Tyler Schulz

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EDUCATION

Sep. 2017 to May 2021	**University of Victoria** BSc Honours Mathematics w/ Minor in Physics
Sep. 2021 to Present	**University of Victoria** MSc Mathematics

RESEARCH EXPERIENCE

Sep. 2020 to April 2021	**Honours Project** at the UNIVERSITY OF VICTORIA Current research aims to classify the KMS states on a C*-dynamical system for the affine semigroup over the natural numbers, particularly at sub-critical temperatures.
May 2020 to Aug. 2020	**Undergraduate Summer Research**, funded by the NSERC USRA at the UNIVERSITY OF VICTORIA Investigated properties of extremal KMS states on C*-dynamical systems. In particular, how the type of a state relates to it's persistence and spatial representations, and factorizations of states through conditional expectations.
May 2019 to Aug. 2019	**Undergraduate Summer Research**, funded by the NSERC USRA at the UNIVERSITY OF VICTORIA Studied a family of spectral triples over rotation algebras by computing their Chern characters, and used the residue index theorem to compute their pairings with K-theory.

PUBLICATIONS AND REPORTS

2020	Nathaniel Butler, Heath Emerson, Tyler Schulz, **Dirac-Schrodinger operators and the irrational torus** AWAITING PUBLICATION Preprint available on arxiv.org.
2021	Marcelo Laca, Tyler Schulz, **Supercritical phase transition on a right Toeplitz algebra** IN PROGRESS

Presentations

Mar. 2020	**Undergraduate Math Seminar**
	hosted by the University of Victoria
	Talk: *Complex geometry as a gateway to index theory.* A presentation on the Riemann-Roch Theorem for complex projective curves.

Jan. 2020	**Graduate Operator Algebras Seminar**
	hosted by the University of Victoria
	Talk: *A Spectral Triple for Flows and the Residue Index Theorem.* A presentation on the background and results from what would eventually become the paper *Dirac-Schrodinger operators and the irrational torus.*

Oct. 2019 to Nov. 2019	**Graduate Noncommutative Geometry Seminar**
	hosted by the University of Victoria
	Talk: *Dirac-Schrödinger operators and Bott periodicity, parts I, III, and V.* A series of presentations in the Graduate Noncommutative Geometry seminar on how Dirac-Schrödinger operators can be used to prove $\mathbb{Z}$-equivariant Bott periodicity in KK-theory. The speaker alternated between myself and Nathaniel Butler.

Mar. 2019	**Undergraduate Math Seminar**
	hosted by the University of Victoria
	Talk: *The Serre-Swan Theorem.* A presentation of the Serre-Swan Theorem for real and complex vector bundles over compact manifolds.

Jan. 2019	**Undergraduate Math Seminar**
	hosted by the University of Victoria
	Talk: *Basic Enumerative Geometry I and II.* Two presentations providing an overview of the basic definitions and theorems from enumerative geometry, and some interesting open questions.

Jul. 2018	**SUMS Summer Mini-Conference**
	hosted by the University of Victoria
	Talk: *Curves with Area in $\mathbb{R}^2$.* A presentation on constructions of various Osgood curves.

Awards and Recognitions

2021	**Alexander Graham Bell Canada Graduate Scholarship - Masters' Award**
	UVic President's Research Scholarship
	Faculty of Science Dean's List
2020	**Undergraduate Student Research Award** from the Natural Sciences and Engineering Research Council of Canada
	Marvin Shinbrot Memorial Scholarship
	UVic President's Scholarship
2019	**Faculty of Science Dean's List**
	Frank and Margaret Gibbs Scholarship
	Lothar Hermann Redlin Memorial Scholarship
	Marvin Shinbrot Memorial Scholarship
	Undergraduate Student Research Award
	UVic President's Scholarship
2018	**Faculty of Science Dean's List**
	UVic President's Scholarship
2017	**UVic Enterance Scholarship**

Teaching Experience

Sep. 2021 to April 2022	**Teaching Assistant Consultant** at the University of Victoria Organized a peer observation program for new tutorial instructors. This involved creating workshops, arranging TAs into peer observation groups, and facilitating group observations and discussions.
Sep. 2021 to Dec. 2021	**Teaching Assistant** at the University of Victoria Course Titles: Calculus II (MATH 101) Ran two interactive tutorial sections. Created problem sets for tutorials and homework.
Sep. 2021 to Dec. 2021	**Assistance Center Tutor** at the University of Victoria Provided official tutoring services for the *Math and Stats Assistance Center*, specializing in calculus, real analysis, and algebra.
Jan. 2020 to April 2020	**Teaching Assistant** at the University of Victoria Course Titles: Matrix Algebra I (Math 211), Minimal Cantor Systems (Math 465/540) Graded problem sets for both courses, and provided live assistance during Math 211 lectures through Zoom.
Sep. 2020 to Dec. 2020	**Assistance Center Tutor** at the University of Victoria Provided official tutoring services for the *Math and Stats Assistance Center*, specializing in calculus, real analysis, and algebra.

Sep. 2020 to Dec. 2020	**Teaching Assistant** at the University of Victoria Course Titles: Linear Algebra (Math 311) Graded problem sets.
Jan. 2020 to April 2020	**Teaching Assistant** at the University of Victoria Course Title: Calculus II (Math 101) Ran three interactive tutorial sections.
Sep. 2019 to Dec. 2019	**Assistance Center Tutor** at the University of Victoria Provided official tutoring services for the *Math and Stats Assistance Center*, specializing in calculus, real analysis, and algebra.
Sep. 2019 to Dec. 2019	**Teaching Assistant** at the University of Victoria Course Title: Calculus I (Math 100) Ran two interactive tutorial sections.

Event Coordination

Jan. 2020 to March 2020	**Undergraduate Math Seminar** Organiser Organised a weekly seminar of 50 minute math talks given by undergraduate students. I found speakers, arranged room bookings, and distributed titles/abstracts. There were 10 talks in total.
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March 2019	**Pi Day Math Competition** Co-Organiser Every year on Pi Day (March 14th, 3.14), the undergraduate math and stats course union organizes a social event for the whole department with free pie and a friendly math competition. I was responsible for providing math problems for the competition.
July 2018	**SUMS Summer Mini-Conference** Co-Organiser A 3 day conference for undergraduate math and stats students at UVic. Featured 20 minute talks from 7 undergraduate students and 1 hour talks from 3 grad students and professors. I was responsible for finding undergraduate speakers for the conference.

Volunteering and Community Engagement

May 2019 to Present	**Students in Undergraduate Math and Stats Course Union (SUMS)** President Executive member of the math and stats course union at UVic. Oversaw the organization of student-run academic events (seminars, conferences), social events, and a semesterly newsletter featuring work by undergraduate students.
Nov. 2020 to Present	**Math and Stats Space Committee** Undergraduate Representative The Math and Stats Space Committee is responsible for evaluating the building space needs of the department in order to best inform the department chair on upcoming renovation plans. My role in the committee is to ensure that the needs of the undergraduate students are also brought into consideration.
Nov. 2017	**MathMania** Volunteer A number of booths with math puzzles/games were set up at a local elementary school for kids and parents to enjoy. I ran one of these booths.
Nov. 2017	**Let's Talk Science Outreach** Volunteer Volunteered for the Let's Talk Science Outreach program's Math Symposium event. Middle school students came to UVic and were split into small groups, which participated in various math-themed activities. I ran one of these activities.
Sep. 2018 to April 2019	**Students in Undergraduate Math and Stats Course Union (SUMS)** Vice-President Executive member of the math and stats course union at UVic. Assisted in the organization of student-run seminars, social events, and a semesterly newsletter featuring work by undergraduate students.

References

Professor Marcelo Laca University of Victoria	**Research Supervisor** Office: DTB A548 3800 Finnerty Rd, Victoria, BC mailto:laca at uvic.ca (250) 721 7467
Professor Jane Butterfield University of Victoria	**Teaching Supervisor** jvbutter at uvic.ca