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Education

PhD in Mathematics, University of Wisconsin - Madison, August 2010.
Adviser: Gheorghe Craciun.

MS in Statistics, University of Wisconsin - Madison, May 2008.

MS in Mathematics, University of Wisconsin - Madison, December 2006.

BS in Mathematics, ranked 1^{st} in graduating class, Babeş - Bolyai University Cluj-Napoca, Romania, June 2002.

Employment

MBI Early Career Award Visitor, Mathematical Biosciences Institute, The Ohio State University, Spring 2016.

Assistant Professor, Department of Mathematics, West Virginia University, 2013-present.

Research Associate, Department of Electrical Engineering, Imperial College London, 2011-2013.

Postdoctoral Researcher, Department of Biomolecular Chemistry and Department of Mathematics, University of Wisconsin-Madison, 2010-2011.

Research Assistant, Department of Mathematics and DOE BACTER Institute, University of Wisconsin-Madison, 2007-2010.

Teaching Assistant, Department of Mathematics, University of Wisconsin-Madison, 2004-2007.

Instructor, Summer Orientation Program for International Teaching Assistants, Department of Mathematics, University of Wisconsin-Madison, 2006.

Young Researcher, the Geometric Analysis Network, University of Ancona, Italy, 2003.

Teaching Assistant, Technical University of Cluj-Napoca, Romania, 2002.

Publications

1. Murad Banaji, Casian Pantea. Some results on injectivity and multistationarity in chemical reaction networks. to appear in *SIAM Journal on Applied Dynamical Systems*, 2016.
2. Matthew Johnston, Casian Pantea, Pete Donnell, A computational approach to persistence, permanence, and endotacticity of biochemical reaction networks. *Journal of Mathematical Biology* **72**, 467–498, 2016.
3. Pete Donnell, Murad Banaji, Anca Marginean, Casian Pantea, *CoNtRol: an open source framework for the analysis of chemical reaction networks,* Bioinformatics 30:11, 2014.
4. David Angeli, Murad Banaji, Casian Pantea, *Combinatorial approaches to Hopf bifurcations in systems of interacting elements,* Communications in Mathematical Sciences 12:6, 1101–1133, 2014.

5. Casian Pantea, Ankur Gupta, James B. Rawlings, Gheorghe Craciun, *The QSSA in chemical kinetics: As taught and as practiced,* in Jonoska, N and Saito, M (Eds.), *Discrete and Topological Models in Molecular Biology*, Springer, 2013.
6. Gheorghe Craciun, Fedor Nazarov, Casian Pantea, *Persistence and permanence of mass-action and power-law dynamical systems,* SIAM Journal on Applied Mathematics 73:1, 305–329, 2013.
7. Casian Pantea, *On the persistence and global stability of mass-action systems,* SIAM Journal on Mathematical Analysis 44:3, 1636–1673, 2012.
8. Casian Pantea, Heinz Köppl, Gheorghe Craciun, *Global injectivity and multiple equilibria in uni- and bi-molecular reaction networks*, Discrete and Continuous Dynamical Systems – Series B, 17:6, 2012.
9. Gheorghe Craciun, Jaejik Kim, Casian Pantea, Grzegorz A. Rempala, *Algebraic statistical model for biochemical network inference,* Communications in Statistics - Simulation and Computation 42, 2013.
10. Gheorghe Craciun, Casian Pantea, Eduardo Sontag, *Graph-theoretic characterizations of multistability and monotonicity for biochemical reaction networks*, in Koeppl, H.; Densmore, D.; Setti, G.; di Bernardo, M. (Eds.), *Design and analysis of biomolecular circuits*, 63–73, Springer, 2011.
11. Casian Pantea, Gheorghe Craciun, *Computational methods for analyzing bistability in biochemical reaction networks,* Proceedings of the IEEE International Symposium on Circuits and Systems, 549–552, 2010.
12. Gheorghe Craciun, Jaejik Kim, Casian Pantea, Grzegorz A. Rempala, *Algebraic methods for inferring biochemical networks: A maximum likelihood approach,* Computational Biology and Chemistry 33, 361–367, 2009.
13. Gheorghe Craciun, Casian Pantea, *Identifiability of chemical reaction networks,* Journal of Mathematical Chemistry 44:1, 244–259, 2008.
14. Casian Pantea, *On the number of conjugacy classes of finite p-groups,* Mathematica 46:69, 193–203, 2004.
15. Casian Pantea, *The Hochschild homology of the algebra of C^1 functions on compact manifolds,* technical report, Babeş - Bolyai University, 2004.

Software

Pete Donnell, Murad Banaji, Anca Marginean, Casian Pantea, CoNtRol. *A chemical reaction networks analysis framework.* `http://reaction-networks.net/control/.`

Casian Pantea, BioNetID. *A software package for identifying reaction networks.* Available at `http://math.wvu.edu/∼cpantea/misc.html`.

Casian Pantea, BioNetX. *A software package for examining reaction networks.* Available at `http://math.wvu.edu/∼cpantea/misc.html`.

Presentations

Some results on Injectivity and multistationarity of reaction networks, Mathematical Biosciences Institute, The Ohio State Uiversity, January 2016.

Injectivity and multistationarity in reaction networks, Theoretical Biology Seminar, Penn State Math Department, September 2015.

Network Geometry and Inference in Biochemical Reaction Systems, 8th International Congress on Industrial and Applied Mathematics, Beijing China, August 2015.

Some results on injectivity and multistationarity in networks of interacting elements, SIAM Conference on Applied Algebraic Geometry, NIMS, Daejeon South Korea, August 2015.

Multistationarity in chemical reaction networks: a parameter-free approach, The Ninth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens GA, April 2015.

Injectivity and multistationarity in chemical reaction networks, Networks Seminar, University of Wisconsin-Madison September 2014.

Chemical reaction network theory: dynamics from structure, Colloquium, Northern Illinois University, DeKalb IL September 2014.

Chemical reaction network theory: dynamics from structure, Colloquium, Western Illinois University, Macomb IL September 2014.

Combinatorial methods for ruling out Hopf Bifurcations in reaction networks, "Combinatorial and algebraic approaches to chemical reaction networks" workshop, Portsmouth UK, June 2014.

Ruling out Hopf bifurcations in biochemical reaction networks, 9th European Conference on Mathematical and Theoretical Biology, Gothenburgh Sweden, June 2014.

Chemical Reaction Network Theory: A tale of dynamics and structure, Interdisciplinary Colloquium, Babeş-Bolyai University Cluj-Napoca, Romania, May 2014.

Persistence, Permanence, and Global Stability in Biological Interaction Networks, Applied Mathematics Colloquium, Babeş-Bolyai University Cluj-Napoca, Romania, May 2014.

A brief introduction to chemical reaction network theory, Applied analysis seminar, West Virginia University, Morgantown WV, October 2013.

Ruling out Hopf bifurcations in systems of interacting elements, SIAM Conference on Applied Algebraic Geometry, Fort Collins CO, August 2013.

Geometry of interaction networks: dynamics from structure, colloquium seminar, West Virginia University, Morgantown WV, April 2013.

Combinatorial approaches to Hopf bifurcations and oscillations, AIM workshop on mathematical problems arising from biochemical reaction networks, AIM, Palo Alto CA, March 2013.

Persistence and global stability via geometry of interaction networks, colloquium seminar, University of Alberta, Edmonton, Canada, January 2013.

Stability and persistence in power-law systems, Nonlinear Dynamics Seminar, University of Leeds, UK, November 2012.

Persistence and Global stability in Biochemical Interaction Networks, SIAM Conference on Life Sciences, San Diego CA, August 2012.

The Global Attractor Conjecture and the Persistence Conjecture in mass-action systems, 6th European Congress of Mathematics, Krakow, Poland, July 2012.

Persistence and global stability in mass-action kinetics, Nonlinear Dynamics Seminar, University of Portsmouth, UK, November 2011.

Persistence and the Global Attractor Conjecture: Recent Approaches, SIAM Conference on Applied Algebraic Geometry, Raleigh NC, October 2011.

Persistence and global stability in mass-action systems, International Conference on Nonlinear Operators, Differential Equations and Applications, Cluj-Napoca, Romania, July 2011.

Persistence and the Global Attractor Conjecture: Recent Approaches, 8th European Conference on Mathematical and Theoretical Biology, and Annual Meeting of the Society for Mathematical Biology, Krakow, Poland, June 2011.

A geometric test for persistence in population interaction models, Casablanca International Workshop in Mathematical Biology, Casablanca, Morocco, June 2011.

Computational methods for analyzing bistability in biochemical reaction networks, CIBM seminar, University of Wisconsin-Madison, Madison WI, November 2010.

Persistence and permanence in biological interaction networks (poster), CIBM retreat, University of Wisconsin-Madison, Madison WI, October 2010.

Persistence and permanence of biochemical reaction networks, Workshop for Young Researchers in Mathematical Biology, Mathematical Biosciences Institute, Columbus OH, August 2010.

Computational methods for analyzing bistability in biochemical reaction networks, 2010 IEEE International Symposium on Circuits and Systems, special session on Analysis and Design of Biomolecular Circuits, Paris, France, May 2010.

BioNetID - *a biochemical reaction network identification software,* Statistical Methods for Biochemical Reaction Systems Mini Workshop, Medical College of Georgia, Augusta GA, December 2009.

Computational methods for analyzing bistability in biochemical reaction networks, DOE BACTER seminar, University of Wisconsin-Madison, Madison WI, October 2009.

Solvability of QSSA in chemical kinetics, Special Session on the Mathematics of Biochemical Reaction Networks, AMS Southeastern Sectional Meeting, North Carolina State University, Raleigh NC, April 2009.

Algebraic methods for inferring biochemical networks: a maximum likelihood approach, Stochastic Models for Intracellular Reaction Networks Focus Research Group, Medical College of Georgia, Augusta GA, January 2009.

Identifiability of chemical reaction networks (poster), SAMSI Workshop on Algebraic Methods in Systems Biology and Statistics, Research Triangle Park, NC, September 2008.

On the number of conjugacy classes of finite p-groups, International Symposium on Algebra, Cluj-Napoca, Romania, May 2005.

The Hochschild homology of the algebra of C^1 functions on compact manifolds, colloquium seminar, Department of Mathematics, Babeş - Bolyai University, March 2004.

Service

Conferences Organized

(with Carsten Conradi and Badal Joshi) *Special Session on Recent Developments in the Theory and Applications of Reaction Network Models*, AMS Central Fall Sectional Meeting, Loyola University Chicago, Chicago IL, October 2015.

(with Maya Mincheva) *Developments in the Mathematics of Biochemical Reaction Networks (two parts)*, SIAM Conference on the Life Sciences, Charlotte NC, August 2014.

International Workshop on Chemical Reaction Network Theory, London, November 26-27, 2012.

(with Maya Mincheva) *Long-term Dynamical Properties of Biochemical Reaction Networks* mini-symposium, SIAM Conference on Life Sciences, August 2-7, 2012.

(with Anne Shiu and Manoj Gopalkrishnan) *Biochemical Reaction Networks* mini-symposium, SIAM Conference on Applied Algebraic Geometry, Raleigh, October 6-9, 2011.

(with Maya Mincheva) *Structure and Dynamics of Biochemical Reaction Networks* mini-symposium, 8th European Conference on Mathematical and Theoretical Biology, and Annual Meeting of The Society for Mathematical Biology, Krakow, June 28 - July 2, 2011.

Peer review

SIAM J. Appl. Math; J. Math Biol; SIGMA; Phys. Lett. A; Appl. Math. Comp; J. Theor. Biol; SIAM J. Appl. Dyn. Syst; PLOS One; BMC Syst. Biol; IEEE Trans. Control of Network Syst; Bull. Math. Biol.; J. Proc. Cont.; J. Roy. Soc. Inter.; Theor. Comp. Sci.

Funding

NSF DMS #1517577. *Multistationarity and Oscillations in Biochemical Reaction Networks.*
PI (individual grant); 2015–2018; $198,003.

MAA Dolciani Mathematics Enrichment Award. *WVU Junior Math Club.*
(joint with Charis Tsikkou); 2015–2016; $6000.

Fellowships and Awards

John A. Nohel Prize for best thesis in Applied Mathematics, University of Wisconsin-Madison, 2010.

DOE BACTER Trainee Fellowship, DOE BACTER Institute, University of Wisconsin-Madison, 2009.

Summer Fellowship, Department of Mathematics, University of Wisconsin-Madison, 2007, 2008.

Babeş - Bolyai University University-Wide Performance Scholarship, 2003.

National Merit Scholarship, Science and Education Council of Romania, 1998-2002.

Second Prize, International Mathematical Competition for University Students, Warsaw, 2002.

First Prize, Traian Lalescu National Mathematical Competition, Romania, 2000.

Computer Skills

Mathematical software: Matlab, Octave, Maple, Maxima.

Statistical software: R, SAS.