Walker H. Stern

He/him/his

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Curriculum Vitæ, Fall 2023

Born: 23. July, 1991. Santa Cruz, CA, USA
Nationality: USA

Education

Dr. rer. nat. in Mathematics – Universität Bonn   2019

> Thesis: Open Topological Field Theories and 2-Segal Objects

M.A. in Mathematics – Brandeis University   2013

B.S. in Mathematics & Physics – Brandeis University   2013

Professional Appointments & Employment

Postdoctoral Researcher, Bilkent University   2023–present

RTG Postdoc, University of Virginia   2020–23

Wissenschaftliche Mitarbeiter, Universität Hamburg   2018-20

Doctoral Candidate, MPIM/Universität Bonn   2014-19

Adjunct Instructor, Mathematics, Wentworth Institute of Technology   2013-14

Publications & Preprints

Journal articles

Fernando Abellán García & Walker H. Stern, *Enhanced twisted arrow categories.* Theory and applications of categories. Vol 29. pp 98-149. Preprint: arXiv:2009.11969

Fernando Abellán García & Walker H. Stern, *2-Cartesian fibrations I: A model for ∞-bicategories fibred in ∞-bicategories.* Appl. Cartegor. Struct. 30, pp. 1341-1392. DOI: 10.1007/s10485-022-09693-x. Preprint: arXiv:2106.03606

Walker H. Stern & Lóránt Szegedy, *Topological field theories on open-closed r-spin surfaces.* Topology Appl. 312-1. 2022. DOI: 10.1016/j.topol.2022.108062. Preprint: arXiv:2004.14181

Fernando Abellán García & Walker H. Stern, *Theorem A for marked 2-categories.* J. Pure and Applied Algebra. 226-9. 2022. DOI: 10.1016/j.jpaa.2022.107040. Preprint: arXiv:2002.12817

Fernando Abellán García, Tobias Dyckerhoff, & Walker H. Stern *A relative 2-nerve.* Algebr. Geom. Topol. 20-6 (2020) pp. 3147–3182. DOI: 10.2140/agt.2020.20.3147. Preprint: arXiv:1910.06223

Walker H. Stern, *2-Segal objects and algebras in spans.* J. Homotopy Relat. Str. 16 (2021) pp. 297-361. DOI: 10.1007/s40062-021-00282-8. Preprint: arXiv:1905.06671

Preprints

Fernando Abellán García & Walker H. Stern, *On cofinal functors of ∞-bicategories.* arXiv:2304.07028 (Submitted)

Fernando Abellán García & Walker H. Stern, *2-Cartesian fibrations II: The Grothendieck construction.* arXiv:2201.09589 (Submitted)

Walker H. Stern, *Structured Topological Field Theories via Crossed Simplicial Groups.* arXiv:1603.02614

In preparation

Julie Bergner & Walker H. Stern, *Cyclic 2-Segal sets and the Waldhausen construction.*

Julie Bergner & Walker H. Stern, *Cyclic Segal spaces*

Iván Contreras, Rajan Mehta, & Walker H. Stern, *Frobenius objects in symplectic categories I*

Walker Stern, *A fibrational model for cyclic ∞-operads*

As translator

Werner Ballmann, *Introduction to Topology and Geometry.* Birkhäuser. 2018.

Selected Talks

Invited Talks

Higher Grothendieck constructions. Workshop: "Higher categorical methods in algebra and geometry," Hamburg.	2023
Cofinality and Grothendieck constructions. AMS sectional meeting, Amherst, Special session on higher structures and homotopical algebra	2022
Marked 2-colimits. AMS sectional meeting, UVA, special session on homotopy theory (canceled)	2022
Generalizing Quillen's Theorem A. IRP HHS Opening Workshop, Barcelona	2021
Calabi-Yau algebras and 2-Segal objects. Thomas Poguntke Memorial Workshop, Barcelona	2019
Crossed simplicial groups and field theories. Universität Wien	2017

Seminar and Colloquium Talks

Colloquium, Weber State University, *Spin TFTs and polygonal decompositions*	2023
Math Factor (Undergraduate math club), Weber State University, *Slicing and Dicing Polyhedra*	2023
Graduate Student Seminar (Utah State University) *Spin TFTs and polygonal decompositions*	2023
Topology Seminar (University of Louisiana, Lafayette) *Frobenius algebras and symplectic categories.*	2022
Topology, Algebraic Geometry, and Dynamics Seminar (George Mason) *Frobenius algebras and symplectic categories.*	2022
Topology Seminar (UVA)	
- *Lax functors and fibred categories*	2023
- *Representing $(\infty, 2)$-functors*	2022
- *From 2-Segal spaces to TFTs*	2020
Research Seminar on Higher Structures (Hamburg)	

- *Theorem A for 2-categories* 2020
- *Deformation theories classify formal moduli problems* 2020
- *Examples of deformations II: complex manifolds and vector bundles* 2019
- *Models for (∞, n)-categories* 2019

Teaching

University of Virginia

- Math 5305: Proofs in Analysis (Summer Zero) 2023
- Math 3354: Survey of Algebra 2023
- Math 4720: Introduction to Differential Geometry 2022
- Math 3350: Applied Linear Algebra 2022
- MATH 5896: Supervised Study in Mathematics (Topology) 2022
- Math 8850: Intro to Quasi-categories 2021
- Math 5700: Intro to Geometry 2021
- Math 2310: Calculus III 2020

Universität Hamburg

- Tutor (TA) for Lineare Algebra und Analytische Geometrie (instruction in German) 2019-20
- Tutor (TA) for Homological Algebra 2019
- Tutor (TA) for Introduction to Higher Category Theory 2018-19

Wentworth Institute of Technology
- Math 625: Differential Equations 2013, 2014
- Math 250: Precalculus 2014
- Facilitated Study Groups, mathematics 2014
- Math 285: Engineering Calculus I 2013

Mentoring

Mentored a graduate student for the "Online workshop on $(\infty, 2)$-categories." 2023

Directed Reading Program mentor for two projects at UVA. Topics: Spring 2022

- Introductory category theory. (Following *Category Theory in Context*, by E. Riehl)
- Mathematical proof and elegance. (Following *Proofs from THE BOOK* by M. Aigner and G. Ziegler)

Research experiences for undergraduates (REUs)

- Mentored a four-student research group in a project on equivariant topological complexity. Summer 2021
  Resulting preprint:

  Bell, R., Eckert, A., Pesak, R., and Schweitzer, A. *A Finite Equivariant Generalization of Motion Planning and Topological Complexity.* arXiv:2201.03695
- Mentored a four-student research group in a project on model categories Summer 2022
  Resulting preprint:

  Dailey, I., Huggins, C., Mujevic, S., and Shupe, C. *Homotopical models for metric spaces and completeness* arXiv:2212.00147

Service

Reviewer for AMS Mathematical Reviews.	2021-present
Member of the "Closing achievement gaps working group" for the UVA Math department	Spring 2022