

# Joseph John KLOBUSICKY

## CONTACT INFORMATION

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## SUMMARY

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CURRENT POSITION: NSF RTG Postdoctoral Scholar. Rensselaer Polytechnic Institute. August 2016-Present.

### RESEARCH INTERESTS:

Major interests: Modeling in **applied probability and analysis**, with experience in

- Stochastic methods applied to quantitative microbiology
- Kinetic theory for structures found in material science

Other interests:

- Neural networks and machine learning
- Medical informatics and queueing theory

## EDUCATION

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MAY 2014 Ph.D. in Applied Mathematics, **Brown University**, Providence, RI  
**Thesis:** "Kinetic limits of piecewise deterministic Markov processes and grain boundary coarsening"  
**Advisor:** Prof. Govind MENON  
MAY 2010 M.Sc. in APPLIED MATHEMATICS, **Brown University**, Providence, RI  
MAY 2009 M.S. in MATHEMATICS, **Carnegie Mellon University**, Pittsburgh, PA  
MAY 2009 B.S. in MATHEMATICS, **Carnegie Mellon University**, Pittsburgh, PA

## PREVIOUS APPOINTMENTS

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Sept 2016-Current	Lecturer at RENSSELAER POLYTECHNIC INSTITUTE <b>Courses:</b> <i>Probability Theory with Applications</i> (Fall '16/'17) <i>Introduction to Differential Equations</i> (Spring '17/'18, Fall '18)
Sept 2015-May 2016	Lecturer at BUCKNELL UNIVERSITY <b>Courses:</b> <i>Introduction to Statistics</i> (Fall '15) <i>Introduction to Mathematical Modeling</i> (Spring '16)
May 2014-August 2016	Data scientist/applied mathematician at GEISINGER MEDICAL CENTER, Danville, PA
August 2010-May 2013	Teaching assistant at BROWN UNIVERSITY <b>Courses:</b> <i>Differential Equations</i> (Fall '10, Spring '11) Instructor at <i>Brown/Kobe University</i> <i>Supercomputing Summer School</i> (Summer '13)

## PUBLICATIONS (FOR PREPRINTS, PLEASE VISIT JOEKLOBUSICKY.NET)

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### In preparation:

*Effective behavior of cooperative and nonidentical molecular motors.*  
With Peter Kramer and John Fricks.

### Submitted:

*Two-dimensional grain boundary networks: stochastic particle models and kinetic limits*  
With Govind Menon and Robert Pego.

*CrossNets: cross-information flow in deep learning architectures.*  
With Chirag Agarwal, Mehdi Sharifzhadeh, and Dan Schonfeld.

### Accepted:

(Mathematical modeling/particle systems)

*Concentration inequalities for a removal-driven thinning process.*  
Joe Klobusicky, Govind Menon. *Quart. Appl. Math.* 75 (2017), pp. 677-696.

*Building polyhedra by self-folding: theory and experiment.*  
Ryan Kaplan, Joe Klobusicky, Shivendra Pandey, David H. Gracias, and Govind Menon. *Artificial Life*. Vol. 20, Issue 4, Fall 2014, pp. 409-439.

*Self-assembly of mesoscale isomers: the role of pathways and degrees of freedom.*  
Shivendra Pandey, Daniel Johnson, Ryan Kaplan, Joe Klobusicky, Govind Menon, and David H. Gracias. *PLoS One*, 9.10 (2014): e108960.

(Medical Informatics)

*A network-theoretic analysis of hospital admission, transfer, and discharge data.*  
Joe Klobusicky, Maria Cioffi, Naba Mukhtar, Nathan C. Ryan. In *AMIA Summit on Clinical Research Informatics Proceedings*. Vol. 2018, pp. 45-53.

*Aberrations in the iron regulatory gene signature are associated with decreased survival in diffuse infiltrating gliomas.*  
Joe Klobusicky, Cody Weston, Jennifer Weston, James Connor, Steven A. Toms and Nicholas F. Marko. *PLoS One*. 11.11(2016): e0166593.

*Evolving patient compliance trends: integrating clinical, insurance, and extrapolated socio-economic data.*

Joe Klobusicky, Arun Aryasomayajula. and Nicholas F. Marko. In AMIA Annual Symposium Proceedings. Vol. 2015, pp. 766-774.

## ORGANIZATIONAL ACTIVITIES

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Organizer: RTG/Dynamical Systems Seminar. Fall 2017-present.

Assistant coach: Mathematical and Interdisciplinary Contest in Modeling (MCM/ICM)

## COMPUTER LANGUAGES

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Python, R, Matlab

## WORKSHOPS AND SUMMER SCHOOLS

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PIRE Workshop. "From grain boundaries to stochastic homogenization". University of Leipzig, Germany. July 2015.

CNA Summer School. "Topics in nonlinear PDEs and calculus of variations, and applications in material science". Carnegie Mellon University. Pittsburgh, Pennsylvania. June 2013.

NSF PIRE Summer School. "New frontiers in multiscale analysis and computing for materials". IMA. Minneapolis, Minnesota. June 2012.

CNA Workshop. "Macroscopic modeling of materials with fine structure": Carnegie Mellon University. Pittsburgh, Pennsylvania. May 2011.

## PRESENTATIONS

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SIAM Life Sciences 2018. "Stochastic averaging for multiple cooperative and antagonistic molecular motors". August 2018.

Mechbio Conference 2018. "Stochastic averaging for multiple cooperative and antagonistic molecular motors". Poster. UC Irvine. July 2018.

SIAM Mathematical Aspects of Material Science. "Particle System Models for Two-dimensional Grain Boundary Coarsening". July 2018.

Biology and Medicine Through Mathematics. "Stochastic averaging for multiple cooperative and antagonistic molecular motors". Virginia Commonwealth University. June 2018.

University of New Mexico Colloquium. "Particle system models for two-dimensional grain boundary coarsening". May 2018.

Frontier Probability Days. Oregon State University. "Stochastic particle systems related to grain boundary coarsening". April 2018.

AMIA 2018 Informatics Summit. "A network-theoretic analysis of hospital admission, transfer, and discharge data". March 2018.

Society of Mathematical Biology Annual Meeting: "Effective Behavior of Two Molecular Motors". July 2017.

Frontiers in Applied and Computational Mathematics 2017: "Two One-Dimensional Models From Grain Boundary Coarsening". June 2017.

2017 SIAM Dynamical Systems. Minisymposium organizer for "Random Dynamics in Molecular Biology", with talk "Effective dynamics of multiple molecular motors". May 2017.

10th IMACS Nonlinear Evolution Equations and Wave Phenomena: “Effective behavior of multiple molecular motors”. April 2017.

Joint Mathematics Meeting 2017: “A minimal model of grain coarsening”. January 2017.

AIMS 2016: “Hydrodynamic limits of grain coarsening in two dimensions”. July 2016.

SIAM Mathematical Aspects of Material Science: “Kinetic models for 2D grain growth”. May 2016.

Applied Math Days at RPI: “A particle system model of two dimensional grain boundary coarsening”. April 2016.

RTG Seminar: “Piecewise-deterministic Markov processes and kinetic limits of grain boundary coarsening”. February 2016.

Student Talk Series: “Piecewise deterministic Markov processes and metal grain coarsening”. Bucknell University. February, 2015.

Bucknell University/Geisinger Lecture Series: ““What exactly is medical mathematics?””. Bucknell University. January, 2015.

Lefschetz Center for Dynamical Systems Seminar: “Grain coarsening and kinetic limits for piecewise-deterministic Markov processes”. Brown University. February 2014.

Graduate Student Seminar: “Curve shortening flow and grain coarsening”. Brown University. November 2013.

Poster: “Self assembly of polyhedra”: NSF Building Engineered Complex Systems Workshop. January 2013.