

# Josiah Couch

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## Education

Ph.D. Physics, University of Texas at Austin, Thesis advisor: Prof. Willy Fischler GPA: 3.68	May 2020 (expected).
B.S. Physics and B.S. Mathematics, Oklahoma State University, GPA: 3.69	August 2013.

## Honors and Awards

OGS Summer Only Fellowship	Summer 2018
Nominated for UT Services for Students with Disabilities Appreciation Award	Fall 2016
OSU Department of Physics Outstanding Senior	2012
OSU Department of Physics Outstanding Junior	2011

## Publications and Preprints

J. Couch, S. Eccles, P. Nguyen, B. Swingle and S. Xu, "The Speed of Quantum Information Spreading in Chaotic Systems," [arXiv:1908.06993](https://arxiv.org/abs/1908.06993) [cond-mat.stat-mech].

E. Cáceres, J. Couch, S. Eccles and W. Fischler, "Holographic Purification Complexity," *Phys. Rev. D* **99**, no. 8, 086016 (2019) doi:10.1103/PhysRevD.99.086016 [arXiv:1811.10650 [hep-th]]. 5 citations counted in INSPIRE as of 21 Aug 2019

J. Couch, S. Eccles, T. Jacobson and P. Nguyen, "Holographic Complexity and Volume," *JHEP* **1811**, 044 (2018) doi:10.1007/JHEP11(2018)044 [arXiv:1807.02186 [hep-th]]. 14 citations counted in INSPIRE as of 21 Aug 2019

J. Couch, S. Eccles, W. Fischler and M. L. Xiao, "Holographic complexity and noncommutative gauge theory," *JHEP* **1803**, 108 (2018) doi:10.1007/JHEP03(2018)108 [arXiv:1710.07833 [hep-th]]. 37 citations counted in INSPIRE as of 21 Aug 2019

J. Couch, W. Fischler and P. H. Nguyen, "Noether charge, black hole volume, and complexity," *JHEP* **1703**, 119 (2017) doi:10.1007/JHEP03(2017)119 [arXiv:1610.02038 [hep-th]]. 96 citations counted in INSPIRE as of 21 Aug 2019

## Work in Progress

E. Cáceres, S. Chapman, J. Couch, J. Hernandez, R. Myers, and S. Ruan "Complexity of Mixed States in QFT," Work in Progress.

## Conferences

Southwest Strings Meeting 2019, Arizona State University, Tempe, AZ. - Speaker

Joint meeting of the Texas Section of the APS, Texas Section of the AAPT, and Zone 13 of the SPS 2018, University of Houston, Houston, TX - Speaker

Prospects in Theoretical Physics 2018, "From Qubits to Spacetime", Institute for Advanced Study, Princeton, NJ - Participant

Southwest Holography Meeting 2018, University of Texas at Austin, Austin, TX. - Speaker

Joint meeting of the Texas Section of the APS, Texas Section of the AAPT, and Zone 13 of the SPS 2017, University of Texas at Dallas, Richardson, TX - Speaker

"Quantum Information in Quantum Gravity III", University of British Columbia, Vancouver, BC - Participant

It from Qubit "Complexity and Black Holes" Workshop, Stanford Institute for Theoretical Physics, Stanford University, Stanford, CA - Participant

## Talks

"Holographic Complexity and Volume," Southwest Strings Meeting 2019, Arizona State University, Tempe, AZ February 2019

"Purification complexity in free scalar field theory," Joint Meeting of the Texas Section of the APS, Texas Section of the AAPT, and Zone 13 of the SPS, Houston, TX October 2018

"Holographic Complexity," Oklahoma State University, Stillwater, OK April 2018

"Holographic Complexity and Non-Commutative Gauge Theory," Southwest Holography Meeting 2018, University of Texas at Austin, Austin, TX March 2018

"Holographic Complexity and Non-Commutative Gauge Theory," Joint Meeting of the Texas Section of the APS, Texas Section of the AAPT, and Zone 13 of the SPS, Richardson, TX October 2017

## Teaching Experience

PHY 389K (Graduate Quantum Mechanics I) - Grader Spring 2018

PHY 362L (Quantum Physics III: Particles and Nuclei) - Grader Spring 2016 & 2018

PHY 373 (Quantum Physics I: Foundations) - Grader and Discussion TA Fall 2015 & 2018

PHY 316 (Electricity and Magnetism) - Grader and Discussion TA Spring 2017 & 2018

PHY 341 (Forensic Science) - Grader Fall 2017

PHY 352K (Classical Electrodynamics I) - Grader and Discussion TA Fall 2016

PHY 103M (Lab for Engineering Physics II) - Teaching Assistant S/F 2014 & S/Summer 2015

PHY 103N (Lab for Engineering Physics I) - Teaching Assistant Fall 2013