

# John Dougherty

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## CONTACT INFORMATION

Department of Philosophy  
University of California, San Diego  
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AOS Philosophy of Physics, Philosophy of Mathematics

AOC Philosophy of Science, Logic, Metaphysics

## EDUCATION

**University of California, San Diego**, La Jolla, California  
Ph.D., Philosophy Expected Spring 2018

**University of Chicago**, Chicago, Illinois  
A.B., Honors, Physics May 2010  
A.B., Honors, The History, Philosophy, and Social Studies of Science and Medicine May 2010

## DISSERTATION

*Identity in gauge theories*

*Committee:* Craig Callender (chair), Nancy Cartwright, David Meyer, Chip Sebens, Jim Weatherall

*Abstract:* I argue that contemporary theories of physics are best understood as involving a more refined identity relation than the one found in first order logic. I use this identity relation to provide novel interpretations of Yang–Mills theory and General Relativity, two of the most successful physical theories. I show that my interpretation is superior to those currently on the market because it solves problems left open by extant interpretations and provides a better explanation of the distinctive features of these theories. My interpretation also fills gaps in justification found in the physics literature.

## FELLOWSHIPS & AWARDS

Beyond Spacetime Predoctoral Research Fellow Winter & Spring 2017  
2016 PSA Graduate Student Essay Award November 2016  
UC San Diego Frontiers of Innovation Scholars Program Fellow AY 2016  
UC San Diego GSA Travel Grant Spring 2015  
UC San Diego Philosophy Dept. Graduate Essay Prize Spring 2014

## PUBLICATIONS

Black hole thermodynamics: More than an analogy? (With C. Callender) Forthcoming  
*Guide to the Philosophy of Cosmology* ed. A. Ijjas and B. Loewer. Oxford University Press.  
What inductive explanations could not be, *Synthese* Forthcoming  
Sameness and separability in gauge theories, *Philosophy of Science*, 84(5):1189–1201 2017

## PRESENTATIONS

Sizing up gauge  
*Philosophy of Logic, Math and Physics Graduate Conference* June 2017  
Western University

Equality and separability in gauge theories  
*Philosophy of Science Association — Twenty-Fifth Biennial Meeting* November 2016  
Atlanta, GA  
*Foundations 2016* July 2016  
London School of Economics  
*British Society for the Philosophy of Science Annual Conference 2016* July 2016  
Cardiff University

The Aharonov–Bohm effect, take  $n$   
*Third International Summer School in Philosophy of Physics* July 2015  
Saig, Germany

	What mathematical explanations could not be <i>Philosophy of Logic, Math and Physics Graduate Conference</i> Western University	June 2015
	The hole argument, take <i>n</i> <i>Third Irvine–Pittsburgh–Princeton Conference on the Foundations of Physics</i> Princeton University	March 2015
	The geometry of black hole entropy <i>Beyond Spacetime II: Time in Quantum Gravity</i> University of California, San Diego	March 2015
	A few points on gunky space <i>Philosophy of Science Association — Twenty-Fourth Biennial Meeting</i> Chicago, IL	November 2014
	Black hole thermodynamics: More than an analogy? (with C. Callender) <i>Philosophy of Science Association — Twenty-Fourth Biennial Meeting</i> Chicago, IL	November 2014
	Symmetries, laws, and quantum fields <i>Philosophy Dept. Graduate Student Conference with A. Chakravartty</i> University of California, San Diego	May 2014
	Problems with justifying typicality measures <i>Second Irvine–Pittsburgh–Princeton Conference on the Foundations of Physics</i> University of California, Irvine	March 2014
COMMENTARIES	Comments on T. Menon, “Rebuilding Neurath’s boat Planck by Planck” <i>Conference on the Philosophical Foundations of Quantum Gravity</i> Bogis-Bossey, Switzerland	June 2017
	Comments on T. Barrett, “What do symmetries tell us about structure?” <i>2017 American Philosophical Association Pacific Division Meeting</i> Seattle, Washington	April 2017
	Comments on C. Chall, “Doubt for Dawid’s non-empirical theory assessment” <i>2016 American Philosophical Association Pacific Division Meeting</i> San Francisco, CA	April 2016
	Comments on R. Wald, “The ‘geodesic principle’ ... in general relativity” <i>Foundations of General Relativity Workshop: What are the Laws of General Relativity?</i> University of Michigan	January 2014
TEACHING EXPERIENCE	<b>University of California, San Diego</b> , La Jolla, California <i>Instructor of Record — Philosophy Dept.</i>	March 2015 – present
	PHIL 10 Introduction to Logic	Summer 2017
	PHIL 12 Scientific Reasoning	Spring 2015, Winter 2018
	PHIL 26 Science, Society, and Values	Summer 2016
	<i>Teaching Assistant — Philosophy Dept.</i>	September 2011 – December 2016
	PHIL 1 Intro. to Philosophy	Winter 2012
	PHIL 10 Intro. to Logic	Spring 2013, Summer 2014, Fall 2014
	PHIL 14 Intro. to Philosophy: Metaphysics	Winter 2015
	PHIL 15 Intro. to Philosophy: Epistemology	Fall 2012
	PHIL 27 Ethics & Society I	Fall 2011, Summer 2012, Winter 2013
	PHIL 28 Ethics & Society II	Spring 2012, Fall 2016
	PHIL 101 Aristotle	Summer 2015
	PHIL 181 Existentialism	Summer 2013
	<i>Graduate Writing Consultant — UC San Diego Writing Center</i>	AY 2016
	<i>Teaching Assistant — Revelle Humanities Program</i>	September 2013 – June 2014
	HUM 1 Foundations of Western Civilization: Israel and Greece	Winter 2014
	HUM 2 Rome, Christianity, and the Middle Ages	Spring 2014

**Pomona College**, Claremont, California

*Lecturer in Philosophy — Philosophy Dept.*

*August 2017 – December 2017*

PHIL 1 Problems of Philosophy

Fall 2017

PHIL 104 Philosophy of Science

Fall 2017

PHIL 199 Directed Readings on the Philosophy of Mathematics

Fall 2017

**University of Chicago**, Chicago, Illinois

*Teaching Assistant — Mathematics Dept.*

*September 2007 – June 2010*

MATH 131–133 Elementary Functions and Calculus I-II-III

AY 2008, 2010

MATH 105–106 Fundamental Mathematics

AY 2009

RESEARCH  
EXPERIENCE

**University of California, San Diego**, La Jolla, California

*Research Assistant to Christian Wüthrich*

Fall 2011 – Spring 2015

Assisted Prof. Wüthrich in research on causal set theory. Managed the [beyondspacetime.net](http://beyondspacetime.net) website. Helped organize the 2015 'Beyond Spacetime II' seminar.

*Research Assistant to J. William Helton*

Spring 2013 – Fall 2013

Assisted Prof. Helton in the creation of an online historical archive for the Mathematical Theory of Networks and Systems conference series.

**University of Chicago**, Chicago, Illinois

*CERN Technologist*

August 2010 – August 2011

Employed on-site at CERN in Geneva, Switzerland. Duties included development of software interface to the charge injection system (CIS) of the ATLAS experiment, development of live monitoring applications for the TileCal detector, and calibration of the TileCal using the CIS.

PROFESSIONAL  
SERVICE

Refereeing:

*British Journal for the Philosophy of Science, European Journal for Philosophy of Science, Foundations of Physics, Philosophical Studies, Philosophy of Science, Synthese*

Selection committee member, UC San Diego Summer Program for Women in Philosophy

2015

Coordinator, Graduate Philosophy Colloquium series

2013 – 2015