the 230 space groups (vol 8, 50, 2017)*, Nature Communications, 8 (2017).

133. H. C. Po, L. Fidkowski, A. Vishwanath and A. C. Potter, *Radical chiral Floquet phases in a periodically driven Kitaev model and beyond*, Physical Review B, 96 (2017).

132. T. Morimoto, H. C. Po and A. Vishwanath, *Floquet topological phases protected by time glide symmetry*, Physical Review B, 95 (2017).

131. M. A. Metlitski, A. Vishwanath and C. K. Xu, *Duality and bosonization of (2+1)-dimensional Majorana fermions*, Physical Review B, 95 (2017).

130. Y. M. Lu, G. Y. Cho and A. Vishwanath, *Unification of bosonic and fermionic theories of spin liquids on the kagome lattice*, Physical Review B, 96 (2017).

129. Y. C. He, F. Grusdt, A. Kaufman, M. Greiner and A. Vishwanath, *Realizing and adiabatically preparing bosonic integer and fractional quantum Hall states in optical lattices*, Physical Review B, 96 (2017).

128. S. Gazit, M. Randeria and A. Vishwanath, *Emergent Dirac fermions and broken symmetries in confined and deconfined phases of Z(2) gauge theories*, Nature Physics, 13 (2017), pp. 484-490.

127. L. Fidkowski and A. Vishwanath, *Realizing anomalous anyonic symmetries at the surfaces of three-dimensional gauge theories*, Physical Review B, 96 (2017).

126. Affeldt, T. Hogan, C. L. Smallwood, T. Das, J. D. Denlinger, S. D. Wilson, A. Vishwanath and A. Lanzara, *Spectral weight suppression near a metal-insulator transition in a double-layer electron-doped iridate*, Physical Review B, 95 (2017).

125. Y. Zhang, D. Bulmash, P. Hosur, A. C. Potter and A. Vishwanath, *Quantum oscillations from generic surface Fermi arcs and bulk chiral modes in Weyl semimetals*, Scientific Reports, 6 (2016).

124. M. P. Zaletel, Z. Y. Zhu, Y. M. Lu, A. Vishwanath and S. R. White, *Space Group Symmetry Fractionalization in a Chiral Kagome Heisenberg Antiferromagnet*, Physical Review Letters, 116 (2016).

123. K. Yadav, C. T. Nelson, S. L. Hsu, Z. Hong, J. D. Clarkson, C. M. Schlepuetz, A. R. Damodaran, P. Shafer, E. Arenholz, L. R. Dedon, D. Chen, A. Vishwanath, A. M. Minor, L. Q. Chen, J. F. Scott, L. W. Martin and R. Ramesh, *Observation of polar vortices in oxide superlattices*, Nature, 530 (2016), pp. 198-+.

122. H. Watanabe and A. Vishwanath, *Electric Field-Induced Skyrmion Crystals via Charged Monopoles in Insulating Helimagets*, Journal of the Physical Society of Japan, 85 (2016).

121. H. Watanabe, H. C. Po, M. P. Zaletel and A. Vishwanath, *Filling-Enforced Gaplessness in Band Structures of the 230 Space Groups*, Physical Review Letters, 117 (2016).

120. C. Potter, M. Serbyn and A. Vishwanath, *Thermoelectric Transport Signatures of Dirac Composite Fermions in the Half-Filled Landau Level*, Physical Review X, 6 (2016).

119. C. Potter, T. Morimoto and A. Vishwanath, *Classification of Interacting Topological Floquet Phases in One Dimension*, Physical Review X, 6 (2016).

118. H. C. Po, H. Watanabe, M. P. Zaletel and A. Vishwanath, *Filling-enforced quantum band insulators in spin-orbit coupled crystals*, Science Advances, 2 (2016).

117. H. C. Po, L. Fidkowski, T. Morimoto, A. C. Potter and A. Vishwanath, *Chiral Floquet Phases of Many-Body Localized Bosons*, Physical Review X, 6 (2016).

116. H. C. Po, Y. Bahri and A. Vishwanath, *Phonon analog of topological nodal semimetals*, Physical Review B, 93 (2016).

115. P. J. W. Moll, N. L. Nair, T. Helm, A. C. Potter, I. Kimchi, A. Vishwanath and J. G. Analytis, *Transport evidence for Fermi-arc-mediated chirality transfer in the Dirac semimetal Cd3As2*, Nature, 535 (2016), pp. 266-+.

114. M. A. Metlitski and A. Vishwanath, *Particle-vortex duality of two-dimensional Dirac fermion from electric-magnetic duality of three-dimensional topological insulators*, Physical Review B, 93 (2016).

113. Y. M. Lu and A. Vishwanath, *Classification and properties of symmetry-enriched topological phases: Chern-Simons approach with applications to Z(2) spin liquids*, Physical Review B, 93 (2016).

112. Liu, D. Kriegner, L. Horak, D. Puggioni, C. R. Serrao, R. Chen, D. Yi, C. Frontera, V. Holy, A. Vishwanath, J. M. Rondinelli, X. Marti and R. Ramesh, *Strain-induced nonsymmorphic symmetry breaking and removal of Dirac semimetallic nodal line in an orthoperovskite iridate*, Physical Review B, 93 (2016).

111. G. Grushin, J. W. F. Venderbos, A. Vishwanath and R. Ilan, *Inhomogeneous Weyl and Dirac Semimetals: Transport in Axial Magnetic Fields and Fermi Arc Surface States from Pseudo-Landau Levels*, Physical Review X, 6 (2016).

110. S. D. Geraedts, M. P. Zaletel, R. S. K. Mong, M. A. Metlitski, A. Vishwanath and O. I. Motrunich, *The half-filled Landau level: The case for Dirac composite fermions*, Science, 352 (2016), pp. 197-201.

109. S. Gazit and A. Vishwanath, *Bosonic topological phase in a paired superfluid*, Physical Review B, 93 (2016).

108. P. T. Dumitrescu, M. Serbyn, R. T. Scalettar and A. Vishwanath, *Superconductivity and nematic fluctuations in a model of doped FeSe monolayers: Determinant quantum Monte Carlo study*, Physical Review B, 94 (2016).

107. M. Cheng, M. Zaletel, M. Barkeshli, A. Vishwanath and P. Bonderson, *Translational Symmetry and Microscopic Constraints on Symmetry-Enriched Topological Phases: A View from the Surface*, Physical Review X, 6 (2016).

106. F. Burnell, X. Chen, A. Kitaev, M. Metlitski and A. Vishwanath, *Time reversal invariant gapped boundaries of the double semion state*, Physical Review B, 93 (2016).

105. Y. Zhang, T. Grover and A. Vishwanath, *General procedure for determining braiding and statistics of anyons using entanglement interferometry*, Physical Review B, 91 (2015).

104. M. P. Zaletel and A. Vishwanath, *Constraints on Topological Order in Mott Insulators*, Physical Review Letters, 114 (2015).

103. H. Watanabe, H. C. Po, A. Vishwanath and M. Zaletel, *Filling constraints for spin-orbit coupled insulators in symmorphic and nonsymmorphic crystals*, Proceedings of the National Academy of Sciences of the United States of America, 112 (2015), pp. 14551-14556.

102. M. Schoop, L. L. S. Xie, R. Chen, Q. D. Gibson, S. H. Lapidus, I. Kimchi, M. Hirschberger, N. Haldolaarachchige, M. N. Ali, C. A. Belvin, T. Liang, J. B. Neaton, N. P. Ong, A. Vishwanath and R. J. Cava, *Dirac metal to topological metal transition at a structural phase change in Au2Pb and prediction of Z(2) topology for the superconductor*, Physical Review B, 91 (2015).

101. Kimchi, R. Coldea and A. Vishwanath, *Unified theory of spiral magnetism in the harmonic-honeycomb iridates alpha, beta, and gamma Li2IrO3*, Physical Review B, 91 (2015).

100. P. Hinton, S. Patankar, E. Thewalt, A. Ruiz, G. Lopez, N. Breznay, A. Vishwanath, J. Analytis, J. Orenstein, J. D. Koralek and I. Kimchi, *Photoexcited states of the harmonic honeycomb iridate gamma-Li2IrO3*, Physical Review B, 92 (2015).

99. X. Chen and A. Vishwanath, *Towards Gauging Time-Reversal Symmetry: A Tensor Network Approach*, Physical Review X, 5 (2015).

98. X. Chen, F. J. Burnell, A. Vishwanath and L. Fidkowski, *Anomalous Symmetry Fractionalization and Surface Topological Order*, Physical Review X, 5 (2015).

97. Y. Bahri, R. Vosk, E. Altman and A. Vishwanath, *Localization and topology protected quantum coherence at the edge of hot matter*, Nature Communications, 6 (2015).

96. H. Watanabe and A. Vishwanath, *Criterion for stability of Goldstone modes and Fermi liquid behavior in a metal with broken symmetry*, Proceedings of the National Academy of Sciences of the United States of America, 111 (2014), pp. 16314-16318.

95. H. Watanabe, S. A. Parameswaran, S. Raghu and A. Vishwanath, *Anomalous Fermi-liquid phase in metallic skyrmion crystals*, Physical Review B, 90 (2014).

94. O. Vafek and A. Vishwanath, *Dirac Fermions in Solids: From High-T-c Cuprates and Graphene to Topological Insulators and Weyl Semimetals*, in J. S. Langer, ed., *Annual Review of Condensed Matter Physics, Vol 5*, 2014, pp. 83-112.

93. C. Potter, I. Kimchi and A. Vishwanath, *Quantum oscillations from surface Fermi arcs in Weyl and Dirac semimetals*, Nature Communications, 5 (2014).

92. S. A. Parameswaran, T. Grover, D. A. Abanin, D. A. Pesin and A. Vishwanath, *Probing the Chiral Anomaly with Nonlocal Transport in Three-Dimensional Topological Semimetals*, Physical Review X, 4 (2014).

91. A. Modic, T. E. Smidt, I. Kimchi, N. P. Breznay, A. Biffin, S. Choi, R. D. Johnson, R. Coldea, P. Watkins-Curry, G. T. Mccandless, J. Y. Chan, F. Gandara, Z. Islam, A. Vishwanath, A. Shekhter, R. D. Mcdonald and J. G. Analytis, *Realization of a three-*

dimensional spin-anisotropic harmonic honeycomb iridate, Nature Communications, 5 (2014).

90. Y. M. Lu and A. Vishwanath, *Theory and classification of interacting integer topological phases in two dimensions: A Chern-Simons approach (vol 86, 125119, 2012)*, Physical Review B, 89 (2014).

89. Kimchi and A. Vishwanath, *Kitaev-Heisenberg models for iridates on the triangular, hyperkagome, kagome, fcc, and pyrochlore lattices*, Physical Review B, 89 (2014).

88. Kimchi, J. G. Analytis and A. Vishwanath, *Three-dimensional quantum spin liquids in models of harmonic-honeycomb iridates and phase diagram in an infinite-D approximation*, Physical Review B, 90 (2014).

87. S. Jeon, B. B. Zhou, A. Gyenis, B. E. Feldman, I. Kimchi, A. C. Potter, Q. D. Gibson, R. J. Cava, A. Vishwanath and A. Yazdani, *Landau quantization and quasiparticle interference in the three-dimensional Dirac semimetal Cd3As2*, Nature Materials, 13 (2014), pp. 851-856.

86. T. Grover, D. N. Sheng and A. Vishwanath, *Emergent Space-Time Supersymmetry at the Boundary of a Topological Phase*, Science, 344 (2014), pp. 280-283.

85. X. Chen, Y. M. Lu and A. Vishwanath, *Symmetry-protected topological phases from decorated domain walls*, Nature Communications, 5 (2014).

84. X. Chen, L. Fidkowski and A. Vishwanath, *Symmetry enforced non-Abelian topological order at the surface of a topological insulator*, Physical Review B, 89 (2014).

83. F. J. Burnell, X. Chen, L. Fidkowski and A. Vishwanath, *Exactly soluble model of a three-dimensional symmetry-protected topological phase of bosons with surface topological order*, Physical Review B, 90 (2014).

82. Biffin, R. D. Johnson, I. Kimchi, R. Morris, A. Bombardi, J. G. Analytis, A. Vishwanath and R. Coldea, *Noncoplanar and Counterrotating Incommensurate Magnetic Order Stabilized by Kitaev Interactions in gamma-Li2IrO3*, Physical Review Letters, 113 (2014).

81. Y. Bahri and A. Vishwanath, *Detecting Majorana fermions in quasi-one-dimensional topological phases using nonlocal order parameters*, Physical Review B, 89 (2014).

80. Y. Zhang and A. Vishwanath, *Establishing non-Abelian topological order in Gutzwiller-projected Chern insulators via entanglement entropy and modular S-matrix*, Physical Review B, 87 (2013).

79. Vishwanath and T. Senthil, *Physics of Three-Dimensional Bosonic Topological Insulators: Surface-Deconfined Criticality and Quantized Magnetoelectric Effect*, Physical Review X, 3 (2013).

78. R. Serrao, J. Liu, J. T. Heron, G. Singh-Bhalla, A. Yadav, S. J. Suresha, R. J. Paull, D. Yi, J. H. Chu, M. Trassin, A. Vishwanath, E. Arenholz, C. Frontera, J. Zelezny, T. Jungwirth, X. Marti and R. Ramesh, *Epitaxy-distorted spin-orbit Mott insulator in Sr2IrO4 thin films*, Physical Review B, 87 (2013).

77. S. A. Parameswaran, A. M. Turner, D. P. Arovas and A. Vishwanath, *Topological order and absence of band insulators at integer filling in non-symmorphic crystals*, Nature Physics, 9 (2013), pp. 299-303.

76. S. A. Parameswaran, I. Kimchi, A. M. Turner, D. M. Stamper-Kurn and A. Vishwanath, *Wannier Permanent Wave Functions for Featureless Bosonic Mott Insulators on the 1/3-Filled Kagome Lattice*, Physical Review Letters, 110 (2013).

75. Kimchi, S. A. Parameswaran, A. M. Turner, F. Wang and A. Vishwanath, *Featureless and nonfractionalized Mott insulators on the honeycomb lattice at 1/2 site filling*, Proceedings of the National Academy of Sciences of the United States of America, 110 (2013), pp. 16378-16383.

74. P. Hinton, J. D. Koralek, G. Yu, E. M. Motoyama, Y. M. Lu, A. Vishwanath, M. Greven and J. Orenstein, *Time-Resolved Optical Reflectivity of the Electron-Doped Nd2-xCexCuO4+delta Cuprate Superconductor: Evidence for an Interplay between Competing Orders*, Physical Review Letters, 110 (2013).

73. P. Hinton, J. D. Koralek, Y. M. Lu, A. Vishwanath, J. Orenstein, D. A. Bonn, W. N. Hardy and R. X. Liang, *New collective mode in YBa2Cu3O6+x observed by time-domain reflectometry*, Physical Review B, 88 (2013).

72. T. Grover, Y. Zhang and A. Vishwanath, *Entanglement entropy as a portal to the physics of quantum spin liquids*, New Journal of Physics, 15 (2013).

71. T. Grover and A. Vishwanath, *Quantum phase transition between integer quantum Hall states of bosons*, Physical Review B, 87 (2013).

70. Fidkowski, X. Chen and A. Vishwanath, *Non-Abelian Topological Order on the Surface of a 3D Topological Superconductor from an Exactly Solved Model*, Physical Review X, 3 (2013).

69. Y. Zhang, T. Grover and A. Vishwanath, *Topological entanglement entropy of Z(2) spin liquids and lattice Laughlin states (vol 84, 075128, 2011)*, Physical Review B, 85 (2012).

68. Y. Zhang, T. Grover, A. Turner, M. Oshikawa and A. Vishwanath, *Quasiparticle statistics and braiding from ground-state entanglement*, Physical Review B, 85 (2012).

67. Y. Z. You, I. Kimchi and A. Vishwanath, *Doping a spin-orbit Mott insulator: Topological superconductivity from the Kitaev-Heisenberg model and possible application to (Na-2/Li-2)IrO3*, Physical Review B, 86 (2012).

66. X. G. Wan, A. Vishwanath and S. Y. Savrasov, *Computational Design of Axion Insulators Based on 5d Spinel Compounds*, Physical Review Letters, 108 (2012).

65. M. Turner, Y. Zhang, R. S. K. Mong and A. Vishwanath, *Quantized response and topology of magnetic insulators with inversion symmetry*, Physical Review B, 85 (2012).

64. R. Shankar and A. Vishwanath, *Explanation of a strange bulk-edge equality*, in T. Hakioglu, N. C. Yeh and H. Y. Choi, eds., *Eurasia-Pacific Summer School and Conference on Correlated Electrons*, 2012.

63. Y. M. Lu and A. Vishwanath, *Theory and classification of interacting integer topological phases in two dimensions: A Chern-Simons approach*, Physical Review B, 86 (2012).

62. D. Koralek, D. Meier, J. P. Hinton, A. Bauer, S. A. Parameswaran, A. Vishwanath, R. Ramesh, R. W. Schoenlein, C. Pfleiderer and J. Orenstein, *Observation of Coherent Helimagnons and Gilbert Damping in an Itinerant Magnet*, Physical Review Letters, 109 (2012).

61. G. B. Jo, J. Guzman, C. K. Thomas, P. Hosur, A. Vishwanath and D. M. Stamper-Kurn, *Ultracold Atoms in a Tunable Optical Kagome Lattice*, Physical Review Letters, 108 (2012).

60. P. Hosur, S. A. Parameswaran and A. Vishwanath, *Charge Transport in Weyl Semimetals*, Physical Review Letters, 108 (2012).

59. P. Ghaemi, J. Cayssol, D. N. Sheng and A. Vishwanath, *Fractional Topological Phases and Broken Time-Reversal Symmetry in Strained Graphene*, Physical Review Letters, 108 (2012).

58. Y. Zhang, T. Grover and A. Vishwanath, *Entanglement Entropy of Critical Spin Liquids*, Physical Review Letters, 107 (2011).

57. Y. Zhang, T. Grover and A. Vishwanath, *Topological entanglement entropy of Z(2) spin liquids and lattice Laughlin states*, Physical Review B, 84 (2011).

56. X. G. Wan, A. M. Turner, A. Vishwanath and S. Y. Savrasov, *Topological semimetal and Fermi-arc surface states in the electronic structure of pyrochlore iridates*, Physical Review B, 83 (2011).

55. R. Shankar and A. Vishwanath, *Equality of Bulk Wave Functions and Edge Correlations in Some Topological Superconductors: A Spacetime Derivation*, Physical Review Letters, 107 (2011).

54. Y. Ran, P. Hosur and A. Vishwanath, *Fermionic Hopf solitons and Berry phase in topological surface superconductors*, Physical Review B, 84 (2011).

53. P. Hosur, P. Ghaemi, R. S. K. Mong and A. Vishwanath, *Majorana Modes at the Ends of Superconductor Vortices in Doped Topological Insulators*, Physical Review Letters, 107 (2011).

52. T. Grover, A. M. Turner and A. Vishwanath, *Entanglement entropy of gapped phases and topological order in three dimensions*, Physical Review B, 84 (2011).

51. P. Ghaemi and A. Vishwanath, *Anomalous Zeeman response of the coexisting superconducting and spin-density-wave phases as a probe of extended s-wave pairing in ferropnictide superconductors*, Physical Review B, 83 (2011).

50. Y. Zhang and A. Vishwanath, *Anomalous Aharonov-Bohm Conductance Oscillations from Topological Insulator Surface States*, Physical Review Letters, 105 (2010).

49. M. Turner, Y. Zhang and A. Vishwanath, *Entanglement and inversion symmetry in topological insulators*, Physical Review B, 82 (2010).

48. P. Hosur, S. Ryu and A. Vishwanath, *Chiral topological insulators, superconductors, and other competing orders in three dimensions*, Physical Review B, 81 (2010).

47. Y. Zhang, Y. Ran and A. Vishwanath, *Topological insulators in three dimensions from spontaneous symmetry breaking*, Physical Review B, 79 (2009).

46. F. Wang, H. Zhai, Y. Ran, A. Vishwanath and D. H. Lee, *Functional Renormalization-Group Study of the Pairing Symmetry and Pairing Mechanism of the FeAs-Based High-Temperature Superconductor*, Physical Review Letters, 102 (2009).

45. F. Wang and A. Vishwanath, *Z(2) spin-orbital liquid state in the square lattice Kugel-Khomskii model*, Physical Review B, 80 (2009).

44. F. Wang, F. Pollmann and A. Vishwanath, *Extended Supersolid Phase of Frustrated Hard-Core Bosons on a Triangular Lattice*, Physical Review Letters, 102 (2009).

43. A. M. Turner, F. Wang and A. Vishwanath, *Kinetic magnetism and orbital order in iron telluride*, Physical Review B, 80 (2009).

42. Y. Ran, Y. Zhang and A. Vishwanath, *One-dimensional topologically protected modes in topological insulators with lattice dislocations*, Nature Physics, 5 (2009), pp. 298-303.

41. Y. Ran, F. Wang, H. Zhai, A. Vishwanath and D. H. Lee, *Nodal spin density wave and band topology of the FeAs-based materials*, Physical Review B, 79 (2009).

40. L. Radzihovsky and A. Vishwanath, *Quantum Liquid Crystals in an Imbalanced Fermi Gas: Fluctuations and Fractional Vortices in Larkin-Ovchinnikov States*, Physical Review Letters, 103 (2009).

39. D. Podolsky, S. Chandrasekharan and A. Vishwanath, *Phase transitions of S=1 spinor condensates in an optical lattice*, Physical Review B, 80 (2009).

38. L. Mathey, A. Vishwanath and E. Altman, *Noise correlations in low-dimensional systems of ultracold atoms*, Physical Review A, 79 (2009).

37. P. Ghaemi, F. Wang and A. Vishwanath, *Andreev Bound States as a Phase-Sensitive Probe of the Pairing Symmetry of the Iron Pnictide Superconductors*, Physical Review Letters, 102 (2009).

36. F. Wang and A. Vishwanath, *Spin phonon induced collinear order and magnetization plateaus in triangular and kagome antiferromagnets: Applications to CuFeO(2)*, Physical Review Letters, 100 (2008).

35. A. Sen, K. Damle and A. Vishwanath, *Magnetization plateaus and sublattice ordering in easy-axis kagome lattice antiferromagnets*, Physical Review Letters, 100 (2008).

34. Y. Ran, A. Vishwanath and D. H. Lee, *Spin-charge separated solitons in a topological band insulator*, Physical Review Letters, 101 (2008).

33. S. Raghu, D. Podolsky, A. Vishwanath and D. A. Huse, *Vortex-dynamics approach to the Nernst effect in extreme type-II superconductors dominated by phase fluctuations*, Physical Review B, 78 (2008).

32. L. Mathey, E. Altman and A. Vishwanath, *Noise correlations in one-dimensional systems of ultracold fermions*, Physical Review Letters, 100 (2008).

31. M. J. Lawler, H. Y. Kee, Y. B. Kim and A. Vishwanath, *Topological spin liquid on the hyperkagome lattice of Na4Ir3O8*, Physical Review Letters, 100 (2008).

30. B. Binz and A. Vishwanath, *Chirality induced anomalous-Hall effect in helical spin crystals*, Physica B-Condensed Matter, 403 (2008), pp. 1336-1340.

29. F. Wang, A. Vishwanath and Y. B. Kim, *Quantum and classical spins on the spatially distorted kagome lattice: Applications to volborthite Cu3V2O7(OH)(2)center dot 2H(2)O*, Physical Review B, 76 (2007).

28. A. M. Turner, R. Barnett, E. Demler and A. Vishwanath, *Nematic order by disorder in spin-2 Bose-Einstein condensates*, Physical Review Letters, 98 (2007).

27. D. Podolsky, A. Vishwanath, J. Moore and S. Sachdev, *Thermoelectric transport near pair breaking quantum phase transition out of d-wave superconductivity*, Physical Review B, 75 (2007).

26. D. Podolsky, S. Raghu and A. Vishwanath, *Nernst effect and diamagnetism in phase fluctuating superconductors*, Physical Review Letters, 99 (2007).

25. B. Binz and A. Vishwanath, *Theoretical proposal predicting anomalous magnetoresistance and quadratic Hall effect in the partially ordered state of MnSi*, Journal of Magnetism and Magnetic Materials, 310 (2007), pp. 1062-1064.

24. F. Wang and A. Vishwanath, *Spin-liquid states on the triangular and Kagome lattices: A projective-symmetry-group analysis of Schwinger boson states*, Physical Review B, 74 (2006).

23. G. Green, J. E. Moore, S. L. Sondhi and A. Vishwanath, *Current noise in the vicinity of the 2D superconductor-insulator quantum critical point*, Physical Review Letters, 97 (2006).

22. Bray-Ali, J. E. Moore, T. Senthil and A. Vishwanath, *Ordering near the percolation threshold in models of two-dimensional interacting bosons with quenched dilution*, Physical Review B, 73 (2006).

21. B. Binz, A. Vishwanath and V. Aji, *Theory of the helical spin crystal: A candidate for the partially ordered state of MnSi*, Physical Review Letters, 96 (2006).

20. B. Binz and A. Vishwanath, *Theory of helical spin crystals: Phases, textures, and properties*, Physical Review B, 74 (2006).

19. T. Senthil, L. Balents, S. Sachdev, A. Vishwanath and M. P. A. Fisher, *Deconfined Criticality Critically Defined*, Journal of the Physical Society of Japan, 74 (2005).

18. R. G. Melko, A. Paramekanti, A. A. Burkov, A. Vishwanath, D. N. Sheng and L. Balents, *Supersolid order from disorder: Hard-core bosons on the triangular lattice*, Physical Review Letters, 95 (2005).

17. P. M. Ghaemi, A. Vishwanath and T. Senthil, *Finite-temperature properties of quantum Lifshitz transitions between valence-bond solid phases: An example of local quantum criticality*, Physical Review B, 72 (2005).

16. E. Altman and A. Vishwanath, *Dynamic projection on Feshbach molecules: A probe of pairing and phase fluctuations*, Physical Review Letters, 95 (2005).

15. A. Vishwanath, J. E. Moore and T. Senthil, *Screening and dissipation at the superconductor-insulator transition induced by a metallic ground plane*, Physical Review B, 69 (2004).

14. A. Vishwanath, L. Balents and T. Senthil, *Quantum criticality and deconfinement in phase transitions between valence bond solids*, Physical Review B, 69 (2004).

13. T. Senthil, A. Vishwanath, L. Balents, S. Sachdev and M. P. A. Fisher, *Deconfined quantum critical points*, Science, 303 (2004), pp. 1490-1494.

12. T. Senthil, L. Balents, S. Sachdev, A. Vishwanath and M. P. A. Fisher, *Quantum criticality beyond the Landau-Ginzburg-Wilson paradigm*, Physical Review B, 70 (2004).

11. Paramekanti and A. Vishwanath, *Extending Luttinger's theorem to Z(2) fractionalized phases of matter*, Physical Review B, 70 (2004).

10. O. I. Motrunich and A. Vishwanath, *Emergent photons and transitions in the O(3) sigma model with hedgehog suppression*, Physical Review B, 70 (2004).

9. C. Durst, A. Vishwanath and P. A. Lee, *Weak-field thermal Hall conductivity in the mixed state of d-wave superconductors*, Physical Review Letters, 90 (2003).

8. A. Vishwanath, *Dirac nodes and quantized thermal Hall effect in the mixed state of d-wave superconductors*, Physical Review B, 66 (2002).

7. A. Vishwanath and T. Senthil, *Luttinger liquid physics in the superconductor vortex core*, Physical Review B, 63 (2001).

6. A. Vishwanath and D. Carpentier, *Two-dimensional anisotropic non-Fermi-liquid phase of coupled Luttinger liquids*, Physical Review Letters, 86 (2001), pp. 676-679.

5. A. Vishwanath, *Quantized thermal Hall effect in the mixed state of d-wave superconductors*, Physical Review Letters, 87 (2001).

4. Soljacic, M. Segev, T. Coskun, D. N. Christodoulides and A. Vishwanath, *Modulation instability of incoherent beams in noninstantaneous nonlinear media*, Physical Review Letters, 84 (2000), pp. 467-470.

3. B. Knight, A. Vishwanath, J. P. Brody and R. H. Austin, *Hydrodynamic focusing on a silicon chip: Mixing nanoliters in microseconds*, Physical Review Letters, 80 (1998), pp. 3863-3866.

2. Thirumalai, V. Ashwin and J. K. Bhattacharjee, *Dynamics of Random Hydrophobic-Hydrophilic Copolymers with Implications for Protein Folding*, Phys Rev Lett, 77 (1996), pp. 5385-5388.

1. V. Ashvin, G. V. Vijayagovindan and N. Kumar, *Tunneling conductance of Luttinger liquids: Resonances*, Phys Rev B Condens Matter, 53 (1996), pp. R13239-R13241.