

Seth Whitsitt

Curriculum vitae

Employment

2018-current **NRC Postdoctoral Fellow**, *Joint Quantum Institute, National Institute of Standards and Technology and the University of Maryland*, College Park, MD.
Advisor: Alexey Gorshkov

Education

2012–2018 **Ph.D., Physics**, *Harvard University*, Cambridge, MA.
Dissertation: Universal non-local observables at interacting quantum critical points
Advisor: Subir Sachdev
Ph.D. defense date: April 17, 2018
Ph.D. conferral date: May 24, 2018

2015 **A.M. (Master of Arts) in Physics**, *Harvard University*, Cambridge, MA.

2008–2012 **Bachelors of Science in Physics**, *University of Texas at Austin*, Austin, TX.
Advisor: Gregory A. Fiete

Publications

- “Observation of Domain Wall Confinement and Dynamics in a Quantum Simulator,” W. L. Tan, P. Becker, F. Liu, G. Pagano, K. S. Collins, A. De, L. Feng, H. B. Kaplan, A. Kyrianiadis, R. Lundgren, W. Morong, S. Whitsitt, A. V. Gorshkov, C. Monroe, [arXiv:1912.11117](https://arxiv.org/abs/1912.11117).
- “Real-time dynamics of string breaking in quantum spin chains,” R. Verdel, F. Liu, S. Whitsitt, A. V. Gorshkov, M. Heyl, [arXiv:1911.11382](https://arxiv.org/abs/1911.11382).

- “Torus Spectroscopy of the Gross-Neveu-Yukawa Quantum Field Theory: Free Dirac versus Chiral Ising Fixed Point,” M. Schuler, S. Hesselmann, S. Whitsitt, T.-C. Lang, S. Wessel, and A. M. Läuchli, [arXiv:1907.05373](#).
- “Circuit Complexity across a Topological Phase Transition,” F. Liu, S. Whitsitt, J. B. Curtis, R. Lundgren, P. Titum, Z-C Yang, J. R. Garrison, A. V. Gorshkov, [arXiv:1907.10720](#).
- “Quantum field theory for the chiral clock transition in one spatial dimension,” S. Whitsitt, R. Samajdar, and S. Sachdev, *Physical Review B*, **98**, 205118, (2018), [arXiv:1808.07056](#).
- “Critical behavior of an impurity at the boson superfluid-Mott insulator transition,” S. Whitsitt, S. Sachdev, *Physical Review A*, **96**, 053620 (2017), [arXiv:1709.04919](#).
- “Spectrum of the Wilson-Fisher conformal field theory on the torus,” S. Whitsitt, M. Schuler, L.-P. Henry, A. M. Läuchli, and S. Sachdev, *Physical Review B*, **96**, 035142 (2017), **Editors’ Suggestion**, [arXiv:1701.03111](#)
- “Entanglement entropy of the large- N Wilson-Fisher conformal field theory,” S. Whitsitt, W. Witczak-Krempa, and S. Sachdev, *Physical Review B* **95**, 045148 (2017), [arXiv:1610.06568](#).
- “Transition from the \mathbb{Z}_2 spin liquid to antiferromagnetic order: spectrum on the torus,” S. Whitsitt, S. Sachdev, *Physical Review B* **94**, 115147 (2016), [arXiv:1603.05652](#).
- “Universal Signatures of Quantum Critical Points from Finite-Size Torus Spectra: A Window into the Operator Content of Higher-Dimensional Conformal Field Theories,” M. Schuler, S. Whitsitt, L.-P. Henry, S. Sachdev, and A. M. Läuchli, *Physical Review Letters* **117** 210401 (2016), [arXiv:1603.03042](#).
- “Renormalization group analysis of a fermionic hot-spot model,” S. Whitsitt and S. Sachdev, *Physical Review B* **90**, 104595 (2014) [arXiv:1406.6061](#).
- “Exact chiral spin liquids and mean-field perturbations of gamma matrix models on the ruby lattice,” S. Whitsitt, V. Chua, and G. A. Fiete, *New Journal of Physics* **14**, 115029 (2012), [arXiv:1204.2803](#).

Honors

- Peirce Fellowship, Harvard University (2012-2015)
- Finalist, Leroy Apker Award, APS (2012)

- Graduate Research Fellow, National Science Foundation (2012 - 2015)
- UT Austin Dean's Honored Graduate (2012)
- 2nd Prize, UT Austin Co-op George H. Mitchell Award for Outstanding Undergraduate Research (2012)
- UT Austin Unrestricted Endowed Presidential Scholar (2011 - 2012)
- UT Austin Unrestricted Endowed Presidential Scholar (2010 - 2011)
- Conrad and Marcel Schlumberger Scholarship (2008 - 2012)

Conferences and Schools

- Les Houches Summer School, Session CXIV, "Dynamics and Disorder in Quantum Many-Body Systems Far From Equilibrium," École de Physique des Houches, (August 2019).
- APS March Meeting, Boston, MA (March 2019)
- Entanglement and Coherence in Quantum Materials, Gordon Research Conference, Mt. Auburn, MA, (June 2018)
- APS March Meeting, Los Angeles, CA (March 2018)
- Maglab Theory Winter school, National High Magnetic Field Laboratory, Tallahassee, FL (January 2018)
- ARO and ASOFR, MURI Review, Joint Quantum Institute, University of Maryland, College Park, MD (October 2017)
- APS March Meeting, New Orleans, LA (March 2017)
- 34th Winter School in Theoretical Physics: "New Horizons in Quantum Matter," The Hebrew University of Jerusalem, Jerusalem, Israel (January 2017)
- Emergent Phenomena in Quantum Materials Summer School, Cornell University (June 2016)
- APS March Meeting, Baltimore, MD (March 2016)
- Low Energy Challenges for High Energy Physicists, Perimeter Institute (May 2014)

- Field Theoretic Computer Simulations for Particle Physics and Condensed Matter, Boston University (May 2014)
- APS March Meeting, Boston, MA (February 2012)

Teaching

- Grader, Graduate Quantum Field Theory and Graduate Quantum Mechanics I, Fall 2017, Harvard University
- TA, Graduate Statistical Physics, Fall 2016, Harvard University
- TA, Graduate Quantum II, Spring 2016, Harvard University
- TA, Undergraduate Quantum II, Fall 2015, Harvard University
- Learning Assistant, Undergraduate Waves and Optics, Spring 2012, UT Austin
- Learning Assistant, Undergraduate Engineering Physics II, Spring 2011, UT Austin
- Learning Assistant, Undergraduate Engineering Physics I, Fall 2010, UT Austin

Talks and Posters

- *Poster*: "Quantum field theory for the chiral clock transition in one spatial dimension," Les Houches Summer School, Session CXIV, Les Houches, France (August 2019)
- "Quantum field theory for the chiral clock transition in one spatial dimension," APS March Meeting, Boston, MA (March 2019)
- "Critical behavior of an impurity at the boson superfluid-Mott insulator transition," JQI-QUICS-CMTC Seminar, University of Maryland, College Park, MD (February 2019)
- *Poster*: "Quantum field theory for the chiral clock transition in one spatial dimension," Gordon Research Conference, Mt. Auburn, MA (June 2018)
- "Critical behavior of an impurity at the boson superfluid-Mott insulator transition," APS March Meeting, New Orleans, LA (March 2018)

- “Torus spectra and entanglement entropy in (2+1)-dimensional quantum critical points,” Rutgers University, New Brunswick, NJ (February 2018)
- “Torus spectra and entanglement entropy in (2+1)-dimensional conformal field theories,” Perimeter Institute for Theoretical Physics, Waterloo, ON, Canada (January 2018)
- *Poster*: “Critical behavior of an impurity at the boson superfluid-Mott insulator transition,” ARO MURI Review, Joint Quantum Institute, University of Maryland, College Park, MD (October 2017)
- “Entanglement entropy of the large N Wilson-Fisher conformal field theory,” APS March Meeting, New Orleans, LA (March 2017)
- “Confinement transitions in \mathbb{Z}_2 spin liquids: spectrum on the torus,” APS March Meeting, Baltimore, MD (March 2016)
- “Confinement transitions in \mathbb{Z}_2 spin liquids: spectrum on the torus,” Harvard University Kid’s Seminar, Cambridge, MA (March 2016)
- *Poster*: “Exact Chiral Spin Liquids and Mean-Field Perturbations of Gamma Matrix Models on the Ruby Lattice,” UT Austin, Undergraduate Poster Competition (April 2012)
- “Exact Chiral Spin Liquids and Mean-Field Perturbations of Gamma Matrix Models on the Ruby Lattice,” APS March Meeting, Boston, MA (February 2012)

Miscellaneous Research Experience

- Visiting Researcher, Perimeter Institute (June 2017)
- Visiting Researcher, Perimeter Institute (August 2016)
- Visiting Researcher, Perimeter Institute (August 2015)
- Visiting Researcher, Perimeter Institute (May 2014)
- Undergraduate Researcher, UT Austin, Advisor: Gregory A. Fiete (May 2011 - August 2012)
- Undergraduate Researcher, UT Austin, Advisor: Richard A. Matzner (November 2010 - May 2011)