Bradford P Taylor

CONTACT INFORMATION

School of Physics
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RESEARCH INTERESTS

Dynamical systems modeling applied to biology
Multi-Scale Models
Stochastic Processes
Spatial Models

EDUCATION

Ph.D. Physics, Georgia Institute of Technology (2016)
Dissertation title: Population dynamics of multiple viral infections
B.S. Physics, Rhodes College, *cum laude* (2009)

AWARDS AND HONORS

Nerem Travel Award Fellowship, Georgia Tech 2015
1st place grad presentation, Biomathematics and ecology education conference 2013
Presidential Scholarship, Rhodes College 2005–2009
ΣΠΣ National physics honor society, Rhodes College 2008

SUBMITTED MANUSCRIPTS

BP Taylor, CJ Penington, JS Weitz. Emergence of elevated levels of multiple infections in spatial host-virus dynamics.
bioRxiv doi: http://dx.doi.org/10.1101/048876

PUBLICATIONS

BP Taylor, J Dushoff, JS Weitz. Stochasticity and the limits to confidence when estimating R_0 of Ebola and other emerging infectious diseases. 2016. *J. Theoretical Biology.* 408. 145-154

JT Pentz, **BP Taylor**, WC Ratcliff. Apoptosis in snowflake yeast: novel trait, or side effect of toxic waste?. 2016. *J Royal Society Interface.* 13.118: 20160121.

JS Weitz, CA Stock, SW Wilhelm, L Bourouiba, ML Coleman, A Buchan, MJ Follows, JA Fuhrman, LF Jover, JT Lennon, M Middelboe, DL Sonderegger, CA Suttle, **BP Taylor**, TF Thingstad, WH Wilson, KE Wommack. A multitrophic model to quantify the effects of marine viruses on microbial food webs and ecosystem process. 2015. *ISME J.* 9: 1352-1364

BP Taylor, MH Cortez, JS Weitz. The virus of my virus is my friend: ecological effects of virophage with alternative modes of coinfection. 2014. *J. Theoretical Biology.* 354: 124-136.

B Taylor, TJ Lee, JS Weitz. A Guide to Sensitivity Analysis of Quantitative Models of Gene Expression Dynamics. 2013. *Methods.* 62 (1): 109-120.

J Schulte, C Seaton, **B Taylor**. Free and free abelian Euler-Satake characteristics of nonorientable 2-orbifolds. 2011. *Topology and its Applications*. 158: 2244-2255

W Duval, J Schulte, C Seaton, **B Taylor**. Classifying closed 2-orbifolds with Euler characteristic. 2010. *Glasgow Math. J.* 52: 414-419

S. Banerjee, **B Taylor**, A Banerjee. On the stability of Electrostatic Orbits. 2009. *American J. Physics*. 77: 151-158

Invited talks

Robust estimation and limits to confidence of the basic reproduction number in disease outbreaks: the example of Ebola virus disease. Society for Mathematical Biology. 2015. Atlanta, GA.

Can you trust mathematical models in Biology: sensitivity analysis as a guide. Mathematics Colloquium, Rhodes College. 2012. Memphis, TN

Accepted conference talks

Emergence of elevated levels of multiple infections in spatial host-virus dynamics. Quantitative Laws II. 2016. Lake Como, Italy.

Emergence of elevated levels of multiple infections in spatial host-virus dynamics. American Physical Society. 2016. Baltimore, MD.

Emergence of elevated levels of multiple infections in spatial host-virus dynamics. Atlanta Area Systems Biophysics Meeting. 2016. Atlanta, GA.

Emergence of elevated levels of coinfection in spatial Virus-Microbe Dynamics. International Physics of Living Systems '15. 2015. Arlington, VA

A hitchhiker's guide to coinfection: ecology and evolution of virophage. International Physics of Living Systems '14. 2014. Munich, Germany

The virus of my virus is my friend: ecology of virophage. SIAM Life Sciences. 2014. Charlotte, NC

The virus of my virus is my friend: ecology of virophage. Biomathematics and Ecology: Education and Research (BEER). 2013. Arlington, VA

Accepted conference posters

Emergence of elevated levels of multiple infections in spatial host-virus dynamics. International Physics of Living Systems. 2016. Boston, MA.

Emergence of elevated levels of multiple infections in spatial host-virus dynamics. Populations, Evolution, and Physics. 2016. Aspen Center for Physics, CO.

Frequency of multiply infecting bacteriophage in natural environments exposed by spatial models. qBio. 2015. Blacksburg, VA

Process noise and the limits to inferring the basic reproduction number of an epidemic: application to Ebola virus disease (EVD).Ecology and Evolution of Infectious Diseases.2015. Athens, GA.

The virus of my virus is my friend: ecology of virophage. Dynamics Days. 2014. Atlanta, GA

Local and Global Sensitivity Analysis of Phage-λ Models. Frontiers in Systems and Synthetic Biology '13. 2013. Atlanta, GA

Identifying Mechanisms and Consequences of Virophage Entry through a Dynamical Modeling Approach. Environmental Virology Workshop. 2013. Tucson, AZ

Local and Global Sensitivity Analysis of Phage-λ Models. Society for Mathematical Biology Meeting. 2012. Knoxville, TN.

Technical Skills

Programming languages: MATLAB, Python, Mathematica. Productivity: LaTeX, Microsoft Office.

Teaching Experience

Developing course materials for graduate qBios intro course, Georgia Institute of Technology 2016
Tech for Teaching certificate representing completion of sequence of courses in higher education pedagogy, Georgia Institute of Technology 2014
TA, Introductory Physics I, Georgia Institute of Technology 2010-2011
After-school Tutor, All high school courses, John O'Connell High School 2010
Mathematics Tutor, Numerous undergraduate courses, Rhodes College 2006-2009

Citizenship

United States of America

Languages

Native: English

Reference letter writers

1) Joshua Weitz:
School of Biology and School of Physics, Georgia Institute of Technology
email: jsweitz@gatech.edu, Ph: 404.385.6169
2) Michael Cortez:
Department of Mathematics and Statistics, Utah State University
email: michael.cortez@usu.edu, Ph: 435.797.7695
3) William Ratcliff:
School of Biology, Georgia Institute of Technology,
email: william.ratcliff@biology.gatech.edu, Ph: 404.894.8906