

CURRICULUM VITÆ, 1. OCTOBER, 2024

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

Wissenschaftlicher Mitarbeiter , Technische Universität München <i>Scientific employee</i>	October 2024 – present
Postdoctoral Researcher , Bilkent University <i>Scientific Employee</i>	2023 – 2024
RTG Postdoc , University of Virginia <i>Scientific Employee & University Instructor</i>	2020 – 2023
Wissenschaftlicher Mitarbeiter , Universität Hamburg <i>Scientific Employee</i>	2018 – 2020
Stipendiat , MPIM Bonn <i>Doctoral candidate in mathematics</i>	2014 – 2018
Adjunct Instructor , Mathematics, Wentworth Institute of Technology <i>University Instructor</i>	2013 – 2014

PUBLICATIONS & PREPRINTS**Journal articles**

- Ivan Contreras, Rajan Amit Mehta, & Walker H. Stern. *Frobenius and commutative pseudomonoids in the bicategory of spans*. To appear in J. Geom. Phys. [arXiv:2311.15342](#)
- 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](https://doi.org/10.1016/j.topol.2022.108062). Preprint: [arXiv:2004.14181](https://arxiv.org/abs/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](https://doi.org/10.1016/j.jpaa.2022.107040). Preprint: [arXiv:2002.12817](https://arxiv.org/abs/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](https://doi.org/10.2140/agt.2020.20.3147). Preprint: [arXiv:1910.06223](https://arxiv.org/abs/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](https://doi.org/10.1007/s40062-021-00282-8). Preprint: [arXiv:1905.06671](https://arxiv.org/abs/1905.06671)

Preprints

- Redi Haderi & Walker H. Stern. *An \mathcal{O} -monoidal Grothendieck construction*. [arXiv:2404.01031](https://arxiv.org/abs/2404.01031)
- Cihan Okay & Walker H. Stern. *Twisted simplicial distributions*. [arXiv:2403.19808](https://arxiv.org/abs/2403.19808) (Submitted)
- Cihan Okay, Redi Haderi, & Walker H. Stern. *The operadic theory of convexity*. [arXiv:2403.18102](https://arxiv.org/abs/2403.18102) (Submitted)
- Fernando Abellán García & Walker H. Stern, *On cofinal functors of ∞ -bicategories*. [arXiv:2304.07028](https://arxiv.org/abs/2304.07028) (Submitted)
- Fernando Abellán García & Walker H. Stern, *2-Cartesian fibrations II: The Grothendieck construction*. [arXiv:2201.09589](https://arxiv.org/abs/2201.09589) (Submitted)
- Walker H. Stern, *Structured Topological Field Theories via Crossed Simplicial Groups*. [arXiv:1603.02614](https://arxiv.org/abs/1603.02614)

In preparation

- Cihan Okay, Victor Torres-Castillo, & Walker H. Stern *Weak associativity, simplicial effects, and partial groups*.
- Walker H. Stern. *Perspectives on the 2-Segal conditions*
- Julie Bergner & Walker H. Stern, *Cyclic Segal spaces*
- Walker H. Stern, *A fibrational model for cyclic ∞ -operads*

As translator

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

SELECTED TALKS

Conference and Workshop Talks

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| <i>Twisted simplicial distributions</i> . 21st International Conference on Quantum Physics and Logic, Buenos Aires | 2024 |
| Workshop: "Higher Segal Spaces and their Applications to Algebraic K-Theory, Hall Algebras, and Combinatorics," Banff International Research Station | 2024 |
| - <i>Introduction: The 2-Segal space perspective</i> | |
| - <i>Cyclic 2-Segal spaces</i> | |
| <i>Higher Grothendieck constructions</i> . Workshop: "Higher categorical methods in algebra and geometry," Hamburg. | 2023 |
| <i>Cofinality and Grothendieck constructions</i> . AMS sectional meeting, Amherst, Special session on higher structures and homotopical algebra | 2022 |

<i>Marked 2-colimits.</i> AMS sectional meeting, UVA, special session on homotopy theory (canceled)	2022
<i>Generalizing Quillen's Theorem A.</i> IRP HHS Opening Workshop, Barcelona	2021
<i>Calabi-Yau algebras and 2-Segal objects.</i> Thomas Poguntke Memorial Workshop, Barcelona	2019

Seminar and Colloquium Talks

Algebra and Geometry Seminar, HKUST, <i>Higher Segal spaces and algebraic structures</i>	2024
Topology Seminar, Bilkent University. Four-talk sequence on higher category theory.	2024
Math Factor (Undergraduate math club), Weber State University, <i>Slicing and Dicing Polyhedra</i>	2023
Seminar, Utah State University <i>Spin TFTs and polygonal decompositions</i>	2023
Topology Seminar (University of Louisiana, Lafayette) <i>Frobenius algebras and symplectic categories.</i>	2022
Topology, Algebraic Geometry, and Dynamics Seminar (George Mason) <i>Frobenius algebras and symplectic categories.</i>	2022
Topology Seminar (UVA)	
- <i>Lax functors and fibred categories</i>	2023
- <i>Representing $(\infty, 2)$-functors</i>	2022
- <i>From 2-Segal spaces to TFTs</i>	2020
Research Seminar on Higher Structures (Hamburg)	
- <i>Theorem A for 2-categories</i>	2020
- <i>Deformation theories classify formal moduli problems</i>	2020
- <i>Examples of deformations II: complex manifolds and vector bundles</i>	2019
- <i>Models for (∞, n)-categories</i>	2019
<i>Crossed simplicial groups and field theories.</i> Universität Wien	2017

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 an undergraduate student on a research project studying quantum contextuality. ongoing

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](https://arxiv.org/abs/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](https://arxiv.org/abs/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