

**C. DELANEY**  
[cdelaney@math.ucsb.edu](mailto:cdelaney@math.ucsb.edu)

**EDUCATION**

PhD, Mathematics, UCSB	(Expected) 2019
MA, Mathematics, UCSB	2016
BS, Physics, California Institute of Technology	2013

**RESEARCH INTERESTS**

quantum information theory/science, fusion categories, condensed matter theory

**RESEARCH EXPERIENCE**

Microsoft Station Q Graduate Student Fellow	2016-2017
National Science Foundation Graduate Research Fellow	2013-2016
HRL Laboratories Internship in Computational Physics	Summer 2017
Caltech Summer Undergraduate Research Fellow	Summers 2010-2012

**PUBLICATIONS & PRE-PRINTS**

*Topological quantum computation with symmetry defects.* C. Delaney, Zhenghan Wang. (In preparation.)

*Local unitary representations of the braid group and their application to quantum computing.* C. Delaney, Eric C. Rowell, Zhenghan Wang. <http://arxiv.org/pdf/1604.06429v1.pdf>

*Dyson-Schwinger equations and the theory of computation.* C. Delaney, M. Marcolli. "Feynman Amplitudes, Periods and Motives", Clay Math Institute and AMS. <http://arxiv.org/pdf/1302.5040v1.pdf>

*Generalizing the Connes-Moscovici Hopf algebra to contain all rooted trees.* S. Agarwala, C. Delaney. Journal of Mathematical Physics, Volume 56, Issue 4, April 2015. <http://arxiv.org/pdf/1302.4004v1.pdf>

*The TRENDS High-Contrast Imaging Survey. I. Three Benchmark M-Dwarfs Orbiting Solar-type Stars J.* Crepp, J. Johnson, A. Howard, G. Marcy, D. Fischer, L. Hillenbrand, S. Yantek, C. Delaney, J. Wright, H. Isaacson, B. Montet. Astrophysical Journal, Volume 761, Number 1 <http://iopscience.iop.org/article/10.1088/0004-637X/761/1/39/pdf>

**SERVICE & OUTREACH**

Co-organizer of UCSB Quantum Algebra and Topology Seminar	2015-2017
Graduate student mentor	
• Scholarships for Transfer Students to Engage and Excel (STEEM) program	2014-2016
• UCSB Women in STEM Mentorship Program	2016-2017

**INVITED TALKS**

*Applications of equivariantization/de-equivariantization to topological quantum computing* 2018  
JMM San Diego

*Introduction to the mathematics of topological quantum computing* 2017  
HRL Laboratories, Malibu, CA

*Quantum computing with symmetry defects* 2016, 2017

- Subfactors and Quantum Symmetries  
Maui College, HI
- AMS Sectional: Special Session on Topological Phases of Matter and Quantum Computation  
Bowdoin College, ME

*Dyson-Schwinger equations and the theory of computation* 2013  
Max-Planck Institute for Mathematics, Bonn, DE

## **PROGRAMMING EXPERIENCE**

- Working experience with Python, Mathematica, and IDL with applications to advanced mathematics and data analysis

## **TEACHING EXPERIENCE**

Math 34A,B - Calculus for Life and Social Science (TA)	Summer, Fall 2015
Math 3B - Calculus with Applications II (Head TA)	Winter 2016
Math 4A - Linear Algebra with Applications (TA)	Fall 2016
Math 111C - Abstract Algebra: Field and Galois Theory (TA)	Spring 2016
Math 132A - Operations Research (Reader)	Spring 2017