Jonathan B. Curtis

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Positions

2022-	Postdoctoral Fellow	University of California, Los Angeles
2022-	University Affiliate	Harvard University
2020-2022	HQI Postdoctoral Fellow	Harvard University
2016-2020	Graduate Student	University of Maryland, College Park

Education

2016-2020 **Ph.D. Physics** University of Maryland, College Park

Advisor: Professor Victor Galitski
Thesis: *Quasiparticles in Superconductors and Superfluids*
Date of award: August 21st, 2020

2012-2016 **B.S. Physics, B.S. Applied Math** University of Rochester

Magna Cum Laude
Senior Thesis: *Searching for Two-Flavor Leptonic Tridents in the MINERvA Experiment*
Thesis Advisor: Professor Kevin McFarland

Awards and Honors

2021	LEES 2021 Silver Poster Award
2020-2022	Harvard Quantum Initiative Postdoctoral Fellow
2019	KITP Graduate Fellow (Fall)
2018	Boulder School for Condensed Matter Theory and Materials Physics
2016-2019	National Science Foundation Graduate Research Fellowship
2016-2018	Dean's Fellowship, University of Maryland
2016	Phi Beta Kappa, University of Rochester Chapter
2015	Barry M. Goldwater Fellowship, Honorable Mention
2013 - 2016	American Rowing Association Academic All-American, First Team

Publications

15. J. Klein, Z. Song, B. Pingault, F. Dirnberger, H. Chi, **J.B. Curtis**, R. Dana, R. Bushati, J. Quan, L. Dekanovsky, Z. Sofer, A. Alù, V.M. Menon, J.S. Moodera, M. Lončar, P. Narang, F.M. Ross
Sensing the local magnetic environment through optically active defects in a layered magnetic semiconductor.
ACS Nano 17 288. (2022)
https://doi.org/10.1021/acsnano.2c07655

14. N.R. Poniatowski, **J.B. Curtis**, C.G.L. Bøttcher, V.M. Galitski, A. Yacoby, P. Narang, E. Demler
Surface Cooper pair spin waves in triplet superconductors.
Phys. Rev. Lett. 129 237002. (2022)
https://doi.org/10.1103/PhysRevLett.129.237002

13. P.E. Dolgirev, A. Zong, M.H. Michael, **J.B. Curtis**, D. Podolsky, A. Cavalleri, E. Demler
Periodic dynamics in superconductors induced by an impulsive optical quench.
Comm. Phys. 5 234. (2022)
https://doi.org/10.1038/s42005-022-01007-w

12. D. Nicoletti, M. Buzzi, M. Fechner, P.E. Dolgirev, M.H. Michael, **J.B. Curtis**, E. Demler, G.D. Gu, A. Cavalleri
Coherent emission from surface Josephson plasmons in striped cuprates.
P.N.A.S. 119 e2211670119. (2022)
https://doi.org/10.1073/pnas.2211670119

11. J. Klein, T. Pham, J.D. Thomsen, **J.B. Curtis**, T. Denneulin, M. Lorke, M. Florian, A. Steinhoff, R. A. Wiscons, J. Luxa, Z. Sofer, F. Jahnke, P. Narang, and F. M. Ross
Control of structure and spin texture in the van der Waals layered magnet CrSBr.
Nat. Comm. 13 5420. (2022)
https://doi.org/10.1038/s41467-022-32737-8

10. **J.B. Curtis**, N.R. Poniatowski, A. Yacoby, P. Narang
Proximity-induced collective modes in an unconventional superconductor heterostructure.
Phys. Rev. B 106 064508. (2022)
https://doi.org/10.1103/PhysRevB.106.064508

9. J.H. Wilson, **J.B. Curtis**, V.M. Galitski
Analogue spacetimes from nonrelativistic Goldstone modes in spinor condensates.
Phys. Rev. A 105 043316. (2022)
https://doi.org/10.1103/PhysRevA.105.043316

8. N.R. Poniatowski, **J.B. Curtis**, A. Yacoby, P. Narang
Spectroscopic signatures of time-reversal symmetry breaking superconductivity.
Comm. Phys. 4 44. (2022)
https://doi.org/10.1038/s42005-022-00819-0

7. **J.B. Curtis**, A. Grankin, N.R. Poniatowski, V.M. Galitski, P. Narang, E. Demler
Cavity magnon-polaritons in cuprate parent compounds.
Phys. Rev. Res. 4 013101. (2022)
https://journals.aps.org/prresearch/abstract/10.1103/PhysRevResearch.4.013101

6. **J.B. Curtis**, I. Boettcher, J.T. Young, M.F. Maghrebi, H. Carmichael, A.V. Gorshkov, M. Foss-Feig
Critical theory for the breakdown of photon blockade.
Phys. Rev. Research 3 023062. (2021)
https://doi.org/10.1103/PhysRevResearch.3.023062

5. F. Liu, S. Whitsitt, **J.B. Curtis**, R. Lundgren, P. Titum, Z.-C. Yang, J.R. Garrison, A.V. Gorshkov
Circuit Complexity across a Topological Phase Transition.
Phys. Rev. Research 2 013323. (2020)
https://doi.org/10.1103/PhysRevResearch.2.013323

4. **J.B. Curtis**, G. Refael, V. Galitski
Evanescent Modes and Step-like Acoustic Black Holes.
Ann. of Phys. 407 148-165. (2019)
https://doi.org/10.1016/j.aop.2019.04.017

3. **J.B. Curtis**, Z.M. Raines, A.A. Allocca, M. Hafezi, V.M. Galitski
Cavity Quantum Eliashberg Enhancement of Superconductivity.
Phys. Rev. Lett. 122 167002. (2019)
https://doi.org/10.1103/PhysRevLett.122.167002

2. A.A. Allocca, Z.M. Raines, **J.B. Curtis**, V.M. Galitski
Cavity superconductor-polaritons.
Phys. Rev. B. 99 020504(R). (2019)
https://doi.org/10.1103/PhysRevB.99.020504

1. J.J. Kas, J.J. Rehr, **J.B. Curtis**
Particle-hole cumulant approach for inelastic losses in x-ray spectra.
Phys. Rev. B 94 035156. (2016)
http://dx.doi.org/10.1103/PhysRevB.94.035156

Preprints

8. **J.B. Curtis**, M.H. Michael, E. Demler
Local Fluctuations in Cavity Control of Ferroelectricity.
arXiv 2301.01884. (2023)
https://doi.org/10.48550/arXiv.2301.01884

7. **J.B. Curtis**, A. Disa, M. Fechner, A. Cavalleri, P. Narang
Dynamics of photo-induced ferromagnetism in oxides with orbital degeneracy.
arXiv 2209.10567. (2022)
https://doi.org/10.48550/arXiv.2209.10567

6. **J.B. Curtis**, N.R. Poniatowski, Y. Xie, A. Yacoby, E. Demler, P. Narang
Stabilizing fluctuating spin-triplet superconductivity in graphene via induced spin-orbit coupling.
arXiv 2209.10560. (2022)
https://doi.org/10.48550/arXiv.2209.10560

5. **J.B. Curtis**, I. Petrides, P. Narang
Finite-Momentum Instability of Dynamical Axion Insulator.
arXiv 2206.04711. (2022)
https://doi.org/10.48550/arXiv.2206.04711

4. J. Klein, B. Pingault, M. Florian, M.-C. Heißenbüttel, A. Steinhoff, Z. Song, K. Torres, F. Dirnberger, **J.B. Curtis**, T. Deilmann, R. Dana, R. Bushati, J. Quan, J. Luxa, Z. Sofer, A. Alù, V.M. Menon, U. Wurstbauer, M. Rohlfing, P. Narang, M. Lončar, F.M. Ross
The bulk van der Waals layered magnet CrSBr is a quasi-1D quantum material.
arXiv 2205.13456. (2022)
https://doi.org/10.48550/arXiv.2205.13456

3. P.E. Dolgirev, M.H. Michael, **J.B. Curtis**, D.E. Parker, D. Nicoletti, M. Buzzi, M. Fechner, A. Cavalleri, E. Demler
Optically-induced Umklapp shift currents in striped cuprates.
arXiv 2203.04687. (2022)
https://arxiv.org/abs/2203.04687

2. P.E. Dolgirev, M.H. Michael, **J.B. Curtis**, D. Nicoletti, M. Buzzi, M. Fechner, A. Cavalleri, E. Demler
Theory for Anomalous Terahertz Emission in Striped Cuprate Superconductors.
arXiv 2112.05772. (2021)
https://arxiv.org/abs/2112.05772

1. A.S. Disa, **J.B. Curtis**, M. Fechner, A. Liu, A. von Hoegen, M. Först, T.F. Nova, P. Narang, A. Maljuk, A.V. Boris, B. Keimer, A. Cavalleri
Optical Stabilization of Fluctuating High Temperature Ferromagnetism in $YTiO_3$.
arXiv 2111.13622. (2021)
https://arxiv.org/abs/2111.13622

Talks and Posters

13. *Nonequilibrium Spin-Orbital Dynamics in Mott Insulator $YTiO_3$*
GRC: Ultrafast Phenomena in Cooperative Systems
Ventura, CA. Oct 2022

12. *Local Fluctuations in Cavity Control of Ferroelectricity*
Correlated Matter and Light
Geneva, Switzerland. Sept. 2022

11. *Nonequilibrium Spin-Orbital Dynamics in Mott Insulator $YTiO_3$*
Non-Equilibrium Emergence in Quantum Design
Ingelheim, Germany. June 2022

10. *Optical Control of Quantum Materials*
California Institute of Technology
Pasadena, CA. May 2022

9. *Optical Control of Quantum Materials*
   Stanford University
   Stanford, CA. May 2022

8. *Cavity magnon-polaritons in cuprate parent compounds*
   Columbia University
   Virtual. July 2021

7. *Cavity magnon-polaritons in cuprate parent compounds*
   Virtual Science Forum Speakers' Corner
   Virtual. July 2021

6. *Spectroscopic signatures of time-reversal symmetry breaking superconductivity*
   International Conference on Low Energy Electrodynamics in Solids
   Virtual. June 2021

5. *Cavity Probes and Control of Antiferromagnetic Fluctuations in a Mott Insulator*
   MRS Spring Meeting 2021
   Virtual. April 2021

4. *Cavity Probes and Control of Antiferromagnetic Fluctuations in a Mott Insulator*
   APS March Meeting 2021
   Virtual. March 2021

3. *Cavity Quantum Enhancement of Superconductivity*
   APS March Meeting 2019
   Boston, MA. March 2019

2. *Unconventional criticality in the driven Jaynes-Cummings model*
   APS DAMOP Meeting 2018
   Ft. Lauderdale, FL. May 2018

1. *Localized Horizon Modes Partnered to Acoustic Hawking Emission in a Bose-Einstein Condensate*
   APS March Meeting 2018
   Los Angeles, CA. March 2018

Teaching Positions

Fall 2021	**Many-Body Theory** (Sub. for Prof. Demler)	*ETH Zürich*
Spring 2018	**Many-Body Theory** (Sub. for Prof. Galitski)	*University of Maryland*
Spring 2016	**Modern Physics Lab** (Teaching Intern)	*University of Rochester*
Spring 2015	**Quantum Mechanics** (Teaching Intern)	*University of Rochester*
Fall 2014	**Introductory Physics** (Teaching Intern)	*University of Rochester*
Spring 2014	**Introductory Physics** (Teaching Intern)	*University of Rochester*
Fall 2013	**Introductory Physics** (Teaching Intern)	*University of Rochester*