

Patrick Naylor

University of Waterloo
✉ patrick.naylor@uwaterloo.ca
🌐 patricknaylor.org

Research Interests:

Low dimensional and geometric topology: in particular, questions about 3- and 4-manifolds, knotted surfaces, and trisections of 4-manifolds.

Education

- 2016–Present **PhD, Pure Mathematics**, *University of Waterloo*, Waterloo, Canada.
Advised by Doug Park.
- 2015–2016 **MMath, Pure Mathematics**, *University of Waterloo*, Waterloo, Canada.
- 2011–2015 **BSc Honours, Pure Mathematics**, *University of Manitoba*, Winnipeg, Canada.
- Research Visits
- Fall 2019 **Visiting Student**, *Max Planck Institute for Mathematics*.
- Fall 2018 **Visiting Student**, *University of Georgia*.

Papers and Preprints

- P. Naylor, H. Schwartz, **Gluck twisting roll-spun knots**, [arXiv:2009.05703], 2020. Submitted.
- P. Naylor, **Trisection diagrams and twists of 4-manifolds**, [arXiv:1906.01495], 2019. Submitted.
- A. Beyaz, P. Naylor, S. Onaran, D. Park, **From automorphisms of Riemann surfaces to smooth 4-manifolds**, *Math. Res. Lett.* 27(3), 629–645, 2020.
- A. Clay, C. Desmarais, P. Naylor, **Testing bi-orderability of knot groups**, *Canad. Math. Bull.* 59(3), 472–482, 2016.
- R. Craigen, C. Desmarais, T. Eaton, P. Naylor, **Negacyclic Weighing Matrices**, 2016. Submitted.

Talks

Invited Talks

- Sep 2019 Workshop on 4-manifolds (lightning talk), Max Planck Institute for Mathematics
- Jun 2019 CMS Summer Meeting Topology Session, University of Regina
- May 2019 Quantum Gravity Seminar, Perimeter Institute for Theoretical Physics
- Mar 2019 Joint Pure Math and C&O Graduate Student Colloquium, University of Waterloo
- Mar 2018 Geometry and Topology Seminar, McMaster University
- Sep 2017 Pure Math Graduate Student Colloquium, University of Waterloo

Seminar Talks

- 2018-Present GT GAPS Seminar, Online
- 2019-Present Geometry Working Seminar, University of Waterloo
 - 2020 TQFT and Frobenius Algebras Learning Seminar, University of Waterloo
 - 2018 Topology Student Seminar, University of Georgia
- 2017–2018 Topology and Geometry Learning Seminar, University of Waterloo
- 2016–2018 Algebraic Geometry Learning Seminar, University of Waterloo
- 2015–2016 Ring Theory Learning Seminar, University of Waterloo

Conferences Attended

- Jun 2020 Virtual Summer Trisectors Workshop, Online
- Jun 2020 Nearly Carbon Neutral Geometric Topology Conference, Online
- Nov 2019 Unifying 4-dimensional Knot Theory, Banff International Research Station
- Sep 2019 Workshop on 4-manifolds, Max Planck Institute for Mathematics
- Jul 2019 Four manifolds: Confluence of High and Low Dimensions, The Fields Institute
- Jun 2019 Canadian Mathematical Society Summer Meeting, University of Regina
- Apr 2019 Spring Trisectors Meeting, University of Georgia
- Dec 2018 Virginia Topology Conference, University of Virginia
- Dec 2018 Canadian Mathematical Society Winter Meeting, Vancouver
- Jun 2018 Topology Students Workshop, Georgia Institute of Technology
- Mar 2018 1st Canadian Geometry and Topology Seminar, The Fields Institute
- Dec 2017 Canadian Mathematical Society Winter Meeting, University of Waterloo
- Dec 2016 Canadian Mathematical Society Winter Meeting, Niagara Falls

Service and Extracurricular

- 2020–Present **Math Circles Presenter**, *CEMC, University of Waterloo*.
Organized math enrichment workshops for high school students.
- 2020–Present **CEMC Contest Committee member**, *CEMC, University of Waterloo*.
Committee to generate a contest problems for national high school math contests.
- 2020–Present **Problem of the Month Committee member**, *CEMC, University of Waterloo*.
Committee to generate a “problem of the month” for enthusiastic high school students.
- 2016–Present **Math Contest Marker**, *CEMC, University of Waterloo*.
Marker for national high school math contests run by the University of Waterloo.
 - 2020 **Camp Euclid Mentor**, *Euclid Lab*.
Mentor for an online mathematical research enrichment program for high school students.

2013–2015 **Undergraduate Research Assistant**, *Department of Mathematics, University of Manitoba*.
with Adam Clay in 2014 and 2015, with Andriy Prymak in 2014, and with Robert Craigen in 2013.

Teaching

Spring 2020 **Instructor**, *University of Waterloo*.
Math 235: Linear Algebra 2 for Honours Math (Online)

2015–Present **Teaching Assistant**, *Department of Pure Mathematics, University of Waterloo*.
TA for a wide variety of undergraduate, graduate, and online math courses.

2013–2015 **Teaching Assistant**, *Department of Mathematics/Statistics, University of Manitoba*.
TA for introductory mathematics and statistics courses.

Awards and Honours

Academic

2017–2020 **NSERC Alexander Graham Bell CGS-D Scholarship**, *University of Waterloo*.

2016–2020 **President's Graduate Scholarship**, *University of Waterloo*.

2018 **NSERC CGS-D MSFSS Scholarship**, *University of Waterloo*.

2018 **David Johnston International Experience Award**, *University of Waterloo*.

2016 **NSERC CGS-M Scholarship**, *University of Waterloo*.

2015 **Special Graduate Scholarship**, *University of Waterloo*.

2013; 2014 **Agnes Stewart Hart Award in Mathematics**, *University of Manitoba*.

2013 **Faculty of Science Undergraduate Research Award**, *University of Manitoba*.
To support mathematics research throughout the summer term.

2012; 2013 **President's Scholarship**, *University of Manitoba*.

2011 **Canadian Association of Physicists Award**.
For high performance on the CAP national physics contest.

Extracurricular

2012–2014 **CIS Academic All Canadian**, *University of Manitoba*.
Maintaining an 80% average while competing on the varsity track team.

2013 **Track & Field/Cross Country Athletic Award**, *University of Manitoba*.

2009–2011 **National Triathlon Age Group Medalist**, *Kelowna, British Columbia*.
Silver medalist (2009), and gold medalist (2010, 2011) in the U19 division.

Interests

Playing piano, track and field, cycling, being a master chef for departmental BBQs.