

Ksenia N. Kyzyurova

January 22, 2019

Curriculum vitae

Contact

E-mail: ksenia.kyzyurova@gmail.com

Web-site: <http://kseniak.ucoz.net/>

Skype: ksenia_kyzyurova

Education

Duke University MSc (2014), PhD (2017) Statistical Science
Trinity College of Arts & Sciences
Durham, NC, USA

Dissertation: On Uncertainty Quantification for Systems of Computer Models

Advisors: Jim Berger, Robert Wolpert

ITMO University BSc (2009), MSc (2011) Applied Math & Computer Science
Natural Sciences Division
St.-Petersburg, Russia

Research Interests

Bayesian statistical data analysis

Inference from scientific computer models

Uncertainty Quantification for computer models

Scientific computing for Bayesian inverse problems

Research Application

Fundamental science research, including geophysics, climate science, volcano eruptions, carbon sequestration

Publications

1. Ksenia N. Kyzyurova, James O. Berger, and Robert L. Wolpert. Coupling computer models through linking their statistical emulators. *SIAM/ASA Journal on Uncertainty Quantification*, 6(3):1151–1171, 2018

Software

1. Ksenia N. Kyzyurova. *LinkedGASP: Linked Emulator of a Coupled System of Simulators: R package version 1.0*. Comprehensive R Archive network (CRAN) repository, 2018

Books

1. Ksenia N. Kyzyurova. *Bayesian metaphysics (open textbook)*. in preparation, 2019
2. Ksenia N. Kyzyurova. *Bayesian inference for applications in natural sciences (open textbook)*. in preparation, 2020

Submitted manuscripts

1. Ksenia N. Kyzyurova. Emulation of computer models with multivariate output. *submitted*, 2018
2. Ksenia N. Kyzyurova. On zero-inflated output of a computer model and its emulation for probabilistic hazard assessment. *submitted*, 2018
3. Ksenia N. Kyzyurova. On scoring rules and frequency predictive measures. *submitted*, 2019

Working manuscripts

1. Ksenia N. Kyzyurova. Probabilistic calibration of scientific computer models involving their surrogates. *in preparation*, 2019
2. Ksenia N. Kyzyurova. Lagrangian emulator of a particle-based computer model. *in preparation*, 2019

Academic and Research Appointments

August 2018 - December 2018, *Postdoctoral research associate*, Brown University, Data Science Initiative (DSI), Providence, Rhode Island

September 2017 - May 2018, *Postdoctoral fellow*, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia

May 2016 - August 2016, *Graduate research assistant*, Los Alamos National Laboratory, CCS-6 Statistical Sciences Division, Los Alamos, NM, USA

August 2012 - August 2017, *Research and teaching assistant*, Duke University, Department of Statistical Science, Durham, NC, USA

September 2009 - June 2012, *Research and teaching assistant*, ITMO University, Department of Mathematics, St.-Petersburg, Russia

Awards

US NSF Travel grant award to participate in SAMSI workshop “Model Uncertainty: Mathematical and Statistical (MUMS)”, Durham, NC, USA, August 2018

US NSF Travel grant award to participate in “Rossbypalooza: Climate meets Statistics” workshop, Chicago, IL, USA, July 2016

US NSF Travel grant award to participate in “Uncertainties in the Geosciences: A Workshop on Hazard Analysis”, Buffalo, NY, January 2016

SIAM Student travel award to participate in SIAM conference on Uncertainty Quantification (UQ16), Lausanne, Switzerland, December 2015

US NSF Travel grant award to participate in OBayes-15 conference, Valencia, Spain, May 2015

Research grant from the city government of St.Petersburg, Russia; Competitive award for outstanding research proposals, St.Petersburg, Russia, November 2011

Best M.S. students research work, ITMO University, St.Petersburg, Russia, June 2011

Research talks

1. On emulation of zero-inflated output of a computer model. *Seminar at Statistical and Mathematical Modeling Working Group*, Brown University School of Public Health, Providence, RI, USA, October 26, 2018
2. Emulation of computer models with multivariate output. *Research visit, University of Pavia*, Pavia, Lombardy, Italy, June 19, 2018
3. Emulation of computer models with multivariate output. *Research visit, USI: Università della Svizzera italiana*, Lugano, Switzerland, June 13, 2018
4. Emulation of computer models with multivariate output. *SIAM conference on Uncertainty Quantification (UQ18)*, Garden Grove, CA, USA, April 16-19, 2018
5. Emulation of computer models with multivariate output. *Seminar at Spatio-Temporal Statistics and Data Science Group, KAUST*, Thuwal, Saudi Arabia, September 26, 2017
6. Coupling computer models through linking their statistical emulators. *The 10th ICSA International Conference on Global Growth of Modern Statistics in 21st Century*, Shanghai, China, December 19-22, 2016
7. Bayesian inverse problem in the framework of the linked emulator of a system of computer models. *Seminar at the Department of Statistical Science, Duke University*, Durham, NC, USA, September 12, 2016
8. Coupling computer models through linking their statistical emulators. *Los Alamos National Laboratory (LANL) Statistical Sciences Seminar*, Los Alamos, NM, USA, May 11, 2016
9. Coupling computer models through linking their statistical emulators. *SIAM conference on Uncertainty Quantification (UQ16)*, Lausanne, Switzerland, April 5-8, 2016
10. Linking statistical emulators of complex scientific computer models. *11th Annual UNCG Regional Mathematics and Statistics Conference*, Greensboro, NC, USA, November 7, 2015
11. Linking statistical emulators. *Seminar at the Department of Statistical Science, Duke University*, Durham, NC, USA, August 31, 2015
12. Spatial modeling of ocean temperature-depth profiles using gaussian processes. *Seminar at the Department of Statistical Science, Duke University*, Durham, NC, USA, November 17, 2014

Research poster presentations

1. Quantifying scenario uncertainty for global temperature projections: a bayesian space-time energy-balance stochastic generator. ISBA conference, June 24-29, 2018. Edinburgh, Scotland, UK
2. Quantifying scenario uncertainty for global temperature projections: a bayesian space-time energy-balance stochastic generator (poster). Conference “Computational and Statistical Interface to Big Data”, March 19-21, 2018. KAUST, Thuwal, Saudi Arabia
3. Bayesian classification of climate computer models (poster). Workshop “Modern Statistics for Complex Data Structures”, November 12-15, 2017. KAUST, Thuwal, Saudi Arabia
4. Coupling computer models through linking their statistical emulators (poster). Statistical Perspectives on Uncertainty Quantification (SPUQ), May 29-30, 2017. Atlanta, GA, USA
5. Linking statistical emulators. 11th International Workshop on Objective Bayes Methodology (OByes-15), June 1-5, 2015. Valencia, Spain
6. Modeling vertical ocean temperature profiles with space-depth gaussian processes. G70: A Celebration of Alan Gelfand’s 70th Birthday, April 19-22, 2015. Durham, NC, USA

Professional activities

Reviewer for *Environmetrics*

Student mentor for incoming PhD students, 2016 - 2017, Department of Statistical Science, Duke University, Durham, NC, USA

VIP Consultant March 20-22, 2015 ASA DataFest 2015, Duke University, Durham, NC, USA

Programming skills

R, Matlab, Stan, JAGS, WinBUGS, Mathematica

Familiarity with Java, C/C++, HTML/CSS

Hobbies

Dancing (Ballet school diploma with honors)

Playing the piano (Rimsky-Korsakov music school diploma with honors)

Taiji

Professional Societies

Current

Objective Bayes group of International Society for Bayesian Analysis (ISBA) (Life-time member)

Uncertainty Quantification (SIAG/UQ, GAMM AG UQ)

Models to Decisions | Decision Making Under Uncertainty (M2D)

American Statistical Association (ASA)

Uncertainty in complex models (UCM)

Previous memberships

Royal Statistical Society (RSS), Society for Industrial and Applied Mathematics (SIAM), Institute of Mathematical Statistics (IMS)

References

James O. Berger, co-advisor

Duke University, Department of Statistical Science, Durham, NC, USA

E-mail: berger@duke.edu

Robert L. Wolpert, co-advisor

Duke University, Department of Statistical Science, Durham, NC, USA

E-mail: rlw@duke.edu

James R. Gattiker, mentor

Los Alamos National Laboratory, CCS-6 Statistical Sciences Division, Los Alamos, NM, USA

E-mail: gatt@lanl.gov

Joanne Wendelberger, colleague

Los Alamos National Laboratory, CCS-6 Statistical Sciences Division, Los Alamos, NM, USA

E-mail: joanne@lanl.gov

Earl Lawrence, colleague

Los Alamos National Laboratory, CCS-6 Statistical Sciences Division, Los Alamos, NM, USA

E-mail: earl@lanl.gov

K. Sham Bhat, collaborator

Los Alamos National Laboratory, CCS-6 Statistical Sciences Division, Los Alamos, NM, USA

E-mail: bhat9999@lanl.gov

Elaine T. Spiller, collaborator

Marquette University, Department of Mathematics, Statistics and Computer Science, Milwaukee, WI, USA

E-mail: elaine.spiller@marquette.edu

Abani K. Patra, collaborator

State University of New York at Buffalo, Department of Mechanical and Aerospace Engineering, Buffalo, NY, USA

E-mail: abani@buffalo.edu

E. Bruce Pitman, collaborator

State University of New York at Buffalo, Department of Mathematics, Buffalo, NY, USA

E-mail: pitman@buffalo.edu

Marcus Bursik, collaborator

State University of New York at Buffalo, Department of Geological Sciences, Buffalo, NY, USA

E-mail: mib@buffalo.edu

Surya T. Tokdar, teacher

Duke University, Department of Statistical Science, Durham, NC, USA

E-mail: st118@stat.duke.edu

Joseph W. Hogan, mentor

Brown University, School of Public Health, Providence, RI, USA

E-mail: jhogan@stat.brown.edu