

CHRISTOPHER QUINN LA FOND JR.

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EDUCATION

University of Oregon

PhD in Pure Mathematics

Oct 2024-Present

University of Cambridge

Master of Advanced Study in Pure Mathematics

Oct 2023- May 2024

Boston University

Bachelor of Arts, Double Major in Pure Mathematics (Honors in the major) and Physics, Magna Cum Laude

Aug 2020 - May 2023

RELEVANT COURSEWORK

Hilbert Schemes

Algebraic Geometry

Fourier Mukai Transforms in Algebraic Geometry

Algebraic Topology

Spectral Sequences

Graduate Abstract Algebra II

Representation Theory

Graduate Abstract Algebra I

Symplectic Topology

Computational Physics

Toric Varieties

Quantum Field Theory I

Abelian Varieties

Graduate Electromagnetism

Commutative Algebra

Graduate Quantum Mechanics I

Differential Geometry

Graduate Quantum Mechanics II

Graduate Mathematical Physics

PROJECTS

Unoriented Cobordism

Nov 2023-May 2024

Under the supervision of Oscar Randall Williams, I wrote a paper on unoriented cobordism for my masters degree. In this paper, I provide a detailed explanation of the Pointragen-Thom Construction, reducing the problem of a classifying closed manifolds up to unoriented cobordism to one in stable homotopy theory, and then a detailed proof of the solution to this stable homotopy proof. In particular, I prove that the structure of the unoriented cobordism ring is given by a graded \mathbb{F}_2 algebra freely generated by elements of degree not equal to $2^n - 1$.

Tautological Classes of Definite Four Manifolds

May 2023-Oct 2023

I worked with Oscar Randall Williams on reading through and understanding the paper by David Baraglia ‘Tautological Classes of Definite Four Manifolds’. In particular, I spent the first part of the project familiarizing myself with Seiberg-Witten gauge theory, the Seiberg-Witten invariant, characteristic classes, (co)homotopy groups, and the refinement of the Seiberg-Witten invariant constructed by Bauer and Furuta. From there Oscar and I met weekly to discuss the paper which used a version of Bauer and Furuta’s refinement extended to compact families of definite four manifolds in order to study the tautological ring of $\mathbb{C}P^2$, and prove other results.

Honors Thesis

Jan 2022 - May 2023

I completed 270 a page honors thesis, under the advisement of Matt Szczesny, on the geometry of gauge theory. In particular, the core goal of the thesis is to cover the necessary mathematical background to understand Dirac operators, and construct the Yang-Mills-Dirac Lagrangian, on an arbitrary pseudo-Riemannian spin manifold.

Estimating the Finite Volume Effects of the Muon $g - 2$

Jun 2020 - Dec 2020

Worked with Christopher Aubin on estimating the finite volume effects of Lattice QCD, by calculating the next to next leading order of said volume effects using chiral perturbation theory. Calculations were mainly done in Fortran and Mathematica.

Surface Micro Replicas of Self Assembled Chiral Polymers and Grooves

Oct 2019 - May 2020

Research project at Fordham University with Petr Shibaev and three other students, where we created and studied different surface patterns appearing on chiral gratings using atomic force microscopy, infrared spectroscopy, and optical methods.

TECHNICAL SKILLS

Programming: Python, C, Fortran, SQL, R
Software & Tools: Mathematica, Matlab

AWARDS

College Prize in Mathematics and Statistics

Upon graduating from Boston University, I received the College Prize for excellence in Mathematics in Statistics, awarded yearly to one graduating student in the Mathematics and Statistics department with the strongest academic record. I was awarded the prize on the basis of my honor's thesis, and performance in advanced coursework.

PREVIOUS JOBS

Teachers Assistant

Oct 2024 - Present

I am a TA for the math department at University of Oregon. I have TA'd for Precalculus and Calculus for Business Students. My responsibilities include grading homeworks, quizzes, and exams, and lecturing for the discussion sections where we review harder to grasp concepts, and go over practice problems.

Grader

Jan 2021 - May 2023

I was a Grader for the math department at Boston University. I have graded for a variety of courses, ranging from calculus I, to real analysis II

Learning Assistant

Jan 2022 - Jul 2022

I assisted graduate students and Professors at Boston University for the Physics 212, and Physics 105 discussion sessions during the spring and summer semesters of 2022.

Lab Teaching Assistant

Aug 2018 - May 2019

I was a Teaching Assistant at Fordham University for the introductory physics labs during the '19-'20 academic year.

CLUBS/ORGANIZATIONS

Sigma Chi Iota Upsilon Chapter

Nov 2021-May 2023

Vice President, May 2022 - May 2023

- *Ushered in mandatory bystander intervention training through SARP for all members.*
- *Codified scholarships, and financial support for members who would otherwise be unable to join.*
- *Organized events with the philanthropy chair to raise money for Students for Reproductive Freedoms, Camp Kesem, and the Huntsman Foundation*
- *Organized events with the community service chair where members helped the Boston University organization Feel Good, a group dedicated to ending hunger.*

Kustos, Jan 2021 - May 2022

- *Organized chapter meeting, and ran educational seminars for new members.*

Math Social Club

Sep 2022 - May 2023

A club for math majors, and those interested in math, to connect and come together in an organized setting.

Varsity Swim Team, Fordham University

Aug 2018 - Nov 2019

Competed and trained with the Varsity swim team at Fordham University.