Curriculum Vitae

David Ayala

Education.

- **Stanford University**. Ph.D. Mathematics (2009).
  Dissertation: *Geometric cobordism categories*
  Advisor: Ralph L. Cohen
- **University of Utah**. M.S. Mathematics (2004).
- **University of Utah**. B.S Physics (2004).
- **University of Utah**. B.S Mathematics (2002).

Appointments.

- **Montana State University**. Assistant Professor of Mathematics (2014–present).
- **University of California, Berkeley**. Mathematical Sciences Research Institute, Postdoctoral Fellow (2014).
- **University of Southern California**. NSF Postdoctoral Fellow (2013–2014).
- **Harvard University**. NSF Postdoctoral Fellow (2009, 2011–2013).
- **University of Copenhagen**. ERC Postdoctoral Fellow (2009–2010).

Grants and Awards.

- **Workshops: Homotopy Harnessing Higher Structures**. National Science Foundation, division of mathematical sciences. Award 1833295 (2018).
- **Factorization Homology, Deformation Theory, and Duality**. National Science Foundation, division of mathematical sciences: topology. Award 1812055 (2018–2021).
- **Faculty Excellence Grant**. Montana State University (2015, 2016, 2017).
- **Factorization Homology and the Cobordism Hypothesis**. National Science Foundation, division of mathematical sciences: topology. Award 1507704 (2015–2018).
- **Scanning Methods in Algebraic Topology**. National Science Foundation, division of mathematical sciences: postdoctoral fellowship. Award 0902639 (2009–2013).
- **ARCS**. Achievement Rewards for College Scientists: graduate student fellowship (2007–2008).
- **VIGRE**. National Science Foundation, division of mathematical sciences: graduate fellowship (2003–2004).

Research papers.

(1) **Flagged higher categories**. Joint with John Francis. To appear: CBMS proceedings: topological and geometric methods in quantum field theory.
(2) **The geometry of cyclotomic trace**. Joint with Aaron Mazel-Gee and Nick Rozenblyum. Available at http://arxiv.org/abs/1710.06414.
(3) **A naive approach to equivariant and cyclotomic spectra**. Joint with Aaron Mazel-Gee and Nick Rozenblyum. Available at http://arxiv.org/abs/1710.06416.
(4) **Factorization homology of enriched $(\infty, 1)$-categories**. Joint with Aaron Mazel-Gee and Nick Rozenblyum. Available at http://arxiv.org/abs/1710.06409.
(5) **The cobordism hypothesis**. Joint with John Francis. Available at http://arxiv.org/abs/1705.02240.
(6) **Fibrations of ∞-categories**. Joint with John Francis. Available at http://arxiv.org/abs/1702.02681.
(7) **Factorization homology I: higher categories**. Joint with John Francis and Nick Rozenblyum. To appar: Advances in Mathematics.
(8) **A stratified homotopy hypothesis**. Joint with John Francis and Nick Rozenblyum. To appear: Journal of the European Mathematical Society.
(9) **Zero-pointed manifolds**. Joint with John Francis. Available at http://arxiv.org/abs/1409.2857.
(10) **Poincaré/Koszul duality**. Joint with John Francis. Available at http://arxiv.org/abs/1409.2478.
(11) **Factorization homology of stratified spaces**. Joint with John Francis and Hiro Lee Tanaka. Selecta Mathematica (N.S.) 23 (2017), no. 1, 293-362.
(12) **Local structures on stratified spaces**. Joint with John Francis and Hiro Lee Tanaka. Advances in Mathematics 307 (2017), 903-1028.
(13) **Factorization homology of topological manifolds**. Joint with John Francis. Journal of Topology 8 (2015), no. 4, 1045-1084.
(14) **Configuration spaces and Θ_n**. Joint with Richard Hepworth. Proc. Amer. Math. Soc. 142 (2014), no. 7, 2243–2254.
(15) **Counting bitangents with stable maps**. Joint with Renzo Cavalieri. Expositiones Mathematicae 24 (2006), no. 4, 307-335.

Other publications.

- **In hope of climate-aware conferencing**. Joint with Lukas Bantner, Andre Henriques, Theo Johnson-Freyd, and Aaron Mazel-Gee. To appear: London Mathematical Society Newsletter.

Invited presentations (selected).

- **Workshop: Adjoints and Orthogonal Groups**. Oaxaca (2018).
- **Colloquium: a Classification of Topological Quantum Field Theories**. University of Utah (2018).
- **Workshop: Factorization Homology and the Cobordism Hypothesis**. 2-part lecture series. University of Nice (2018).
- **Summer school: Factorization Homology**. 8-part lecture series. Haifa University (2018).
- **Seminar: Bruhat stratified orthogonal group acts on higher categories**. Massachusetts Institute of Technology (2017).
- **Conference: Factorization Homology**. Floer Homology and Homotopy Theory. University of California at Los Angeles (2017).
- **Conference: Factorization Homology and TQFT**. Topology Festival. Cornell University (2017).
- **Conference: Deeply non-affine algebraic sigma-models are state sum field theories**. QFT on Manifolds with Boundary and BV. Perimeter Institute (2017).
- **Conference: Higher Adjoints and the Orthogonal Group**. Wasatch Topology Conference. University of Utah (2016).
- **Workshop: Factorization Homology**. 3-part lecture series. University of Texas at Austin (2016).
- **Summer school: Factorization Homology**. 12-part lecture series. Instituto Nacional de Mathematica Pura e Apliceda (2016).
- **Summer school: Homotopy Theory, Manifolds, and Topological Field Theories**. 6-part lecture series. Hausdorff Institute of Mathematics (2015).
- **Seminar: Factorization Homology**. Langlands seminar: 3-part lecture series. University of Chicago (2015).
- **Conference: Factorization Homology**. Topology Oberwolfach (2015).
- **Conference: Poincaré/Koszul Duality**. Reimagining the Foundations of Algebraic Topology. University of California at Berkeley (2014).
- **Seminar: Poincaré/Koszul Duality**. Massachusetts Institute of Technology (2014).
- **Conference: Poincare/Koszul duality**. Topology in Dubrovnik (2014).
- **Conference: Labeled Configuration Spaces**. Graduate Student Topology Conference. University of Notre Dame (2013).

- **Conference: Higher Categories as Sheaves on Manifolds**. Topological Quantum Field Theories. University of Notre Dame (2012).
- **Seminar: Combinatorial Model for Configuration Spaces**. Massachusetts Institute of Technology (2010).
- **Conference: the First Copenhagen Topology Conference**. Cobordism Categories. University of Copenhagen (2010).
- **Seminar: Cobordism Categories with Singularities**. Massachusetts Institute of Technology (2009).
- **Conference: Topological Field Theories**. Cobordism Categories. Northwestern University (2009).

Program organization.

(1) **Higher category theory**. Mathematical Sciences Research Institute (2020). Semester-long program.
(2) **Higher category theory: introductory workshop**. Mathematical Sciences Research Institute (2020). Week-long workshop.
(3) **Homotopy harnessing higher structures: manifolds**. Isaac Newton Institute (2018). Week-long conference.
(4) **Higher algebra and mathematical physics**. Perimeter Institute (2018). Week-long conference.
(5) **NSF-CBMS: geometric and topological methods in quantum field theory**. Montana State University (2017). Week-long conference.
(6) **Factorizable structures in topology and algebraic geometry**. Banff International Research Station (2015). Week-long workshop.
(7) **West coast algebraic topology summer school: topological quantum field theory**. University of British Columbia (2014). Week-long summer school.
(8) **West coast algebraic topology summer school: homotopy theory, manifolds, and topological field theories**. University of Oregon (2010). Week-long summer school.