

# David A. Spade, Ph.D.

## CONTACT INFORMATION

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University of Wisconsin–Milwaukee                      *E-mail:* spade@uwm.edu  
Milwaukee, WI 53211 USA

## EDUCATION

**The Ohio State University**, Columbus, Ohio USA  
*Department of Statistics*

- Ph.D. Statistics, August 2013
  - Dissertation Topic: “Investigating Convergence of Markov Chain Monte Carlo Methods for Bayesian Phylogenetic Inference”
  - Advisor: Radu Herbei
  - Co-Advisor: Laura S. Kubatko

M.S., Statistics, March 2010

**West Liberty State College**, West Liberty, West Virginia USA  
*Department of Mathematics*

B.S., Mathematics, December, 2006

## RESEARCH INTERESTS

- Bayesian Statistical Methods
- Bioinformatics and Statistical Genetics
- Markov chain Monte Carlo methods and their convergence rates
- Statistical Ecology
- Statistical Phylogenetics

## RESEARCH FUNDING

- 2017 National Science Foundation, standard grant, PI. (Became PI following departure of original PI to NSF as a rotating program director). Award Number 1228244. Title: “Statistical Analysis for Partially-Observed Markov Processes with Marked Point Process Observations. Award Number 1228244. Awarded \$31,000. Beginning Date: 08/19/2017. End Date: 08/31/2018.

## ACADEMIC PUBLICATIONS

### - Book Chapters

1. **Spade, D.A.**, (2020) “Markov Chain Monte Carlo Methods: Theory and Practice,” in *Handbook of Statistics, Volume 43: Principles and Methods for Data Science*, Chapter 1, pp 1–66. Editors: A.S.R.S. Rao and C.R. Rao. North-Holland Publishing, Amsterdam
2. **Spade, D.A.**, (2019) “Detection of Quantitative Trait Loci from Genome-Wide Association Studies,” in *Handbook of Statistics, Volume 40: Integrated Population Biology and Modeling, Part B*, Chapter 7, pp 287–353. Editors: A.S.R.S. Rao and C.R. Rao. North-Holland Publishing, Amsterdam

### - Journal Articles

1. **Spade, D.A.** and Strickler, J.R. (2025). “A Markov Chain Model of *Daphnia* Motion.” *Journal of Plankton Research*, 47(2):fbae026.
2. **Spade, D.A.**, Aliyu, I., van Horen, J., and Strickler, J.R. (2024) “A Class of Statistical Models for *Daphnia* Motion over Small Time Scales.” *Mathematical Biosciences*, 367:109114.
3. **Spade, D.A.**, (2022) “Approximate Bounding of Mixing Time for Multiple-Step Gibbs Samplers.” *Monte Carlo Methods and Applications*, 28(3):221–233.
4. **Spade, D.A.**, (2021) “Approximate Verification of Geometric Ergodicity for Multiple-Step Metropolis Transition Kernels.” *Haceteppe Journal of Mathematics and Statistics*, *Accepted*.
5. **Spade, D.A.**, (2021) “Estimating Drift and Minorization Coefficients for Gibbs Sampling Algorithms.” *Monte Carlo Methods and Applications*, 27(3): 195–209.
6. **Spade, D.A.**, (2021) “A Monte Carlo Integration Approach to Estimating Drift and Minorization Coefficients for Metropolis-Hastings Samplers.” *Brazilian Journal of Probability and Statistics*, 35(3):466–483
7. **Spade, D.A.**, (2020) “Geometric Ergodicity of a Metropolis-Hastings Algorithm for Bayesian Inference of Phylogenetic Branch Lengths.” *Computational Statistics*. DOI: <https://doi.org/10.1007/s00180-020-00969-1>.
8. **Spade, D.A.**, (2020) “An Extended Model for Phylogenetic Maximum Likelihood based on Discrete Morphological Characters.” *Statistical Applications in Genetics and Molecular Biology*, 19(1):20190029.
9. **Spade, D.A.**, (2020) “A Computational Approach to Bounding the Mixing Time of a Metropolis-Hastings Sampler.” *Markov Processes and Related Fields*, 26:487–515.
10. Chatterjee, A., Ronghe, A., Padhye, S.B., **Spade, D.A.**, Bhat, N.K., and Bhat, H.K., (2018). “Antioxidant Activities of Novel Resveratrol Analogs TIMBD and HPIMBD in Breast Cancer.” *Journal of Biochemical and Molecular Toxicology*, 2017:e21925.
11. Piccirillo, S., Neog, D., **Spade, D.A.**, Van Horn, D., Kapros, T., and Honigberg, S.M. (2017) “Shrinking Daughters: RLM-1-Dependent G1/S Checkpoint Maintains Daughter Cell Size and Viability.” *Genetics*, 206(4):1923–1938
12. Novak, K.J., Fox, A.M., Carr, C.M., and **Spade, D.A.** (2016). “The Efficacy of Foot Patrol in Violent Places.” *Journal of Experimental Criminology*, 12(3):465–475.

13. **Spade, D.A.** (2016) “A Computational Procedure for Estimation of the Mixing Time of the Random-Scan Metropolis Algorithm”, *Statistics and Computing*, 26:761–781.
14. **Spade, D.A.**, Herbei, R., Kubatko, L.S. (2015). “Geometric Ergodicity of a Hybrid Sampler for Bayesian Inference of Phylogenetic Branch Lengths.” *Mathematical Biosciences*, Vol. 268, pp. 9–21.
15. **Spade, D. A.**, Herbei, R., Kubatko, L.S. (2014) “A Note on the Relaxation Time of Two Markov Chains on Rooted Phylogenetic Tree Spaces”, *Statistics and Probability Letters*, Vol. 84, pp. 247–252.

## ACADEMIC POSTERS AND PRESENTATIONS

- **Contributed Presentation:** “Three-Dimensional Representation of Animal Motion in Six Degrees of Freedom”; Association for the Sciences of Limnology and Oceanography/International Society of Limnology Joint Meeting, Montreal, QC, Canada, May 2026.
- **Contributed Poster:** “Simulating Realistic Three Dimensional Tracks of *Daphnia* Motion”; Ocean Sciences Meeting, New Orleans, LA, March 2024.
- **Contributed Presentation:** “A Class of Statistical Models for *Daphnia* Motion over Small Time Scales”; Aquatic Sciences Meeting, Association for the Sciences of Limnology and Oceanography, Palma de Mallorca, Spain, June 2023.
- **Contributed Presentation:** “Estimating Drift and Minorization Coefficients for Gibbs Sampling Algorithms”; Joint Statistical Meetings, Seattle, WA (Virtual Conference), August 2021
- **Contributed Presentation:** “An Extended Model for Phylogenetic Maximum Likelihood based on Discrete Morphological Characters”; 10th World Congress in Probability and Statistics, Seoul, South Korea (Virtual Conference), July 2021
- **Invited Presentation:** “A Computational Approach to Bounding the Mixing Time of a Metropolis-Hastings Sampler”; University of Missouri–Kansas City, Department of Mathematics and Statistics, November, 2019
- **Invited Presentation:** “A Bayesian Approach to Tree-Based Detection of Quantitative Trait Loci”; University of Wisconsin–Milwaukee, Department of Mathematical Sciences, December, 2017
- **Invited Presentation:** “A Bayesian Approach to Tree-Based Detection of Quantitative Trait Loci”; Augusta University, Department of Population Health Sciences, Division of Biostatistics and Data Science, Augusta, GA, November, 2017
- **Invited Presentation:** “A Bayesian Approach to Tree-Based Detection of Quantitative Trait Loci”; University of Missouri–Kansas City, Kansas City, MO, Department of Mathematics and Statistics, November, 2017
- **Invited Presentation:** “A Summary of Statistical Methods for Analysis of Differential Gene Expression”; University of Missouri–Kansas City, Department of Biomedical and Health Informatics, Kansas City, MO, October, 2017
- **Invited Presentation:** “Modeling Unphased Single-Nucleotide Polymorphism Substitution with a Discussion of Benefits to Quantitative Trait Locus Detection”; Montana State University, Department of Mathematical Sciences, Bozeman, MT, April 2017
- **Invited Presentation:** “Modeling Unphased Single-Nucleotide Polymorphism Substitution with a Discussion of Benefits to Quantitative Trait Locus Detection”; University of Kansas Medical Center, Department of Biostatistics, Kansas City, KS, February, 2017

- **Invited Presentation:** “Modeling Unphased Single-Nucleotide Polymorphism Substitution with a Discussion of Benefits to Quantitative Trait Locus Detection”; University of Missouri–Kansas City, Department of Pharmacology and Toxicology, Kansas City, MO, February, 2017
- **Invited Presentation:** “Modeling Unphased Single-Nucleotide Polymorphism Substitution with a Discussion of Benefits to Quantitative Trait Locus Detection”; Clemson University, Department of Mathematical Sciences, Clemson, SC, January, 2017
- **Invited Presentation:** “Modeling Unphased Single-Nucleotide Polymorphism Substitution with a Discussion of Benefits to Quantitative Trait Locus Detection”; University of Missouri–Kansas City, Department of Mathematics and Statistics, Kansas City, MO, January, 2017
- **Contributed Presentation:** “A Computational Approach to Estimating the Mixing Time of the Random Walk Metropolis Sampler”; Joint Statistical Meetings, Chicago, IL, August, 2016
- **Contributed Presentation:** “A Computational Procedure for Efficient Estimation of the Convergence Rate of the Random-Scan Metropolis Algorithm”; Joint Statistical Meetings, Boston, MA, August, 2014
- **Invited Presentation:** “Geometric Ergodicity of a Hybrid Sampler for Bayesian Inference of Phylogenetic Branch Lengths”; University of New Mexico, Department of Mathematics and Statistics, Albuquerque, NM, June, 2014
- **Contributed Presentation:** “Geometric Ergodicity of a Hybrid Sampler for Bayesian Inference of Phylogenetic Branch Lengths”; Innovations in Design and Dissemination–Frontiers in Biostatistics, University of Kansas–Edwards Campus, Overland Park, KS, April, 2014
- **Invited Presentation:** “Assessing Convergence of Markov Chain Monte Carlo Methods for Bayesian Phylogenetic Inference”; East Tennessee State University, Department of Mathematics and Statistics, Johnson City, TN, February, 2013
- **Invited Presentation:** “Assessing Convergence of Markov Chain Monte Carlo Methods for Bayesian Phylogenetic Inference”; University of Missouri–Kansas City, Department of Mathematics and Statistics, Kansas City, MO, February, 2013
- **Invited Presentation:** “Assessing Convergence of Markov Chain Monte Carlo Methods for Bayesian Phylogenetic Inference”; West Virginia University, Department of Statistics, Morgantown, WV, February, 2013
- **Invited Presentation:** “Assessing Convergence of Markov Chain Monte Carlo Methods for Bayesian Phylogenetic Inference”; Western Michigan University, Department of Statistics, Kalamazoo, MI, February, 2013
- **Contributed Presentation:** “Mixing Times for a Class of Markov Chains on Phylogenetic Tree Spaces”; Joint Statistical Meetings, Miami Beach, FL, August, 2011

## ACADEMIC EXPERIENCE

### University of Wisconsin–Milwaukee, Milwaukee, Wisconsin, USA

- Assistant Professor of Statistics August, 2018–Present
- Students Advised:
  - Russell Latterman–Ph.D.–Graduated Spring 2024
  - Andrew Whetten–Ph.D.–Graduated Spring 2022
  - Maya Betzler–M.S.–Anticipated Graduation Spring 2027
  - Jackson Thurmond–M.S.–Graduated Spring 2025

- Helen Kafka–M.S.–Graduated Spring 2024
- Anna-Lena Kubillus–M.S.–Graduated Spring 2023
- Fabian Fuchs–MS–Graduated Spring 2023
- Madillon Brus (Co-Advisor, M.S. Student, Graduated Spring 2019)
- Dissertation Committees:
  - Comfort Iroko (Current)
  - Brian Hospital (Graduated Spring 2023)
  - Oliver Meister (Graduated Spring 2023)
  - Liting Li (Graduated Spring 2022)
  - Lianlian Zhou (Graduated Spring 2022)
  - Sahadeb Uprettee (Graduated Summer 2020)
  - Ponmalar Ratnam (Graduated Spring 2020)
  - Charles Beer (Graduated Spring 2019)
- Classes Taught:
  - MTHSTAT 761/871–Mathematical Statistics I, Fall 2020, Fall 2021, Fall 2023, Fall 2024, Fall 2026
  - MTHSTAT 762/872–Mathematical Statistics II, Spring 2022, Spring 2024, Spring 2025
  - PH 722–Introduction to Bayesian Statistical Analysis, Spring 2022, Spring 2023
  - PH 711–Intermediate Biostatistics, Spring 2024
  - MATH 233–Calculus and Analytic Geometry III, Summer 2020, Summer 2021
  - MTHSTAT 216–Introduction to Statistical Computing and Data Science, Fall 2022
  - MTHSTAT 563–Regression Analysis, Fall 2018, Fall 2019, Fall 2020, Fall 2021, Fall 2022, Fall 2023, Fall 2024, Fall 2025, Fall 2026
  - MTHSTAT 564–Time Series Analysis, Spring 2019, Spring 2020, Spring 2021, Spring 2022, Spring 2023, Spring 2024, Spring 2025
  - MTHSTAT 361–Introduction to Mathematical Statistics I, Fall 2019, Fall 2025
  - MTHSTAT 362–Introduction to Mathematical Statistics II, Spring 2026
  - MTHSTAT 215–Elementary Statistical Analysis, Summer 2019, Spring 2023, Summer 2024, Summer 2025, Summer 2026
  - MATH 599–Mathematics Capstone, Fall 2019, 2 Students

**University of Missouri–Kansas City**, Kansas City, Missouri, USA

- Assistant Professor of Statistics **August 2013–August 2018**

- Students Advised:
  - Stephen Gardner (M.S.) Graduated Spring 2018
  - Mengru Zhou (M.S.) Graduated Fall 2017
  - Hongyan Hou (M.S.) Graduated Fall 2017
  - Reham Alotaibi (M.S.) Graduated Spring 2017
  - Ibtihal Alsaedi (M.S.) Graduated Spring 2017
  - Ying-Yin Chang (M.S.) Graduated Fall 2016
  - Khaja Chinnakondepalli (M.S.) Graduated Fall 2016
  - Bader Alanazi (M.S.) Graduated Spring 2016

- Rachael Nassimbwa (M.S.) Graduated Spring 2016
- Yonghui Ni (M.S.) Graduated Spring 2016
- Hao Zhou (M.S.) Graduated Spring 2016
- Xing Xia (M.S.) Graduated Spring 2015
- Jing Yi Yan (M.S.) Graduated Spring 2014
- Dissertation Committees
  - Ivan Velazquez Garzon, 2016–2020
  - Rafed Al-Huq, 2014–2019
  - Liudmila Malyshava, 2014–2022
  - Brandon McCoy, 2015–2018
  - Ignacio Ramirez-Cisneros, 2015–2019
  - Xing Xia, 2015–2019
  - Yanan Ma, 2014–2016
  - Qian Li, 2014–2015
- Classes Taught:
  - STAT 436–Introduction to Mathematical Statistics I, Fall 2013, Fall 2014, Fall 2015
  - STAT 441–Introduction to Mathematical Statistics II, Spring 2014, Spring 2015, Spring 2016, Spring 2017
  - STAT 5537–Mathematical Statistics I, Fall 2016, Fall 2017
  - STAT 5551–Applied Statistical Analysis, Fall 2014, Fall 2015, Fall 2016, Fall 2017, Fall 2018
  - STAT 5565–Regression Analysis, Spring 2015
  - STAT 5572–Multivariate Analysis, Spring 2017, Spring 2018
  - STAT 5588–Theory of General Linear Models, Spring 2015, Spring 2018
  - STAT 5590–Bayesian Statistical Analysis, Spring 2015, Fall 2017
  - STAT 5590–Markov Chain Monte Carlo Methods, Spring 2014

## SERVICE

### Professional Service

- Review Editor–Frontiers in Applied Mathematics and Statistics, 2021–Present
- Reviewer–Computational Statistics, 2020–Present
- Reviewer– Journal of Probability and Statistics, 2020–Present
- Statistical Applications in Genetics and Molecular Biology, 2019–Present
- Reviewer–Wiley Texts in Statistics, 2019–Present
- Reviewer–International Journal of Clinical Biostatistics and Biometrics, 2017–Present
- Reviewer–Journal of Microbial Biology and Technology, 2015–Present
- Reviewer–Journal of Statistical Planning and Inference, 2014–Present
- Reviewer–Molecular Phylogenetics and Evolution, 2014–Present
- Reviewer–Mathematical Biosciences, 2015–Present
- Reviewer–Statistics and Probability Letters, 2014–Present
- Reviewer–Statistics and Computing, 2013–Present

**University of Wisconsin–Milwaukee Department of Mathematical Sciences**

- Associate Chair for Undergraduate Studies, Spring 2025–Present
- Chair: Social Committee, Fall 2020–Fall 2022
- Member: Social Committee, Fall 2018–Spring 2020
- Speaker: Area Advising Session on Statistics, Fall 2018, Fall 2019

**University of Missouri System, Fall 2013–Summer 2018**

- Reviewer, University of Missouri Research Board, Fall 2013–Spring 2018

**University of Missouri–Kansas City, Department of Mathematics and Statistics, Fall 2013–Summer 2018**

- Course Contact: STAT 5537, Fall 2016–Summer 2018
- Course Contact: STAT 5551, Fall 2013–Summer 2018
- Course Contact: STAT 5572, Spring 2016–Summer 2018
- Course Contact: STAT 5588, Spring 2015–Summer 2018
- Principal Graduate Advisor for Statistics, Spring 2015–Summer 2018
- Member: Mathematics and Statistics Department Website Redesign Committee, Fall 2013–Summer 2018
- Chair: Statistics Curriculum Committee, Fall 2015–Spring 2018
- Member: Graduate Teaching Assistant Hiring Committee, Fall 2013–Spring 2018
- Chair: Mathematics Non-Tenure-Track Faculty Search Committee, Fall 2016–Spring 2017
- Chair: Statistics Tenure-Track Faculty Search Committee, Fall 2016–Spring 2017
- Member: Statistics Tenure-Track Faculty Search Committee, Fall 2015–Spring 2016
- Course Contact: STAT 5565, Spring 2015
- Graduate Seminar Series Coordinator, Fall 2014–Spring 2015
- Member: Mathematics and Statistics Department Salary Committee, Spring 2015
- Member: Mathematics and Statistics Curriculum Committee, Fall 2013–Spring 2015
- Judge: SEARCH Symposium, Spring 2014
- Mathematics and Statistics Department Secretary, Fall 2013–Spring 2014

**Community and Outreach**

- Flour Power, Fall 2019–2021
- Scorer: MATHCOUNTS Local Competition, SE Wisconsin Chapter, Spring 2019

**CONTRACT WORK****Lecturio**

- Instructor: Introductory statistics, online course (24 lectures)