COLLEEN DELANEY

PRESENT POSITION
Graduate Student in Mathematics
University of California, Santa Barbara
cdelaney@math.ucsb.edu

PAST EDUCATION
M.A. Mathematics 2016
University of California, Santa Barbara

B.S. with Honors in Physics, minor in History 2013
California Institute of Technology, Pasadena, CA

RESEARCH INTERESTS

quantum computation, condensed matter theory, symmetry-enriched topological phases of matter, G-crossed braided fusion categories, quantum hardware design

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`

AWARDS

Microsoft Station Q Graduate Fellowship	2016
National Science Foundation Graduate Research Fellowship	2013
Conference for Undergraduate Women in Physics Poster Competition - 1st Place	2013

PROGRAMMING/LABORATORY EXPERIENCE

- Working experience with Python, Mathematica, SnapPy, IDL
- Five quarters of undergraduate physics labs, including two quarters of senior physics lab with a focus on condensed matter physics

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

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

Quantum computing with symmetry defects   2016
AMS Sectional: Special Session on Topological Phases of Matter and Quantum Computation
Bowdoin College, Maine, USA

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