W. Sebastian Gant

The University of British Columbia
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EDUCATION

The University of British Columbia
PhD candidate, Mathematics — 2021-present
- Thesis: *The motivic homotopy theory of Stiefel varieties with applications to stably free modules*
- Advisor: Ben Williams
- Expected graduation: April 2026

MSc, Mathematics — 2018-2020
- Masters Thesis: *Classifying spaces for topological Azumaya algebras*
- Advisor: Ben Williams

The University of Washington
BSc, Mathematics with honors, minor in physics — 2014-2018
- Undergraduate Thesis: *Reflective subcategories of Top: Hausdorffization and the like*
- Advisor: Jonathan Beardsley

RESEARCH INTERESTS

The motivic homotopy theory of Stiefel varieties. Algebraic vector bundles and torsors. Motives and motivic cohomology. Stable homotopy groups of motivic spheres.

PAPERS AND PREPRINTS

1. S. Gant and B. Williams. *Motivic homotopy groups of spheres and free summands of stably free modules.* To appear in Algebraic & Geometric Topology. 2026. arXiv:2510.10033.
2. S. Gant. *The nonexistence of sections of Stiefel varieties and stably free modules.* To appear in Mathematische Zeitschrift. 2026. arXiv:2509.07263.
3. S. Gant and B. Williams. *Free summands of stably free modules.* In Forum of Math. Sigma. 2025. arXiv:2409.15445.
4. S. Gant. *A geometric splitting of the motive of* GL_n. Preprint. 2024. arXiv:2406.14687.
5. S. Gant and B. Williams. *Spaces of generators for the* 2×2 *complex matrix algebra.* In New York Journal of Mathematics. 2024. arXiv:2201.00700.

TALKS

Stably free modules without free summands — October 2026
SLMath workshop *Motivic homotopy theory: connections and applications*

Free summands of stably free modules — April 2025
University of Chicago Topology Seminar

Summands of stably free modules — October 2024
UBC Algebraic Geometry Seminar

Towards a stable splitting of GL_n *in* $\mathbb{A}^1$*-homotopy theory,* — July 2023
Young Topologists Meeting 2023, EPFL

	Towards a stable splitting of GL_n *in* $\mathbb{A}^1$*-homotopy theory,* UBC topology seminar	February 2023
	Spaces of generators of matrix algebras, UBC topology seminar	June 2020
SCHOLARLY ACTIVITY	eCHT seminar on algebraic vector bundles, participant	Fall 2023
	Motivic cohomology reading group, organizer	June-August 2022
	UBC Topology student seminar, co-organizer with Mihai Marian	2019-2020
SUMMER SCHOOLS	*Winter School in Unstable Motivic Homotopy Theory,* JGU, Mainz	March 2024
	Introduction to Derived Algebraic Geometry, SLMath, UC Berkeley	July 2023
	Floer Homotopy Theory, Pacific Institute for the Mathematical Sciences, UBC Vancouver	July 2022
TEACHING	Differential calculus small class instructor in Term 1 2022, 2023, and 2025	
TA	TA for the following courses: • Algebraic topology • Rings and modules • Groups • Multivariable calculus • Vector calculus • Honors vector calculus • Calculus with applications • Linear algebra	2018-2024
	Math Learning Centre TA	2018-2024
SERVICE AND OUTREACH	UBC Math Circle (a seminar for high school students) talks:	
	The Borsuk-Ulam Theorem and the necklace splitting problem	March 2026
	Planar graphs and the Euler characteristic.	February 2024
	Panellist for UBC's undergraduate colloquium on graduate school in mathematics	April 2024
	Tutor at Rainier Scholars, a nonprofit organization dedicated to improving educational equity in the greater Seattle area.	2015-2016