

# Brydon Eastman

Department of Applied Mathematics,  
Mathematics and Computing 6131  
University of Waterloo,  
Waterloo ON

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## EDUCATION

### University of Waterloo, Waterloo, ON – Ph.D. Applied Mathematics

September 2017 – May 2022

Thesis: *Machine Learning Techniques and Stochastic Modeling in Mathematical Oncology*

Pursued a Ph.D. in applied mathematics and machine learning in mathematical biology under the supervision of Mohammad Kohandel. GPA 93%

### McMaster University, Hamilton, ON – M.Sc. Mathematical Biology

September 2015 – August 2017

Thesis: *Sensitivity to Predator Response Functions in the Chemostat*

Pursued a masters of science in mathematical biology under the supervision of Gail Wolkowicz. GPA 11.2/12

### Redeemer University, Hamilton, ON – Hon B.Sc. Mathematics and Computer Science

January 2011 – April 2015

Thesis: *Pentadiagonal Companion Matrices*

Completed a double major in honours Mathematics and four year Computer Science. GPA 11.6/12

## AWARDS & HONOURS

Outstanding Teaching Assistant Award \$500

Applied BioMath Poster Award \$250

Queen Elizabeth II - Graduate Scholarship in Science and Technology \$15,000

Ping Yang Memorial Graduate Scholarship \$5,000

NSERC Canadian Graduate Scholarship Doctoral \$105,000

NSERC Canadian Graduate Scholarship Masters \$17,500

NSERC Ontario Graduate Scholarship Masters \$15,000

Milos Novotny Fellowship \$4,000

NSERC Undergraduate Research Award \$24,500

Board of Governor's Scholarship \$14,400

## PUBLICATIONS

**A comparison and calibration of integer and fractional order models of COVID-19 with stratified public response** Submitted 2022

Somayeh Fouladi, Mohammad Kohandel, **Brydon Eastman**

**Reinforcement learning derived chemotherapeutic schedules for robust patient-specific therapy** Nature Scientific Reports Sep 9, 2021

**Brydon Eastman**, Michelle Pzedborski, Mohammad Kohandel

**Modeling the impact of public response on the COVID-19 pandemic in Ontario** PLoS One Apr 14, 2021

**Brydon Eastman**, Cameron Meaney, Michelle Pzedborski, Mohammad Kohandel

**A Predator-Prey Model in the Chemostat with Holling Type II Response Function**

Mathematics in Applied Sciences and Engineering Nov 1, 2020

Tedra Bolger, **Brydon Eastman**, Madeleine Hill, Gail S. K. Wolkowicz

**The effects of phenotypic plasticity on the fixation probability of mutant cancer stem cells** Journal of Theoretical Biology Oct 21, 2020

**Brydon Eastman**, Dominik Wodarz, Mohammad Kohandel

**From Solid-State NMR to Crystal Structures through Combinatorial Tiling Theory**

Int. Union Crystallography Jan 1, 2018

Darren Brouwer, Janelle Vanderhout, Chelsey Hurst, **Brydon Eastman**

**Pentadiagonal Companion Matrices** Special Matrices Oct 28, 2015

**Brydon Eastman** and Kevin N. Vander Meulen

**Sparse Spectrally Arbitrary Patterns** The Electronic Journal of Linear Algebra Apr 28, 2015

**Brydon Eastman**, Bryan Shader, Kevin N. Vander Meulen

**Companion Matrix Patterns** Linear Algebra and its Applications Feb 1, 2014

**Brydon Eastman**, I.-J. Kim, B.L. Shader, K.N. Vander Meulen

## PRESENTATIONS

**Brydon Eastman**, Michelle Przedborski, and Mohammad Kohandel. 2021. “Poster: Reinforcement learning derived chemotherapeutic schedules for robust patient-specific therapy given unknown patient response parameters.” Society of Mathematical Biology Annual Meeting. International Conference.

**Brydon Eastman**. 2021. “Contributed Talk: Reinforcement learning derived chemotherapeutic schedules for robust patient-specific therapy.” Workshop in Mathematical and Computational Biology. International Conference.

**Brydon Eastman**. 2019. “Invited Talk: Contrasting chemotherapy schedules from reinforcement learning and optimal control.” Canadian Mathematics Society: Winter Meeting. National Conference.

**Brydon Eastman**, Tedra Bolger, Madeleine Hill, and Gail Wolkowicz. 2016. “Poster: Predator Response Functions in the Chemostat: A Cautionary Tale” Canadian Mathematics Society: Winter Meeting. National Conference

**Brydon Eastman.** 2015. “Contributed Talk: Sex, Drugs, and Mathematics: Using Evolutionary Algorithms to Interpret Pharmaceutical NMR Data.” Canadian Undergraduate Math Conference. National Conference.

**Brydon Eastman,** Brouwer, D. 2015 “Poster: A Genetic Algorithm for NMR Crystallography of Materials with Multispin Networks” MOOT 2015. Provincial Conference. Poster Presentation.

**Brydon Eastman,** Brouwer, D, Vander Meulen, K. 2014. “Poster: Solving Crystal Structures using Delaney Graphs derived from NMR Spectra” McMaster Chemistry Research Symposium. Institutional Conference. Poster Presentation.

**Brydon Eastman** 2014. “Contributed Talk: Solving Crystal Structures using Delaney Graphs derived from NMR Spectra” Conference on Graph Theory, Matrix Theory, and Interactions. International Conference.

**Brydon Eastman** 2013. “Contributed Talk: Companion Matrix Patterns” Canadian Undergraduate Math Conference. National Conference.

## TEACHING

2022 **Instructor** AMATH 353, *University of Waterloo*

Advanced Partial Differential Equations

2020 **Instructor** MATH 137, *University of Waterloo*

Calculus 1 for Honours Computer Science students

2019 **Instructor** MATH 116, *University of Waterloo*

Calculus 1 for Architecture Engineering Students

2022 **Teaching Assistant** AMATH 250, *University of Waterloo*

Differential Equations

2021 **Teaching Assistant** AMATH 350, *University of Waterloo*

Differential Equations (Winter and Fall 2021)

2019–2020 **Teaching Assistant** Calculus I, Calculus III, and Linear Algebra  
*University of Waterloo*

2018 **Teaching Assistant** MATH 117, *University of Waterloo*

Led two tutorial sections of Calculus 1 for Engineering Students

2015–2017 **Teaching Assistant** Scientific Computing, Graph Theory, Various Calculus courses, and assisted in the Math Help Centre

2013 **Instructor**, *Dundas Valley Highschool Co-Op* Instructor for a Grade 11 Physics Course

2015–2017 **Lab Assistant**, *Redeemer University* First year physics lab assistant

2011–2015 **Teaching Assistant**, *Redeemer University* TA for two computer science courses and was part of the university’s tutor program for various mathematics courses.

## CREDENTIALS & AFFILIATIONS

2019 **Fundamentals of University Teaching** *University of Waterloo*, Centre for Teaching Excellence

2020–Present **Member**, Society for Mathematical Biology

2021–Present **Elected Member**, Sigma Xi Scientific Research Honour Society

## STUDENT SUPERVISION

2021 Somayeh Fouladi (Co-Supervised Visiting Ph.D. Research Project)

## COMMUNITY SERVICE

### Open Source Contributor

Contributed to Keras Tuner an open-source automated machine learning platform built on Tensorflow

### Reviewer

Performed peer review for the following journals: iScience, PLOS One, PeerJ, Journal of Biomedical and Health Informatics, Mathematical Biosciences