Wolfgang William Schmaltz

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Education

University of California, Berkeley — Aug. 2012 – May 2018
Doctor of Philosophy in Mathematics

University of Chicago — Sep. 2007 – Jun. 2011
Bachelor of Science in Mathematics

Research Positions

Polyfold Theorist — Mar. 2020 – Dec. 2024
Faculty of Mathematics, Ruhr-Universität Bochum — *Bochum, Germany*

Polyfold Theorist — Jan. 2018 – Feb. 2020
Mathematics Institute, Justus-Liebig University — *Gießen, Germany*

Papers

Pseudocycle Gromov–Witten invariants are a strict subset of polyfold Gromov–Witten invariants — Aug. 2023
W. Schmaltz — *arXiv:2308.14204*

Non-fillability of overtwisted contact manifolds via polyfolds — Nov. 2020
W. Schmaltz, S. Suhr, K. Zehmisch — *arXiv:2011.02249*

The Gromov–Witten axioms for symplectic manifolds via polyfold theory — Dec. 2019
W. Schmaltz — *arXiv:1912.13374*

Naturality of polyfold invariants and pulling back abstract perturbations — Dec. 2019
W. Schmaltz — *arXiv:1912.13370*

The Steenrod problem for orbifolds and polyfold invariants as intersection numbers — Apr. 2019
W. Schmaltz — *arXiv:1904.02186*

Selected Invited Talks

Orbifold Intersection Theory and Polyfold Gromov–Witten Invariants — Nov. 28, 2023
Heidelberg Geometry Seminar — *Heidelberg, Germany*

The Steenrod problem for orbifolds and polyfold Gromov–Witten invariants — Dec. 10, 2020
Oberseminar Dynamische Systeme — *Bochum, Germany*

Gromov–Witten Axioms for Symplectic Manifolds via Polyfold Theory — Oct. 24, 2018
SISSA — *Trieste, Italy*

Naturality of Polyfold Invariants — May 2, 2018
Mathematical Sciences Research Institute — *Berkeley, California*

The Polyfold Gromov–Witten Invariants & Gromov–Witten Axioms for Symplectic Manifolds via Polyfold Theory — Apr. 25, 2018
Berkeley Topology Seminar — *Berkeley, California*

Projects

symplectic-GPT — wolfgangschmaltz.com/symplectic_GPT

- Built an LLM from scratch to illustrate the underlying mathematical principles of tokenizers and attention mechanisms; training data consisted of the raw text of a selection of mathematics papers in symplectic geometry
- Built a fork of symplectic-GPT to examine the current semantic understanding of more sophisticated LLMs; mathBERTA was used for tokenizing of mathematics symbols, and various pretuned base models were used

Skills

Programming Languages: Python (excellent), SQL (excellent), Java
Foreign Languages: English (native), German (C1), Turkish (A2)