David Burstein

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Department of Mathematics and Statistics
Swarthmore College
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EDUCATION
2011-2016
> **Doctor of Philosophy**
> Department of Mathematics, University of Pittsburgh
> Thesis: Challenges in Random Graph Models with Degree Heterogeneity: Existence, Enumeration and Asymptotics of the Spectral Radius
> Advisor: Dr. Jonathan Rubin

2007-2011
> **Bachelor of Science** (summa cum laude)
> Department of Mathematics, University of Maryland
> * University Medal Finalist
> * High Honors in Mathematics for Undergraduate Thesis

WORK EXPERIENCE
August 2016-Present: Swarthmore College, Department of Mathematics and Statistics
Visiting Assistant Professor

May 2015-June 2016: Carnegie Mellon University, Software Engineering Institute
Intern Researcher

AREAS OF INTERESTS
* Graph Theory, Network Science and Dynamical Systems
* Stochastic Processes
* Applications in Internet Routing, Neuroscience and Epidemiology

SELECTED HONORS AND AWARDS
2016   Selected to give a full presentation at NetSci-X-2017

2015   Selected to give a full presentation at the Society for Industrial and Applied Mathematics (SIAM) Workshop on Network Science

2015	SIAM Student Travel Award Recipient
2014	Selected for the American Mathematical Society's Mathematical Research Community in Network Science
2013	National Science Foundation GRFP Honorable Mention
2011	University Medal Finalist
	One of five undergraduate finalists to receive the University Medal
2011	Inducted into Phi Beta Kappa
2010	National Consortium for Measurement and Signature Intelligence Research Scholarship Recipient
	One of three students in all science related fields at the University of Maryland to receive this award based on academic achievement and scientific research
2010	Maryland Summer Scholar Research Grant Recipient
2010	Strauss Teaching Assistantship for Advanced Scholarship in Mathematics and Excellent Teaching Ability

PUBLICATIONS

Interception in distance-vector routing networks (with Franklin Kenter, Jeremy Kun and Feng Shi). Journal of Complex Networks. June 2016. arXiv:1507.05206

*Sufficient conditions for graphicality of bidegree sequences (*with Jonathan Rubin). To appear in the SIAM Journal on Discrete Mathematics. arXiv:1511.02411

Preprints

Degree switching and partitioning for enumerating graphs to arbitrary orders of accuracy. (with Jonathan Rubin). Submitted. arXiv:1511.03738

The k shortest paths problem with application to routing. (with Leigh Metcalf). Submitted. arXiv: 1610.06934

Works in Progress

Asymptotics of the dominating eigenvalue for random directed graphs with community structure.

Measuring synchronous bursting and spiking under varying higher order network connectivity statistics (with Jonathan Rubin).

Posters/Presentations

Convergence of the spectral radii of random directed graphs with community structure. Poster Session at the MBI Generalized Network Structures and Dynamics. March 21-25 2016 Columbus, Ohio: USA.

Enumeration of graphs with fixed degree sequences and applications. Poster Sessions at the IMA Analysis and Control of Network Dynamics Workshop. October 19-23 2015 Minneapolis, Minnesota: USA and at the Network Frontier Workshop. December 6-7 2015 Evanston, Illinois: USA.

The impact of the network topology on a bursting neuronal network. SIAM Workshop on Network Science. May 16-17 2015 Snowbird, Utah: USA.

Graphs with prescribed moments: construction and impact on dynamics. Poster Session at the University of Pittsburgh's International Workshop of "Advances in Discrete Networks". December 12-14 2014 Pittsburgh, PA: USA

Measuring synchronous bursting and spiking under varying second order networks statistics. Poster Session at the 2014 Organization for Computational Neuroscience Annual Meeting. July 26-31 2014 Quebec City, Quebec: Canada

Assessing the impact of network topology on synchronous bursting and spiking. AMS Mathematical Research Community in Network Science. June 24-30 2014 Salt Lake City, Utah: USA

TEACHING EXPERIENCE

2016-Present:	Swarthmore College, Visiting Assistant Professor
	Calculus 2 Instructor
2011-2016:	University of Pittsburgh
	Calculus 3 Instructor (2016)
	Calculus 1 Recitation Leader (2014-2015)
	Calculus 3 Recitation Leader (2013-2014)
	Actuarial Mathematics Grader (2013-2014)
	Complex Analysis Grader (2013-2014)
	Mathematical Biology Grader (2013-2014)
2010-2011:	University of Maryland
	Calculus 2 Recitation Leader
	Calculus 1 Recitation Leader

PROFESSIONAL AFFILIATIONS

American Mathematical Society

Center for Integration of Research, Teaching and Learning

Sigma Xi-Swarthmore Chapter, Departmental Representative

Society for Industrial and Applied Mathematics

SUMMER SCHOOLS

Selected for the Computational Neuroscience Summer School at the University of Ottawa (2014).

Selected for the Math SPIRAL Program at the University of Maryland (2009).

COMPUTER SKILLS

Knowledgable in Python, Matlab, Javascript, HTML/CSS and LaTex