JESSI CISEWSKI-KEHE   CURRICULUM VITAE

Last updated: January 10, 2020

CONTACT INFORMATION

Department of Statistics & Data Science, Yale University	New Haven, CT 06511
Website: `https://jessicisewskikehe.github.io`	E-mail: jessica.cisewski@yale.edu
Citizenship: USA (Born: Minneapolis, MN)	

EDUCATION

Doctorate of Philosophy, Statistics and Operations Research, August 2007 - May 2012
University of North Carolina, Chapel Hill, North Carolina, USA
· Dissertation title: Generalized fiducial inference for linear mixed models (Advisor: Jan Hannig)

Master of Science, Statistics and Operations Research, December 2010
University of North Carolina, Chapel Hill, North Carolina, USA

Bachelor of Science, Mathematics, August 2001 - May 2005 (*Cum Laude*)
University of Notre Dame, South Bend, Indiana, USA
· Université d'Angers, Angers, France, August 2003 - December 2003

RESEARCH INTERESTS

Interdisciplinary research, data science, astrostatistics and cosmostatistics, approximate Bayesian computation, topological data analysis, applications to the physical sciences, foundations of statistics

PROFESSIONAL EXPERIENCE

Assistant Professor, Department of Statistics & Data Science, Yale University, New Haven, CT, July 2015 - present
Secondary Appointment, Department of Astronomy, Yale University, September 2016 - present
Research Scientist, Department of Statistics, Yale University, June 2015

Visiting assistant professor, Department of Statistics, Carnegie Mellon University, Pittsburgh, PA, August 2012 - May 2015

Graduate student fellow, Statistical and Applied Mathematical Sciences Institute (SAMSI), Research Triangle Park, NC (Program: Uncertainty Quantification), Fall 2011, Spring 2012

Research assistant, Department of Statistics and Operations Research, University of North Carolina at Chapel Hill, Spring 2010, Summer 2010, Spring 2011, Summer 2011

Actuarial Assistant, Allstate Insurance Company, Northbrook, IL, August 2005 - August 2007
· Passed Casualty Actuarial Society Exams 1 through 5 (2005 - 2007)
  Current CAS exams status: 1, 2, 3F, C1, M2, VE, VF
  Current SOA exams status: P, FM, STAM, VEE: Accounting and finance, Economics

RESEARCH PUBLICATIONS

- U. Simola, **J. Cisewski-Kehe**, R. L. Wolpert, "Approximate Bayesian Computation for Finite Mixture Models" (Preparing to re-submit).

- P. Holzer and **J. Cisewski-Kehe**, "A Hermite-Gaussian Based Radial Velocity Estimation Method" (Submitted)

- U. Simola, **J. Cisewski-Kehe**, M. U. Gutmann, J. Corander, "Adaptive Approximate Bayesian Computation Tolerance Selection" (Resubmitted).

- C. A. Politsch, **J. Cisewski-Kehe**, R. A. C. Croft, and L. Wasserman, "Trend Filtering – I. A Modern Statistical Tool for Time-Domain Astronomy and Astronomical Spectroscopy" (Accepted for publication in *Monthly Notices of the Royal Astronomical Society*).

- C. A. Politsch, **J. Cisewski-Kehe**, R. A. C. Croft, and L. Wasserman, "Trend Filtering – II. Denoising Astronomical Signals with Varying Degrees of Smoothness" (Accepted for publication in *Monthly Notices of the Royal Astronomical Society*).

- E. Berry, Y-C Chen, **J. Cisewski-Kehe**, B. T. Fasy. "Functional Summaries of Persistence Diagrams" (Accepted for publication in *Journal of Applied and Computational Topology*).

- B. Ning, A. Wise, **J. Cisewski-Kehe**, S. Dodson-Robinson, and D. Fischer, "Identifying Activity-sensitive Spectral Lines: A Bayesian Variable Selection Approach" (2019), *The Astronomical Journal*, 158(5).

- X. Xu, **J. Cisewski-Kehe**, A. B. Davis, D. A. Fischer, J. M. Brewer, "Modeling the Echelle Spectra Continuum with Alpha Shapes and Local Regression Fitting" (2019) *The Astronomical Journal*, 157(6), 243.

- X. Xu and **J. Cisewski-Kehe**, "EmT: Locating empty territories of homology group generators in a dataset" (2019) *Foundations of Data Science*, 1(2): 227-247.

- **J. Cisewski-Kehe**, G. B. Weller, and C. Schafer, "A Preferential Attachment Model for the Stellar Initial Mass Function" (2019) *Electronic Journal of Statistics*, Vol. 13, No. 1, 1580-1607.

- X. Xu, **J. Cisewski-Kehe**, S.B. Green, D. Nagai, "Finding cosmic voids and filament loops using topological data analysis" (2019) *Astronomy and Computing*, **27**, 34-52.

- U. Simola, X. Dumusque, and **J. Cisewski**, "Cross correlation function line-profile variations in radial-velocity measurements by fitting a Skew Normal distribution" (2019), *Astronomy and Astrophysics*, 622, A131.

- X. Yu, G. Del Zanna, D. C. Stenning, **J. Cisewski-Kehe**, V. L. Kashyap, N. Stein, D. A. van Dyk, H. P. Warren, M. A. Weber, "Incorporating Uncertainties in Atomic Data Into the Analysis of Solar and Stellar Observations: A Case Study in Fe XIII" (2018). *The Astrophysical Journal* **866**(2)

- **J. Cisewski**, J. B. Kadane, M.J. Schervish, T. Seidenfeld, and R. Stern, "Bayesian Learning, Meager Sets, and Countably Additive Probabilities: replies to G. Belot and A. Elga" (2018). *Philosophy of Science* **85**(1), 53-78.

- A.B. Davis, **J. Cisewski**, X. Dumusque, D.A. Fischer, and E.B. Ford, "Insights on the Spectral Signatures of Stellar Activity and Planets from PCA" (2017), *The Astrophysical Journal* **846**(59).

- M. Ntampaka, H. Trac, **J. Cisewski**, L.C. Price, "The Velocity Distribution Function of Galaxy Clusters as a Cosmological Probe" (2017). *The Astrophysical Journal* **835**(1), 106.

- **J. Cisewski**, J. B. Kadane, M.J. Schervish, T. Seidenfeld, and R. Stern, "Sleeping Beauty's Credences" (2016). *Philosophy of Science* **83**(3), 324-347.

- M. Shabram, B-O. Demory, **J. Cisewski**, E.B. Ford, and L. Rogers, "Inferring the Eccentricity Distribution of Short-Period Planet Candidates Detected by Kepler in Occultation" (2016) *The Astrophysical Journal* **820**(2), 93.

- E. E. O. Ishida, S. D. P. Vitenti, M. Penna-Lima, **J. Cisewski**, R. S. de Souza, A. M. M. Trindade, E. Cameron, and V. C. Busti, "cosmoabc: Likelihood-free inference via Population Monte Carlo Approximate Bayesian Computation" (2015) *Astronomy and Computing* **13**, 1-11.

- R.L. Smith, S. Powers, **J. Cisewski**, "Qualifying Times for the Boston Marathon" (2014). *CHANCE*, **27**(3), 25-33.

- D. Hammerling, M. Cefalu, **J. Cisewski**, F. Dominici, G. Parmigiani, C. Paulson, R.L. Smith, "Completing the Results of the 2013 Boston Marathon" (2014). *PLOS ONE*, **9**(4): e93800. doi:10.1371/journal.pone.0093800

- **J. Cisewski**, R. A. C. Croft, P. E. Freeman, C. R. Genovese, C. R., Khandai, M. Özbek, and L. Wasserman, "Nonparametric 3D map of the IGM using the Lyman-alpha forest" (2014). *Monthly Notices of the Royal Astronomical Society*, **440**, 1, 2599 – 2609. doi: 10.1093/mnras/stu475

- **J. Cisewski** and J. Hannig, "Generalized fiducial inference for normal linear mixed models" (2012), *The Annals of Statistics*, **40** (10), pp. 2102 – 2127.

- D. Cooley, **J. Cisewski**, R. Erhardt, S. Jeon, E. Mannshardt, B. Omolo, and Y. Sun, "A survey of spatial extremes: measuring spatial dependence and modeling spatial effects" (2012), *REVSTAT - Statistical Journal*, **10**, 1, pp. 135 – 165.

- **J. Cisewski**, E. Snyder, J. Hannig, and L. Oudejans, "Support vector machine classification of unknown powders using laser induced breakdown spectroscopy (LIBS) spectral data" (2012), *Journal of Chemometrics*. doi: 10.1002/cem.2422.

- S. Yeo, **J. Cisewski**, E. Lock, J. S. Marron, "Exploratory Analysis of Exercise Adherence Patterns with Sedentary Pregnant Women" (2010), *Nursing Research*, **59**, pp. 280 – 287.

OTHER PUBLICATIONS

- G. Eadie, T.J. Loredo, A.A. Mahabal, A. Siemiginowska, E. Feigelson, E.B. Ford, S.G. Djorgovski, M. Graham, Z. Ivezic, K. Borne, and **J. Cisewski-Kehe**, "Realizing the potential of astrostatistics and astroinformatics"(2019). arXiv preprint arXiv:1909.11714.

- S. B. Green, A. Mintz, X. Xu, and **J. Cisewski-Kehe**, "Topology of our Cosmology with Persistent Homology" (2019), *CHANCE* (special Astrostatistics issue), **32**(3), 6 – 13.

- A.Siemiginowska, G. Eadie, I. Czekala, E. Feigelson, E.B. Ford, V. Kashyap, M. Kuhn, T.Loredo, M.Ntampaka, A. Stevens, A. Avelino, K. Borne, T. Budavari, B. Burkhart, **J. Cisewski-Kehe**, F. Civano, I. Chilingarian, D.A. van Dyk, G. Fabbiano, D. P. Finkbeiner, D. Foreman-Mackey, P. Freeman, A. Fruscione, A.A. Goodman, M. Graham, H.M. Guenther, J. Hakkila, L. Hernquist, D. Huppenkothen, D. J. James, C. Law, J. Lazio, T. Lee, M. López-Morales, A. A. Mahabal, K. Mandel, X.L. Meng, J. Moustakas, D. Muna, J. E. G. Peek, G.Richards, S. K.N. Portillo, J. Scargle, R. S. de Souza, J. S. Speagle, K. G. Stassun, D. C. Stenning, S. R. Taylor, G. R. Tremblay, V. Trimble, P.A. Yanamandra-Fisher, C. A. Young, "The Next Decade of Astroinformatics and Astrostatistics" (2019), *Bulletin of the American Astronomical Society* **51**(3). Astro2020 Decadal Survey call for science white papers.

- Michelle Ntampaka, Camille Avestruz, Steven Boada, Joao Caldeira, **Jessi Cisewski-Kehe**, Rosanne Di Stefano, Cora Dvorkin, August E. Evrard, Arya Farahi, Doug Finkbeiner, Shy Genel, Alyssa Goodman, Andy Goulding, Shirley Ho, Arthur Kosowsky, Paul La Plante, Francois Lanusse, Michelle Lochner, Rachel Mandelbaum, Daisuke Nagai, Jeffrey A. Newman, Brian Nord, J. E. G. Peek, Austin Peel, Barnabas Poczos, Markus Michael Rau, Aneta Siemiginowska, Dougal J. Sutherland, Hy Trac, Benjamin Wandelt, "The Role of Machine Learning in the Next Decade of Cosmology" (February 2019). Astro2020 Decadal Survey call for science white papers. arXiv preprint arXiv:1902.10159.

- Sara Algeri, Melissa van Beekveld, Nassim Bozorgnia, Alyson Brooks, J. Alberto Casas, **Jessi Cisewski-Kehe**, Francis-Yan Cyr-Racine, Thomas D. P. Edwards, Fabio Iocco, Bradley J. Kavanagh, Judita Mamuzic, Siddharth Mishra-Sharma, Wolfgang Rau, Roberto Ruiz de Austri, Benjamin R. Safdi, Pat Scott, Tracy R. Slatyer, Yue-Lin Sming Tsai, Aaron C. Vincent, Christoph Weniger, Jennifer Rittenhouse West, Robert L. Wolpert, "Statistical challenges in the search for dark matter" (2018). Review paper based on the Banff International Research Station workshop on "DM-Stat: Statistical Challenges in the Search for Dark Matter" (February 2018). arXiv preprint arXiv:1807.09273.

- **J. Cisewski**, "Complex and high-dimensional inference in astrostatistics" (2017), *Wiley StatRef:Statistics Reference Online*. 1-8. (Invited article)

- **J. Cisewski**, "In search of Earth analogues: Detecting exoplanets amid stellar noise" (April 2017). *Significance Magazine*, 14:2: 22 – 25.

- **J. Cisewski**, D. van Dyk, T.C.M. Lee, "Astrostatistics: A New Interest Group" (August 1, 2014). *Amstat News*: http://magazine.amstat.org/blog/2014/08/01/astrostats-group/

- S. Huzurbazar, **J. Cisewski**, B. Fosdick, X. Wang, "Opportunities at SAMSI and NISS" (2014). *CHANCE*, **27**(4), 44 – 47.

- **J. Cisewski**, "Revealing the Invisible" (2014). *Significance Magazine*, 11: 61 – 63. (Contribution to a special astrostatistics issue with Hilbe, J. M., et al (2014), Life, the universe, and everything. *Significance*, 11: 48 – 75.)

- M. Ciollaro, **J. Cisewski**, P. E. Freeman, C. R. Genovese, J. Lei, R. O'Connell, and L. Wasserman, "Prediction of the unabsorbed flux continuum in the Lyman-alpha forest of quasar spectra using nonparametric functional regression" (Under revision).

BOOK CHAPTERS

- M. Ciollaro, **J. Cisewski**, P. E. Freeman, C. R. Genovese, J. Lei, R. O'Connell, and L. Wasserman. *Contributions in infinite-dimensional statistics and related topics* (book), *Nonparametric functional prediction of the unabsorbed flux continuum in the Lyman-alpha forest of quasar spectra* (chapter), Chapter 16, pages 91 - 96. Societa Editrice Esculapio, 2014.

HONORS & AWARDS

- NSF 1854220, "FRG: Collaborative Research: Statistical Approaches to Topological Data Analysis that Address Problems in Complex Data" PIs: Jessi Cisewski-Kehe, Brittany Fasy (Montana State, CS); Co-PIs: Alessandro Rinaldo (CMU), Larry Wasserman (CMU), 9/1/2019 - 8/31/2022 ($368,706, Yale)

- *NASA XRP 80NSSC18K0443,*"Extreme RV Precision: Separating Stellar Jitter from Orbital Velocities." PI: Debra Fischer (Yale, Astronomy), Co-PIs: Jessi Cisewski, Eric Ford (Penn State, Astronomy), 1/1/2018 - 12/31/2019 ($652,857).

- *NSF-AST 1616086*, "The Planet Whisperer: Toward Characterizing Low-mass Planets from Doppler Surveys in the Presence of Stellar Activity." PI: Debra Fischer (Yale, Astronomy), Co-PIs: Jessi Cisewski, Eric Ford (Penn State, Astronomy), 9/1/2016 - 8/31/2019 ($549,698).

- *Association for Women in Mathematics/National Science Foundation Travel Grant*, Joint Statistical Meeting, 2012 ($1,175)

- *Excellence in Teaching Award*, University of North Carolina at Chapel Hill, Department of Statistics and Operations Research, December 2009

- *Graduated Cum Laude*, University of Notre Dame, 2005

- *Norman and Beatrice Haaser Mathematics Scholarship*, University of Notre Dame, Mathematics Department, 2005

TEACHING EXPERIENCE

Instructor (with full course responsibility)

- Department of Statistics & Data Science, Yale University
  · YData: An Introduction to Data Science (S&DS 123/523), Spring 2019
  · YData: ExoStatistics: Exploring Extrasolar Planets with Data Science (S&DS 170/570, ASTR 445/545), Spring 2019
  · Topological Data Analysis (STAT 675), Fall 2016
  · Data Analysis (STAT 361/661), Fall 2015, Spring 2017
  · Introductory Statistics (STAT 100/500), Spring 2016, 2017

- Department of Statistics, Carnegie Mellon University
  · Astrostatistics (36 - 494/694/794) - Mini 4, Spring 2015
  · Applied Linear Models (36 - 617, MS) - Fall 2014
  · Probability and Statistics for Business Applications (36/70 - 207, UG) - Fall 2012, 2013
  · Introduction to Statistical Inference (36 - 226, UG) - Spring 2013, 2014

- Department of Statistics and Operations Research, UNC - Chapel Hill
  · Introductory statistics (STOR155, MS) - Spring 2009, Fall 2009, Fall 2010

Teaching assistant

- Department of Statistics and Operations Research, UNC - Chapel Hill
  · Introductory statistics (STOR151 or 155) Fall 2007, Spring 2008, Summer 2008, Fall 2008

LEADERSHIP

- *Organizing committee member*, 3rd and 4th Annual Graduate Student Probability Conferences, May 2008 - May 2010
  · Conference dates: May 1 - 3, 2009 and April 30 - May 2, 2010
  · Hosts: UNC - Chapel Hill (Statistics and Operations Research) and Duke (Mathematics)
  · Main sponsors: NSF and SAMSI
  · Faculty supervisors: Amarjit Budhiraja (UNC), Jonathan Mattingly (Duke)

- *Organizing committee member*, SIAM Conference on Uncertainty Quantification 2014, April 2013 - April 2014
  · Conference dates: March 31 - April 3, 2014 in Savannah, Georgia, USA

- *Organizing committee chair*, 2nd Workshop on Modern Statistical and Computational Methods for Analysis of Kepler Data (ExoStat2014), October 2013 - June 2014
  · Carnegie Mellon University, Pittsburgh, Pennsylvania, USA
  · Conference dates: June 18 - 21, 2014

- *Co-Founder, Co-Chair*, Astrostatistics Interest Group, American Statistical Association, 3/2014 - 1/2018

- *Chair*, Interest Group in Astrostatistics, American Statistical Association, 1/2018 - 1/2019

- *Scientific Organizing Committee*, Statistical Challenges in Modern Astronomy - VI, March 2015 - June 2016
  · Carnegie Mellon University, Pittsburgh, Pennsylvania, USA
  · Conference dates: June 6 - 10, 2016

- *Council member*, International Astrostatistics Association (IAA), Jan 2016 - present

- *Program Committee (Chair of Invited and Contributed Posters)*, 2017 Joint Statistical Meeting, June 2016 - August 2017

- *Scientific Organizing Committee*, 3rd Workshop on Extremely Precise Radial Velocities, October 2016 - August 2017
  · Pennsylvania State University, State College, Pennsylvania, USA
  · Conference dates: August 14 - 17, 2017

- *Scientific Organizing Committee*, Astronomical Data Analysis series of conferences (ADA9) summer school, April 2017 - present
  · Valencia, Spain
  · Conference dates: May 20 - 22, 2018

- *Vice President for NextGen*, New England Statistical Society (NESS), June 1, 2017 - May 31, 2019
  · (Chair) "Day of Data Science" at Yale University, New Haven, CT, October 27, 2018

- *Co-organizer*, Banff International Research Station for Mathematical Innovation and Discovery, "DM-Stat: Statistical Challenges in the Search for Dark Matter", February 25 - March 2, 2018

- *Committee member*, Working Group on Astroinformatics and Astrostatistics (WGAA), American Astronomical Society, 6/2017 - 6/2020

- *Scientific Organizing Committee*, Second Astro@Stats: Sino-Italian Workshop on Astrostatistics, 1/2018 - 10/2019
  · Conference dates: October 2018 (Guangzhou, China)

- *Co-Chair*, Cosmostatistics Initiative (COIN), International Astrostatistical Association (IAA), 3/2018 - present

- *Scientific Organizing Committee*, Extreme Precision in Radial Velocity IV Workshop, Grindelwald, Switzerland, March 18 - 21, 2019

- *Scientific Organizing Committee*, 3rd Astro@Stats: Sino-Italian Workshop on Astrostatistics, 3/2019 - 10/2019 · Conference dates: October 2019 (Rome, Italy)

- *Scientific Organizing Committee*, Statistical Challenges in Modern Astronomy - VII, November 2019 - June 2021
  · Pennsylvania State University, State College, Pennsylvania, USA
  · Conference dates: June 7-11, 2021

EDITORIAL DUTIES

- Editor, *Astronomy and Computing*, 5/1/2018 - present

- Associate Editor, *Journal of Computational and Graphical Statistics*, 8/2018 - present

- Associate Editor, *Foundations of Data Science*, 1/2019 - present

- Guest Editor, *CHANCE*, special issue on Astrostatistics, 1/2019 - 8/2019

INTERNATIONAL AND NATIONAL MEETINGS

- *Joint Statistical Meeting*, "Generalized fiducial inference for normal mixed linear models" (Contributed talk), Vancouver, Canada, August 2010.

- *Women in Mathematics Symposium*, "Generalized fiducial inference for normal mixed linear models" (Poster), Institute for Pure and Applied Mathematics, University of California at Los Angeles, California, February 2011.

- *North Carolina Symposium for Women in Mathematics and Statistics*, "Generalized fiducial inference for normal mixed linear models" (Contributed talk), North Carolina State University, North Carolina, April 2011.

- *International Indian Statistical Association Conference on Probability, Statistics and Data Analysis*, "Generalized fiducial inference for normal mixed linear models" (Poster), North Carolina State University, North Carolina, April 2011.

- *Statistical Challenges in Modern Astronomy V* (Participant), Pennsylvania State University, State College, Pennsylvania, June 2011.

- *Summer School on Uncertainty Quantification* (Participant), Statistical and Applied Mathematical Sciences Institute and Sandia National Laboratories, Albuquerque, NM, June 2011.

- *Joint Statistical Meeting*, "Classification of unknown powders using a support vector machine classification model" (Topic - contributed talk), Miami, Florida, August 2011.

- *UQ: Methodology Opening Workshop* (Participant), Statistical and Applied Mathematical Science Institute, North Carolina, September 2011.

- *University Research Day*, "Classification of unknown powders using a support vector machine classification model" (Poster), University of North Carolina at Chapel Hill, North Carolina, March 2012.

- *SIAM: Conference on Uncertainty Quantification*, "Inverse Function-based Methodology for UQ" (Topic-contributed talk), Raleigh, North Carolina, April 2012.

- *UQ Graduate Fellow Poster Session*, "Inverse Function-based Methodology for UQ" (Poster), Statistical and Applied Mathematical Science Institute, North Carolina, April 2012.

- *Uncertainty Quantification Transition Workshop*, "Inverse Function-based Methodology for UQ" (Topic-contributed talk), Statistical and Applied Mathematical Science Institute, North Carolina, May 2012.

- *Joint Statistical Meeting*, "Inverse function-based methodology for inverse sensitivity analysis" (Topic - contributed talk), San Diego, CA, August 2012.
  · Chair of contributed session, "Applications of Nonparametric Methods", sponsored by Nonparametrics (NPAR)

- *International Conference on Robust Statistics*, "Generalized Fiducial Inference for Linear Mixed Models" (Invited talk), Burlington, VT, August 2012.

- *Astrostatistics: Opening Workshop* (Participant), Statistical and Applied Mathematical Science Institute, North Carolina, September 2012.

- *CosmoStat2013: Statistical challenges from large data sets in cosmology and particle physics* (Invited participant), Banff Research Center, Banff, Canada, March 2013.
  · "Modeling the IGM with Lyman-alpha Data and Persistent Homology" (Contributed talk)

- "Mapping the Intergalactic Medium using Lyman-alpha Data and Persistent Homology" (Invited talk), *Probabilistic and Statistical Techniques for Cosmological Applications*, Istituto Nazionale di Alta Matematica, Rome, Italy, June 5 - 7, 2013.

- *Modern Statistical and Computational Methods for Analysis of Kepler Data*, (Invited participant), Statistical and Applied Mathematical Science Institute, North Carolina, June 10 - 28, 2013.
  · "Approximate Bayesian Computing" (Invited lecture)

- *15th IMS New Researchers Conference in Statistics and Probability*, "Modeling the IGM with Lyman-alpha Data and Persistent Homology" (Contributed talk), Université de Montréal, Montréal, Canada, August 2013.

- *Joint Statistical Meeting*, "Modeling the IGM with Lyman-alpha Data and Persistent Homology" (Contributed talk), Montréal, Canada, August 2013.

- *The Ninth ICSA International Conference: Challenges of Statistical Methods for Interdisciplinary Research and Big Data*, "Mapping the Intergalactic Medium using the Lyman-alpha Forest" (Invited talk, Astro-statistics), Hong Kong Baptist University, Hong Kong, December 20 - 23, 2013.

- *LDHD: Topological Data Analysis Workshop*, "Persistent Homology of the Intergalactic Medium via the Lyman-alpha Forest" (invited lecture), Statistical and Applied Mathematical Science Institute, North Carolina, February 3 - 7, 2014.

- *SIAM Conference on Uncertainty Quantification 2014*, Organizing committee member, Savannah, Georgia, USA, March 31 - April 3, 2014.
  · "UQ That is Out of This World: UQ for Astronomy" (Mini-symposium organizer)
  · "UQ and Environmental Statistics" (Mini-symposium organizer)

- *Women in Statistics Conference*, "Big Opportunities in the Next Decade: SAMSI & NISS" (Panel discussant), Raleigh, North Carolina, May 15 - 17, 2014.
  · "Nonparametric 3D map of the IGM using the Lyman-alpha forest" (poster)

- *Summer School in Statistics for Astronomers X*, Pennsylvania State University, State College, Pennsylvania, June 2014.
  · "Classification and Clustering in Astronomy" (lecture)

- *Bayesian Computing for Astronomical Data Analysis* , Pennsylvania State University, State College, Pennsylvania, June 2014.
  · "Bayes via forward simulation: approximate Bayesian computation" (lecture)
  · "Importance sampling" (lecture)
  · "Approximate Bayesian computing using sequential sampling" (lecture)
  · "Hierarchical Bayesian Modeling using approximate Bayesian computation" (lecture)

- *ExoStat2014: 2nd Workshop on Modern Statistical and Computational Methods for Analysis of Kepler Data* (Organizing Committee Chair), Carnegie Mellon University, Pittsburgh, Pennsylvania, June 18 - 21, 2014.
  · "Approximate Bayesian Computation for Exoplanets" (talk)

- *Joint Statistical Meeting*, "Approximate Bayesian Computation for Kepler Data" (Invited talk), Boston, MA, August 2014.
  · Organizer of invited session, "Bayesian Astrostatistics," sponsored by the Section on Bayesian Statistical Science

- *Exolab Visitor Program*, "Approximate Bayesian Computation in Astronomy," Harvard-Smithsonian Center for Astrophysics, Boston, MA, August 7 - 8, 2014.

- *Summer School in Statistics for Astronomers XI*, Pennsylvania State University, State College, Pennsylvania, June 2015.
  · "Multivariate Analysis, Clustering and Classification in Astronomy" (lecture) · "Nonparametric Statistics" (lecture)

- *The Second Workshop: Extreme Precision Radial Velocities* (Session chair, Extracting weak signals in the presence of structured noise), Yale University, New Haven, Connecticut, July 5 - 8, 2015.

- *Statistics and Exoplanets Focus Meeting*, "Approximate Bayesian Computation" (Invited talk), International Astronomical Union General Assembly, Honolulu, HI, August, 2015.

- *Joint Statistical Meeting*, Complex and High-Dimensional Inference in Astrostatistics Session (Invited session Organizer, Section on Physical and Engineering Sciences), Seattle, WA, August 2015.

- *227th American Astronomical Society Meeting*, Topics in Machine Learning for Astronomers (Invited session, Lectures in AstroStatistics), Kissimmee, FL, January 2016.

- *Summer School in Statistics for Astronomers XII*, Pennsylvania State University, State College, Pennsylvania, June 2016.
  · "Multivariate Analysis, Clustering and Classification in Astronomy" (lecture) · "Nonparametric Statistics" (lecture)

- *Statistical Challenges in Modern Astronomy - VI*, "Approximate Bayesian Computation for the Stellar Initial Mass Function" (Talk and SOC member), Carnegie Mellon University, Pittsburgh, PA, June 2016.

- *Sagan Summer Workshop*, Is There A Planet In My Data? Statistical Approaches to Finding and Characterizing Planets in Astronomical Data (Invited lecture: An Introduction to Bayesian Analysis), Caltech, Pasadena, CA, July 2016.

- *Joint Statistical Meeting*, "Show Me the Exoplanets: Finding Evidence of Exoplanets in Noisy Stellar Spectra" (Topic-contributed talk), Chicago, IL, August 2016.
  · Organizer of Topic-contributed session, "Computational Astrostatistics," sponsored by the Astrostatistics Special Interest Group
  · Organizer and Chair of invited session, "Theoretical Astrostatistics," sponsored by the Institute for Mathematical Statistics

- *Mathematical Biosciences Institute: Workshop 1: Topological, Geometric, and Statistical Techniques in Biological Data Analysis*, "Hypothesis tests for complicated spatial structures using persistent homology" (Invited talk), Columbus, OH, September 2016.

- *SAMSI ASTRO Program: Exoplanet Populations Workshop* (participant), October 17-28, 2016.
  · Lecture in SAMSI Course, "Approximate Bayesian Computation."

- *229th American Astronomical Society Meeting*, Statistical, Mathematical and Computational Methods for Astronomy (ASTRO): SAMSI 2016-17, "Statistical Methods for Characterizing Variability in Stellar Spectra" (Special session), Grapevine, TX, January 2017.

- *Summer School in Statistics for Astronomers XIII*, Pennsylvania State University, State College, Pennsylvania, June 2017.
  · "Multivariate Analysis, Clustering and Classification in Astronomy" (lecture)

- *Joint Statistical Meeting*, "Disentangling Stellar Spectra " (Topic-contributed talk), Baltimore, MD, August 2017.
  · Chair of all Invited and Contributed Posters
  · Chair of Astrostatistics Interest Group Business Meeting

- *Visiting Scientist*, Department of Statistical Science, University of Padova, Italy, September 5 - October 4, 2017.

- *Astro@Stats 2017*, "Topological Data Analysis of the Cosmic Web" (Invited talk), University of Padova, Italy, September 8, 2017.

- *231st American Astronomical Society Meeting*, Washington, DC, January 2018.
  · Lecture on Approximate Bayesian Computation during one-day workshop on "Hands-On Hierarchical Bayesian Modeling of Cosmic Populations" organized by Tom Loredo (Cornell).
  · "Investigating the Cosmic Web with Topological Data Analysis" (Contributed talk).

- *AAAS 2018 Annual Meeting*, "A Universe of Discoveries: Progress in Astronomy via Advanced Statistical Methods" (session), "In Search of Earth Analogues: Detecting Exoplanets amid Stellar Noise" (talk), Austin, TX, February 2018.

- *Banff International Research Station for Mathematical Innovation and Discovery* (Co-organizer and participant), "DM-Stat: Statistical Challenges in the Search for Dark Matter", February 2018.
  · Lecture on "Approximate Bayesian Computation"

- *ENAR 2018*, IMS Invited Session on Geometry and Topology in Statistical Inference, "Hypothesis testing for spatially complex data using persistent homology summaries" (Invited talk), Atlanta, GA, March 2018.

- *Astronomical Data Analysis series of conferences (ADA9) summer school*, "The Many Ways to Bayes" (Keynote speaker in Bayesian Analysis), Valencia, Spain, May 2018.

- *Summer School in Astroinformatics*, Pennsylvania State University, State College, Pennsylvania, June 2018.
  · "Hierarchical Bayesian Modeling" (lecture)

- *2018 Joint Research Conference on Statistics in Quality, Industry and Technology*, "Astrostatistics Interest Group Invited Session" (Organizer), Santa Fe, NM June 11-14, 2018

- *12th International Vilnius Conference on Probability Theory and Mathematical Statistics and 2018 IMS Annual Meeting on Probability and Statistics*, "Statistical problems in astronomy" (Invited Session Organizer), Vilnius, Lithuania, July 2018.

- *2018 ISBA World Meeting*, "ABC in Edinburgh" (Short course invited speaker), Edinburgh, Scotland, June 2018.

- *Joint Statistical Meeting*, "Investigating the Cosmic Web with Topological Data Analysis" (Invited talk in "SAMSI-ASTRO: New Innovations and Challenges in Astrostatistics"), Vancouver, BC, August 2018.
  · "Approximate Bayesian Computation for the Stellar Initial Mass Function" (Invited poster)
  · Chair of Astrostatistics Interest Group Business Meeting

COLLOQUIA AND SEMINARS

· *Generalized Fiducial Inference for Linear Mixed Models*
    Department of Statistics, University of Wyoming, January 2012.
    Department of Statistics, Indiana University, January 2012.
    Department of Mathematics and Statistics, Villanova University, January 2012.
    Department of Statistics and Probability, Michigan State University, February 2012.
    Department of Applied Statistics, University of Alabama, February 2012.

Department of Statistical Sciences, Baylor University, February 2012.

Department of Statistics, Carnegie Mellon University, February 2012.

· *Generalized Fiducial Inference for Normal and Logistic Linear Mixed Models*, Department of Applied and Computational Mathematics and Statistics, University of Notre Dame, December 2012.

· *Mapping the Intergalactic Medium using Lyman-alpha Forest data*

Department of Statistical Science, University College London, February 2013.

Department of Statistics, Imperial College London, February 2013.

Department of Statistical Science, University of Toronto, November 2013.

· *Far away and just as long ago: Visualizing the Intergalactic Medium using the Lyman-alpha forest*

Department of Statistics - Environmental Seminar, North Carolina State University, February 2014.

Department of Statistics, Pennsylvania State University, February 2014.

– "Introduction to Approximate Bayesian Computation with an application to Kepler Data" (Lunch seminar), Center for Exoplanets and Habitable Worlds.

· *Far away and just as long ago: Visualizing the Intergalactic Medium using the Lyman-alpha forest*, Department of Statistics, Indiana University, March 2014.

· *Cosmology with Persistent Homology and the Lyman-alpha Forest*, Department of Statistics, University of California - Davis, December 2014.

· *Approximate Bayesian Computation for the Stellar Initial Mass Function*

Department of Statistics, Pennsylvania State University, January 2015.

Department of Statistical Science, Cornell University, January 2015.

Department of Applied and Computational Mathematics and Statistics, University of Notre Dame, January 2015.

Department of Statistics, Virginia Tech University, January 2015.

Department of Statistics, University of California - Irvine, February 2015.

Department of Statistics and Biostatistics, Rutgers University, February 2015.

Department of Statistics, Yale University, February 2015.

· *Cosmology with Persistent Homology and the Lyman-alpha Forest*, Data Science Seminar, Department of Mathematics, University of Tennessee, April 2015.

· *Approximate Bayesian Computation for the Stellar Initial Mass Function*, Department of Mathematics, University of Tennessee, April 2015.

· *Exoplanets and Statistics*, Junior Seminar, Department of Mathematics, University of Tennessee, April 2015.

· *Approximate Bayesian Computation for the Stellar Initial Mass Function*

Department of Astronomy, Columbia University, November 2015.

Department of Statistics, North Carolina State University, November 2015.

Department of Statistics, Texas A&M University, March 2016.

Department of Statistics, University of Florida, March 2016.

School of Statistics, University of Minnesota, November 2016.

· *Topological Data Analysis of the Cosmic Web*

Department of Physics and Astronomy, University of Padova, Italy, September 13, 2017.

Flatiron Institute and the Center for Computational Astrophysics, New York, New York, December 2017.

· *A preferential attachment model for the stellar initial mass function via approximate Bayesian computation*

Department of Statistics, University of Connecticut, January 24, 2018.
· *Investigating Spatially Complex Data with Topological Data Analysis*
Department of Statistics, University of Michigan, Ann Arbor, Michigan, October 12, 2018.
Los Alamos National Laboratory, Los Alamos, New Mexico, November 14, 2018.
Department of Applied Mathematics & Statistics, Johns Hopkins University, Baltimore, Maryland, December 6, 2018.
· *Topological Data Analysis: Functional Summaries and Locating Cosmic Voids and Filament Loops*
Department of Statistics, University of Washington - Seattle, February 22, 2019.
· (Upcoming) Department of Statistical Science, Duke University, April 3, 2020.

PUBLIC LECTURES

· *Allegheny Observatory Public Lecture Series in Astronomy*, "Mapping the High Redshift Universe using the Lyman-alpha Forest", Pittsburgh, PA, September 19, 2014.
· *Math Mornings*, "Mapping the Distant Universe: Statistical Methods for Studying the Cosmos", Yale University, New Haven, CT, November 13, 2016.
· *Tilde Cafe - a cafe with an accent on science and the world*, "ExoStatistics: searching for exoplanets with statistics", Branford, CT, June 8, 2019.

OTHER LECTURES

· *Actuarial Club Meeting*, Carnegie Mellon University, Pittsburgh, PA, April 15, 2013.
· *A Day in the Life of a Statistician series*, Carnegie Mellon University, Pittsburgh, PA, March 24, 2014.
· *Teaching and Learning Lunch*, "Eliciting Student Participation in Traditionally Non-Interactive Lectures," Yale University, New Haven, CT, December 14, 2016.
· *Frontiers of Math & Science*, Yale Young Global Scholars, "Astronomy + Statistics = Astrostatistics", Yale University, New Haven, CT, June 23, 2017.
· *Yale Day of Data: Data on Earth* (faculty panel), "Searching for another Earth in Noisy Data", New Haven, CT, November 30, 2018.

ADVISING/MENTORING

Postdoctoral

- Bo Ning, Department of Statistics and Data Science, Yale University, Fall 2018 - present (Ph.D. NC State, August 2018)

Doctoral thesis

- Collin Eubanks (with Larry Wasserman and Rupert Croft), Department of Statistics, Carnegie Mellon University, Spring 2015 - present (co-supervisor of Ph.D. dissertation), "Multi-resolution Regression, Divide and Conquer Risk Estimation, and the Large-scale Universe"

- Umberto Simola (with Alessandra R. Brazzale), Department of Statistical Sciences, University of Padova (Italy), February 2016 - December 2018 (co-supervisor of Ph.D. dissertation), "Developments in Approximate Bayesian Computation and Statistical Applications in Astrostatistics"

- Xin Xu, Department of Statistics and Data Science, Yale University, Fall 2016 - December 2019 (supervisor of Ph.D. dissertation), "Locating Holes in Data with Topological Data

Analysis and Applications in Astronomy"

- Parker Holzer, Department of Statistics and Data Science, Yale University, Fall 2017 - present (supervisor of Ph.D. dissertation), "TBD on ExoStatistics"

Doctoral

- Mattia Ciollaro (with Peter Freeman, Christopher Genovese, Larry Wasserman), Department of Statistics, Carnegie Mellon University, Spring 2013 - December 2013 (Advanced Data Analysis project), "Prediction of the unabsorbed continuum in the Lyman-α forest using functional regression"

- Jisu Kim (with Alessandro Rinaldo, Larry Wasserman), Department of Statistics, Carnegie Mellon University, Spring 2014 - present (Advanced Data Analysis project), "Searching for voids in MassiveBlack II using persistent homology"

- Brendan McVeigh (with Matthew G. Walker), Department of Statistics, Carnegie Mellon University, Fall 2014 - present (Advanced Data Analysis project), "Approximate Bayesian Computation for the Sculptor Dwarf Galaxy"

- Collin Eubanks (with Larry Wasserman and Rupert Croft), Department of Statistics, Carnegie Mellon University, Spring 2015 - Fall 2017 (Advanced Data Analysis project), "Modeling the Lyman-alpha Forest using the SDSS BOSS data"

- Allen B. Davis (with Debra Fischer), Department of Astronomy, Yale University, October 2015 - present (2nd Year Ph.D. project advisor), "Insights on the Spectral Signatures of Stellar Activity and Planets from PCA"

Masters

- Elise Lim (with Peter Freeman), Department of Statistics, Carnegie Mellon University, November 2014 - present, "Estimating Cosmic Variance with large surveys"

- Collin Eubanks (with Larry Wasserman and Rupert Croft), Machine Learning Department, Carnegie Mellon University, Spring 2015 - 2017 (co-supervisor of MSc), "Exploring the Intergalactic Medium"

Undergraduate

- Audrey Callahan (with Peter Freeman), Department of Statistics, Carnegie Mellon University, Spring 2014 (Undergraduate research course, 36-198), "Estimating Cosmic Variance"

- Andersen Chang (with Peter Freeman), Department of Statistics, Carnegie Mellon University, Spring 2014 (Undergraduate research course, 36-198), "Modeling Cosmic Variance"

- Noah Fatsi (with Peter Freeman), Department of Statistics, Carnegie Mellon University, Spring 2014 (Undergraduate research course, 36-198), "Estimating Cosmic Variance with Spatial Bootstrapping"

- Carmen Khoo, Department of Statistics, Carnegie Mellon University, Summer 2014, "Visualization of the Intergalactic Medium"

- Mike Wu, Department of Computer Science, Yale University, Fall 2015 - Spring 2016, CS490, "Comparative Analysis of the Large-Scale Structure of the Universe under Varying Assumptions"

- Briton Park, Department of Statistics, Yale University, Spring 2016, STAT490, "Analyzing the Relations of Central Stellar and Baryonic Mass with Halo Mass in RESOLVE"

- John (Jack) McGinn, Department of Applied Mathematics, Yale University, Spring 2016, "Using Dictionary Learning to Detect the Doppler Shift in Stellar Spectra"

- Annie Hills, Department of Applied Mathematics, Yale University, Fall 2016, "Using Sparse and Functional Principal Component Analysis to Identify Regions of Maximum Stellar Variability Caused by Spots and Exoplanets"

- Derek Lo, Department of Statistics, Yale University, Spring 2017, STAT490, "Developing a Gamified and Adaptive Teaching Platform for Mobile Phones" (Joint with Andrew Barron)

THESIS COMMITTEES

- Lubov Zeifman (PhD), *Statistical issues in estimation of point spread function and shear*, Department of Statistics, Carnegie Mellon University, 2012 - 2014 (Advisor: William F. Eddy)

- Rafael Izbicki (PhD), *Nonparametric Conditional Density Estimation via Adaptive Orthogonal Basis*, Department of Statistics, Carnegie Mellon University, 2012 - 2014 (Advisor: Ann B. Lee)

- Fabrizio Lecci (PhD), *Statistical Inference for Topological Data Analysis*, Department of Statistics, Carnegie Mellon University, 2014 - 2015 (Advisor: Alessandro Rinaldo)

- Yen-Chi Chen (PhD), *Filament Estimation and Uncertainty Measures*, Department of Statistics, Carnegie Mellon University, 2014 - 2016 (Advisors: Christopher R. Genovese and Larry Wasserman)

- Mao-Sheng (Terrence) Liu (PhD), *Inference of Dark Matter Density Profiles of Dwarf Spheroidal Galaxies vis Distribution Functions*, Department of Physics, Carnegie Mellon University, 2018 (Advisor: Matthew G. Walker)

- Jisu Kim (PhD), *Statistical Inference For Geometric Data*, Department of Statistics, Carnegie Mellon University, 2016 - 2018 (Advisors: Alessandro Rinaldo and Larry Wasserman)

- Jingjing Chen (PhD), *A Bayesian Approach to the Understanding of Exoplanet Populations and the Origin of Life*, Department of Astronomy, Columbia University, 2018 (Advisor: David Kipping)

- Sheridan Beckwith Green (PhD), *TBD*, Department of Physics, Yale University, April 2019 - present (Advisor: Frank van den Bosch)

ADMINISTRATIVE SERVICE

- *Internal Seminar Co-organizer*, Department of Statistics and Operations Research, The University of North Carolina at Chapel Hill, 2010 - 2011

- *Seminar and event planning committee*, Department of Statistics, Carnegie Mellon University, 9/2012 - 5/2015

- *Weekly Astrostatistics Meeting Organizer*, Department of Statistics, Carnegie Mellon University, 9/2013 - 3/2015

- *IMS Committee on Young Researchers*, 11/2014 - present

- *Seminar committee*, Department of Statistics, Yale University, 6/2015 - 6/2016

- *Diversity representative*, Department of Statistics, Yale University, 6/2015 - 6/2016

- *Ph.D. admissions committee member*, Department of Statistics & Data Science, Yale University, 2016, 2019, 2020

- *Hiring committee member*, Department of Statistics & Data Science, Yale University, 2016, 2017

- *Review Panel member*, National Science Foundation's Division of Astronomical Sciences, 2016

- *First-Year Advisor*, Pauli Murray College, Yale University, 2018 - 2019

MEMBERSHIP

- Institute of Mathematical Statistics (IMS), 2009 - present (lifetime member)

- American Statistical Association (ASA), 2013 - present

- Association for Women in Mathematics (AWM), 2012

- Association for Women in Science (AWIS), 2012

- International Astrostatistics Association (IAA), January 2013 - present
  · Cosmostatistics working group, April 2014 - present

- International Society for Bayesian Analysis (ISBA), July 2013

- International Astronomical Union (IAU), August 2015 - present

- International AstroInformatics Association (IAIA), 2019 - present (Charter Member)