

Polly Y. Yu

www.math.wisc.edu/~pollyyu · pollyyu@math.wisc.edu

Department of Mathematics · University of Wisconsin-Madison
518 Van Vleck Hall · 480 Lincoln Drive, Madison, WI, 53706

EDUCATION

- | | |
|---|--------------------|
| University of Wisconsin-Madison
PhD in Mathematics
Advisor: Gheorghe Craciun | Sept 2015-present |
| University of Waterloo
MMath in Pure Mathematics
Advisor: Laurent W. Marcoux | Sept 2014-Aug 2015 |
| University of British Columbia
BSc Combined Honours in Chemistry & Mathematics | Sept 2009-May 2014 |

RESEARCH INTERESTS

- biochemical reaction network models
- mass-action systems
- dynamical systems arising from networks

PUBLICATIONS

5. Gheorghe Craciun, Jiaxin Jin, **Polly Y. Yu**. *Stability of single-target networks*. (In preparation.)
4. Gheorghe Craciun, Maya Mincheva, Casian Pantea, **Polly Y. Yu**. *Absolute stability of delay mass-action systems*. (In preparation.)
3. Gheorghe Craciun, Jiaxin Jin, **Polly Y. Yu**. *An efficient characterization of complex-balanced, detailed-balanced, weakly reversible and reversible systems*. Preprint, [arXiv:1812.06214](https://arxiv.org/abs/1812.06214), 2018.
2. Gheorghe Craciun, Stefan Müller, Casian Pantea, **Polly Y. Yu**. *A generalization of Birch's theorem and vertex-balanced steady states for generalized mass-action systems*. Preprint, [arXiv:1802.06919](https://arxiv.org/abs/1802.06919), 2018. (Submitted.)
1. **Polly Y. Yu**, Gheorghe Craciun. *Mathematical analysis of chemical reaction systems*. Israel Journal of Chemistry, **58**, 2018.

PRESENTATIONS

Dynamical Equivalent Mass-Action Systems and Equivalent Flux Systems
Networks Seminar, University of Wisconsin-Madison, WI

Mar 1, 2019

<i>Positive solutions to polynomial systems using a (mostly linear) algorithm</i> AMS Student Chapter Seminar, University of Wisconsin-Madison, WI	Nov 7, 2018
<i>Multistationarity in mass-action systems: Injectivity and the SR graph</i> SIAM Conference on the Life Sciences, Radisson Blue Minneapolis, MN	Aug 9, 2018
<i>Mathematical models of biochemical systems</i> (poster) Retreat for Integrated Program in Biochemistry, University of Wisconsin-Madison, WI	Jan 26, 2018
<i>Generalized polynomial models for biochemical systems</i> (poster) CMS Winter Meeting, University of Waterloo, ON	Dec 9, 2017
<i>Complex-balanced equilibrium in generalized mass-action systems</i> SIAM Conference on Applied Algebraic Geometry, Georgia Institute of Technology, GA	Aug 3, 2017
<i>Generalized mass-action systems</i> Networks Seminar, University of Wisconsin-Madison, WI	Apr 27, May 4, 2017
<i>Zeeman deceleration: motivation, simulation, experiments</i> SIAM Student Seminar, University of Wisconsin-Madison, WI	Mar 6, 2017
<i>Spans of projections in C^*-algebras</i> Masters Research Paper Lecture, University of Waterloo, ON	Aug 19, 2015
<i>Avoiding additive squares infinite words</i> (poster, co-presented with Graham Banero) Symposium on Mathematics and Computation, Simon Fraser University, BC	Aug 7, 2013

FELLOWSHIPS AND AWARDS

<i>Poster Award</i> Retreat for Integrated Program in Biochemistry, University of Wisconsin-Madison, WI	Sept 2018
<i>NSERC Postgraduate Scholarship</i> Natural Sciences and Engineering Research Council of Canada	2017–2019
<i>Ontario Graduate Scholarship</i> (declined) University of Waterloo, ON	2015–2016
<i>President's Graduate Scholarship</i> (declined) University of Waterloo, ON	2015–2016
<i>Ontario Graduate Scholarship</i> University of Waterloo, ON	2014–2015
<i>President's Graduate Scholarship</i> University of Waterloo, ON	2014–2015
<i>Undergraduate Poster Award</i> Symposium on Mathematics and Computation, Simon Fraser University, BC	Aug 2013
<i>NSERC Undergraduate Student Research Award</i> Simon Fraser University, BC	2013
<i>NSERC Undergraduate Student Research Award</i> University of British Columbia, BC	2012

NSERC Industrial Undergraduate Student Research Award 2011
 Xerox Research Centre of Canada, ON

CONFERENCES AND WORKSHOPS ATTENDED

ESI Workshop: *Advances in Chemical Reaction Network Theory* Oct 2018
 Erwin Schrödinger International Institute for Mathematics and Physics, Vienna, Austria

Madison Workshop on *Mathematics of Reaction Networks* Aug 2018
 University of Wisconsin–Madison, Madison, WI

SIAM Conference on the *Life Sciences* Aug 2018
 Radisson Blu Minneapolis, Minneapolis, MN

IDFS Tripods Summer School: *Fundamentals of Data Analysis* Jul 2018
 University of Wisconsin–Madison, Madison, WI

Applications of Polynomial Systems Jun 2018
 Texas Christian University, Fort Worth, TX

Kinetic and Related Models with Applications in the Natural Sciences Apr–May 2018
 University of Wisconsin–Madison, Madison, WI

CMS Winter Meeting Dec 2017
 University of Waterloo, Waterloo, ON

Oberwolfach Seminar: Mathematical Modelling in Systems Biology Nov 2017
 Oberwolfach Research Institute for Mathematics, Oberwolfach–Walke, Germany

SIAM Conference on *Applied Algebraic Geometry* Jul–Aug 2017
 Georgia Institute of Technology, Atlanta, GA

BIRS Workshop: *Mathematical Analysis of Biological Interaction Networks* Jun 2017
 Banff International Research Station, Banff, AB

PIMS-AARMS Summer School: *Differential Equations & Numerical Analysis* Jul–Aug 2015
 Dalhousie University, Halifax, NS

PROFESSIONAL AFFILIATIONS

- Society for Industrial and Applied Mathematics (SIAM)
- American Mathematical Society (AMS)
- Society for Mathematical Biology (SMB)

REVIEWER FOR

- Bulletin of Mathematical Biology

TEACHING AWARDS

Mathematics Graduate Teaching Award University of Wisconsin-Madison, WI	2017
Outstanding Teaching Assistant Award University of Waterloo, ON	2014

TEACHING

University of Wisconsin-Madison

Calculus (Math 211)	Spring 2019
Calculus – Functins of Several Variables (Math 234)	(Coordinator) Fall 2018
Calculus – Functins of Several Variables (Math 234)	Spring 2018
Calculus and Analytic Geometry II (Math 222)	(Coordinator) Fall 2017
Calculus (Math 211)	Spring 2017
Calculus and Analytic Geometry II (Math 222)	Fall 2015, Spring 2016

University of Waterloo

Linear Algebra 2 for Honours Mathematics (Math 235)	Spring 2015
Calculus 2 for the Sciences (Math 128)	Fall 2014

University of British Columbia

Science One: Differential and Integral Calculus	Fall 2013-Winter 2014
Differential Calculus (Math 110/180/184) (Peer-Assisted Study Session Leader)	Winter 2013-2014
Differential Calculus (Math 110)	Fall 2010-Winter 2013

SERVICES

Member, Committee on TA's Policies and Procedures (CTAPP) University of Wisconsin-Madison, WI	Sept 2018-May 2019
Coordinator, Women in Mathematics at Wisconsin University of Wisconsin-Madison, WI	Jan 2017-Aug 2018
Exam Grader, Mega Math Meet University of Wisconsin-Madison, WI	May 2017
Speaker, Math Circle University of Wisconsin-Madison, WI	Nov 2016, Apr 2017, Mar 2019
Activity Leader, CMS-PIMS Math Camp Simon Fraser University, BC	Jun 2013