

SHIWEI LAN

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EDUCATION

Doctor of Philosophy in Statistics	2013
University of California, Irvine	<i>Irvine, California</i>
Master of Science in Mathematics	2010
University of California, Irvine	<i>Irvine, California</i>
Bachelor of Science in Mathematics	2005
Nanjing University	<i>Nanjing, China</i>

EXPERIENCE

Postdoctoral Scholar	09/2016–present
California Institute of Technology	<i>Pasadena, California</i>
Postdoctoral Research Fellow	08/2014–08/2016
University of Warwick	<i>Coventry, UK</i>
Postdoctoral Research Fellow	02/2014–07/2014
University of California, Irvine	<i>Irvine, California</i>
Graduate Research Assistant	06/2013–12/2013
University of California, Irvine	<i>Irvine, California</i>
Teaching Assistant	09/2006–06/2013
University of California, Irvine	<i>Irvine, California</i>

SKILLS

Statistics & Mathematics	Bayesian Statistics, Data Analysis, Stochastic Process, Mathematical/Real/Complex/Numerical Analysis, ODE/PDE, Topology, Differential Geometry, Geometric Analysis
Computer	C/C++, Python, Matlab/Mathematica, R, SAS/Stata, FEniCS

HONORS

Excellent Graduate	top 20%
Nanjing University	2005
National Scholarship	top 3%
Nanjing University	2002, 2003, 2004

ACTIVITIES

Reviews

Statistical Analysis and Data Mining, Scandinavian Journal of Statistics, PLOS ONE,

Talks

Geometric MCMC for Infinite-Dimensional Inverse Problems

SIAM CSE (03/2017)

Atlanta, Georgia

Geometric Dimension-Independent MCMC for Bayesian Inverse Problems

Warwick Data Science Institute (12/2015)

U. Warwick

SIAM UQ (04/2016)

Lausanne, Switzerland

Sampling Constrained Probability Distributions using Spherical Augmentation

Warwick Centre for Predictive Modeling (06/2015)

U. Warwick

Gaussian Process-Geometric Monte Carlo For Big Models

MIR@W: Uncertainty in Complex Computer Models (02/2015)

U. Warwick

Adaptive Geometric Monte Carlos Using Gaussian Process Emulation for Computation Intensive Models

Statistics Seminar (01/2015)

UC Irvine

Center for Scientific Computing (01/2015)

U. Warwick

Financial Seminar (03/2015)

U. Leeds

Geometric Techniques in Advanced MCMC

EQUIP (08/2014)

U. Warwick

Spherical HMC for Constrained Target Distributions

ICML (06/2014)

Beijing, China

AI/ML seminar (11/2013)

UC Irvine

Split Hamiltonian Monte Carlo

5th International Conference of ERCIM on Computing & Statistics (12/2012)

Oviedo, Spain

Lagrangian Dynamical Monte Carlo

AI/ML seminar (11/2012)

UC Irvine

Teaching

Assistance	Calculus (2007, 2008, 2009), Math for Econ (2008, 2009), Linear Algebra (2010), Intro to Bio Stats (2011, 2012, 2013), Intro Prob and Stats Theory (2011), Stats Methods (2011), Stats Methods for Data Analysis (2012, 2013)
Guest Lecture	Hamiltonian Monte Carlo (2013), Bayesian Statistics (2014), Statistical Computing Method (UCI, 2017W)
Lecture	Bayesian Analysis (CalTech, 2017S),
Training	CalTech Project for Effective Teaching Certificate of Interest (2017)

PUBLICATIONS

Recent Work

Geodesic Lagrangian Monte Carlo over the space of positive definite matrices: with application to Bayesian spectral density estimation 2016

Andrew Holbrook, [Shiwei Lan](#), Alexander Vandenberg-Rodes, Babak Shahbaba

<https://arxiv.org/abs/1612.08224>

phylodyn: an R package for phylodynamic simulation and inference 2016
Michael D. Karcher, Julia A. Palacios, [Shiwei Lan](#), Vladimir N. Minin
In submission, <https://arxiv.org/abs/1610.05817>

Published Work

Geometric MCMC for Infinite-Dimensional Inverse Problems 2016
Alexandros Beskos, Mark Girolami, [Shiwei Lan](#), Patrick E. Farrell and Andrew Stuart
Journal of Computational Physics Volume 335, 15 April 2017, Pages 327-351

Bayesian uncertainty quantification for transmissibility of influenza and norovirus using information geometry 2016
Thomas House, Ashley Ford, [Shiwei Lan](#), Samuel Bilson, Elizabeth Buckingham-Jefferey and Mark Girolami
Journal of the Royal Society Interface, Aug. 24, 2016, DOI: 10.1098/rsif.2016.0279

Sampling Constrained Probability Distributions using Spherical Augmentation 2016
[Shiwei Lan](#) and Babak Shahbaba
Chapter 2 of “*Algorithmic Advances in Riemannian Geometry and Applications*”, 2016, ISBN 978-3-319-45026-1

Emulation of Higher-Order Tensors in Manifold Monte Carlo Methods for Bayesian Inverse Problems 2015
[Shiwei Lan](#), Tan Bui-Thanh, Mike Christie and Mark Girolami
Journal of Computational Physics, Volume 308, 1 March 2016, Pages 81-101

An Efficient Bayesian Inference Framework for Coalescent-Based Nonparametric Phylodynamics 2015
[Shiwei Lan](#), Julia A. Palacios, Michael Karcher, Vladimir N. Minin, Babak Shahbaba
Bioinformatics, Volume 31, Issue 20, pp 3282-3289, 2015

A Semiparametric Bayesian Model for Detecting Synchrony Among Multiple Neurons 2014
Babak Shahbaba, Bo Zhou, [Shiwei Lan](#), Hernando Ombao, David Moorman, Sam Behseta
Neural Computation, Volume 26, Issue 9, pp 2025-2051, Sept. 2014

Wormhole Hamiltonian Monte Carlo 2014
[Shiwei Lan](#), Jeffrey Streets, and Babak Shahbaba
AAAI 2014, Quebec City, Proceedings of the Twenty-Eighth AAAI Conference on Artificial Intelligence, pp1953-1959, July 2014

Spherical HMC for Constrained Target Distributions 2014
[Shiwei Lan](#), Bo Zhou, and Babak Shahbaba
ICML 2014, Beijing, Proceedings of the 31st International Conference on Machine Learning, pp. 629-637, 2014

Contribution to the Discussion of the Paper ‘Geodesic Monte Carlo on Embedded Manifolds’ 2014
Babak Shahbaba, [Shiwei Lan](#) and Jeffrey Streets
Scandinavian Journal of Statistics, Volume 41, Issue 1, pages 14-15, March 2014

Markov Chain Monte Carlo from Lagrangian Dynamics 2013
[Shiwei Lan](#), Vassilios Stathopoulos, Babak Shahbaba, and Mark Girolami
Journal of Computational and Graphical Statistics, Volume 24, Issue 2, pp 357-378, 2015

Split Hamiltonian Monte Carlo 2013

Babak Shahbaba, Shiwei Lan, Wesley O. Johnson and Radford M. Neal
Statistics and Computing, Volume 24, Issue 3, pp 339-349, May 2014

Advanced Bayesian Computational Methods through Geometric Techniques 2013

Shiwei Lan, Ph.D Dissertation

UC-Irvine, <http://gradworks.umi.com/36/05/3605182.html>