

## Robert C. Foster

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| CONTACT     | Office 03-132-345  | <i>Phone:</i> (505) 667-6055  |
| INFORMATION | Los Alamos National Laboratory                                   | <i>Work:</i> <a href="mailto:rcfoster@lanl.gov">rcfoster@lanl.gov</a>       |
|             | <a href="http://www.robertcfoster.com">www.robertcfoster.com</a> | <i>Personal:</i> <a href="mailto:rcfoster@gmail.com">rcfoster@gmail.com</a> |

Ph.D. statistician with a strong applied background in the sciences and engineering, skilled communicator, and excellent team member.

**RESEARCH INTERESTS** Applied statistical methods with a focus on science and engineering applications, Bayesian and empirical Bayesian methods, statistical programming, uncertainty quantification, and quantum computation.

**EDUCATION** **Ph.D. in Statistics**

**Iowa State University**, Ames, IA, October 2016

- Thesis title: Topics in Empirical Bayesian Analysis
- Adviser: Mark S. Kaiser
- 3.65 GPA
- My dissertation focuses on comparing and contrasting the ways that the uncertainty introduced into empirical Bayesian methods from double use of the data (once for estimation of the hyperparameters, once in the resulting Bayesian analysis) has been accounted for. Several of these disparate methods are combined into one consistent framework. A new method is proposed for deriving empirical Bayesian intervals for means of natural exponential families with quadratic variance functions based on a modified method of Carl Morris.

**M.S. in Statistics**

**Iowa State University**, Ames, IA, December 2010

- Thesis title: Simulation Analysis of a Bayesian Test Plan for Sequential Data from a Homogeneous Poisson Process
- Adviser: Alyson Wilson
- 3.65 GPA
- My thesis analyzes a Bayesian method for obtaining a sequential test plan based on a specific type of data and determines how the estimated test plan is affected by choice of the prior distribution on the parameters. The performance of the estimated test plan under model misspecification is also investigated.

## B.S. in Mathematics and Statistics

**Oklahoma State University**, Stillwater, OK, May 2007

- Summa cum laude
- Minor in Computer Science
- 3.948 GPA
- Honors college degree

## RESEARCH EXPERIENCE

**Los Alamos National Laboratory**, Los Alamos, NM  
CCS-6, Statistical Sciences group

Postdoctoral Researcher, Oct. 2016 - Present

- Research topics include sources of uncertainty for computation techniques that lie “Beyond Moore’s Law” and the statistical properties of resulting errors from propagation of BML uncertainties, simulation of microstructures from samples of additively manufactured materials, and applications of quantum computing in statistics.

**Iowa State University**, Ames, IA  
Department of statistics

Research Assistant, 2007-2010

- Consulted with various departments and research groups at Iowa State University, including animal science and the agriculture experiment station (AES).

## TEACHING EXPERIENCE

**Iowa State University**, Ames, IA USA  
Department of Statistics

*Instructor*

**August 2010 to May 2016**

- Principles of Statistics: Fall 2010, Spring 2011, Summer 2011, Fall 2011, Spring 2012, Summer 2012
- Probability and Statistics for Computer Science: Fall 2012, Spring 2013, Fall 2013, Spring 2014
- Engineering Statistics: Fall 2014
- Probability and Statistical Inference for Engineers: Spring 2015, Spring 2016

## PUBLICATIONS IN PREPARATION

**Foster, R.**, Weaver, B. and Gattiker, J., ‘Applications of Quantum Computing in Statistics,’ *The American Statistician* (Manuscript)

**Foster, R.**, Vander Wiel, S., Livescu, V., and Bronkhorst, C., ‘Towards Recreation of Microstructure of Spatially Varying Materials from Orthogonal Sections,’ *Computational Materials Science* (Manuscript)

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| TECHNICAL<br>REPORTS       | <p><b>Foster, R.</b>, Weaver, B., Picard, R., and Gattiker, J., ‘Beyond Moore’s Law Uncertainty,” LA-UR-18-28596 (2018)</p> <p>Abendroth, Lori; Marlay, Stephanie; Myers, Anthony J.W.; Elmore, Roger W.; and <b>Foster, Robert C.</b>, ”<i>Regional Corn Planting Date Recommendations for Iowa</i>” (2010). Iowa State Research Farm Progress Reports. 410.</p>  |
| INVITED TALKS              | <p><i>Towards Recreation of Microstructure in Additively Manufactured Materials</i>, International Conference on Plasticity, Jan. 2018; Albuquerque ASA spring meeting, Apr. 2018</p>  |
| CONTRIBUTED<br>TALKS       | <p><i>Applications of Quantum Computing in Statistics</i>, Joint Statistical Meetings, Aug. 2019 (Forthcoming)</p>   |
| POSTER<br>SESSIONS         | <p><b>Foster, R.</b>, Vander Wiel, S., Livescu, V., and Bronkhorst, C., ‘Towards Random Generation of Microstructures of Spatially Varying Materials from Orthogonal Sections,’ Computational Data Science Approaches for Materials 2019</p> <p><b>Foster, R.</b>, Weaver, B., Picard, R., and Gattiker, J., ‘Uncertainty, Noise, and Beyond Moore’s Law ,” CoDA 2018 - Conference on Data Analysis</p> <p><b>Foster, R.</b>, Vander Wiel, S., Livescu, V., and Bronkhorst, C., ‘Generation of Spatially Varying Digital Microstructures for Additively Manufactured Materials,’ 2017 Materials Capability Review on Manufacturing Science</p> |
| PROFESSIONAL<br>MEMBERSHIP | <ul style="list-style-type: none"> <li>• American Statistical Association</li> </ul>   |
| COMPUTING<br>EXPERTISE     | <p>Statistical Software: R, JMP, SAS, Matlab</p> <p>Programming Languages: Python, Java, C</p> <p>Applications: <math>\text{\TeX}</math>, <math>\text{\LaTeX}</math>, <math>\text{\BibTeX}</math>, Microsoft Office</p> <p>Operating Systems: Microsoft Windows, macOS, Unix</p>   |