CV

Ryan Thorngren

October 2015

1 Education

- BSc, Mathematics from Caltech 2009-2013; GPA 3.9/4.3
- PhD, Mathematics from UC Berkeley 2013-2018 (expected)

2 Research

My research concerns the interactions between geometry, topology, quantum field theory, and information, recently with focus on materials with highly entangled ground states.

- "QED_3 surface of the Topological Insulator" with Max Metlitski, to appear
- "Higher SPTs and a Generalization of Anomaly In-Flow" with Curt von Keyserlingk. arXiv:1511.02929
- "Fermionic Symmetry Protected Phases and Cobordisms" with Anton Kapustin, Alex Turzillo, and Zitao Wang. 2014 Submitted to JHEP
- "Framed Wilson Operators on the Boundaries of Novel SPT Phases" Published in JHEP 2015
- "Anomalies of discrete symmetries in various dimensions and group cohomology" with Anton Kapustin. Published in JHEP 2015
- "Anomalies of discrete symmetries in three dimensions and group cohomology" with Anton Kapustin. Published in Phys Rev Lett 2014
- "Higher symmetry and gapped phases of gauge theories", with Anton Kapustin. arXiv:1309.4721 to appear in proceedings of a conference in honor of Maxim Kontsevich's 50th birthday 2014
- "Electric-Magnetic Duality of Topological Gauge Theories from Compactification". arXiv:1309.1489 2013

- "Topological Field Theory on a Lattice, Discrete Theta-Angles and Confinement", with Anton Kapustin. Published in Adv Theor Math Phys 2013
- "Thermodynamic Semirings", with Matilde Marcolli. Published in the Journal of Noncommutative Geometry, EMS. arXiv:1108.2874 2012

3 Invited Talks

- Simons Center for Geometry and Physics, On the Classification on Gapped Phases of Matter, 2016
- Simons Center for Geometry and Physics, Higher Symmetries of Abelian Chern-Simons Theory, 2016
- Perimeter Institute, Integrability and Fermionic SPT, 2015
- UC Berkeley, RTG Seminar, Anomalies and Higher Symmetry. 2015
- UC Berkeley, String Theory Seminar, Higher Symmetry and phases of Yang-Mills Theory, 2014

4 Teaching

- TA, Ma2a Practical Differential Equations, Caltech 2013
- GSI, Ma21 Calculus of a Single Variable, UC Berkeley 2013
- GSI, Ma54 Linear Algebra, UC Berkeley 2014
- GSI, Ma53 Calculus of Two and Three Variables, UC Berkeley 2014

5 Awards and Honors

- Graduate Dean's Summer Research Grant 2014
- Scott Russell Johnson Undergraduate Award 2013
- Robert P. Balles Caltech Mathematics Scholars Award 2012
- Herbert J. Ryser Caltech Mathematics Fellowship 2012
- Caltech Spirit Award 2012 for MIT prank
- Admittance into Physics 11 Research Class 2010 - 2011
- Summer Undergraduate Research Fellowship 2011, 2012