

Daniel Peter Simpson

A. BIOGRAPHICAL INFORMATION

1. PERSONAL

- Name: Daniel Peter Simpson
- Home address: [REDACTED]
- University address: SS6026A
- Home phone: [REDACTED]

2. DEGREES

- Degree: Doctor of Philosophy
- Year: 2009
- Institution: Queensland University of Technology
- Title: *Krylov subspace methods for approximating functions of symmetric positive definite matrices with applications to applied statistics and models of anomalous diffusion*
- Supervisors: Ian Turner and Tony Pettitt

3. EMPLOYMENT

- Department of Statistical Sciences, University of Toronto. Assistant Professor, July 2017—Present.
- Department of Mathematical Sciences, University of Bath. Reader (Associate Professor) June 2016—June 2017, Lecturer (Assistant Professor) August 2015—May 2016.
- Department of Statistics, University of Warwick. CRiSM Fellow. October 2014—July 2015.
- Department of Mathematical Sciences, NTNU, Trondheim, Norway. Research Scientist August 2012—September 2014; Postdoctoral Fellow January 2010—December 2011.
- Department of Biological and Environmental Sciences, University of Helsinki. Postdoctoral Fellow. January 2012—July 2012.
- Department of Mathematics and Mathematical Statistics, Umeå University, Sweden. Postdoctoral Fellow. January 2009—December 2009.

4. HONOURS

Canadian Research Chair in Bayesian Spatial Modelling (2018-2022).

5. PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Developer: Stan project
Maintainer: INLA project
Member: Stan Governing Body (July 2018–July 2019)
Member: Stan's NUMFocus leadership body (until April 2018)

B. ACADEMIC HISTORY

RESEARCH AWARDS (grants, contracts, fellowships) during preceding 5 years including:

- WHO contract for Maternal cause of death estimates: statistical modelling. \$100,000 (USD): \$54,955 (USD) as PI + \$45,045 (USD) as Co-I, Monica Alexander as PI +
- Canadian Research Chair (Tier 2). 2018–2022. \$600,000
- NSERC Discovery Grant: “Towards useable models for complex spatial data”. 1 April 2018 – 31 March 2023. \$115,000
- Network Equilibrium – Advanced Planning Tool. 2015-2016. A consulting contract with TNEI modelling power demand over the electricity grid. £50,000 (PI: Gavin Shaddick) + £16,532 extension (PI: Daniel Simpson)

C. SCHOLARLY AND PROFESSIONAL WORK*

7. Refereed publications (list published work or work accepted for publication in reverse chronological order).

A. Articles

A.C. Farr, K.L. Mengersen, F. Ruggeri, **D.P. Simpson**, P. Wu, P. Yarlagadda. *Combining opinions for use in Bayesian networks: a measurement error approach*. International Statistical Review. Accepted July 2019. 44 Pages.

Óli Páll Geirsson, Birgir Hrafnkelsson, **Daniel Simpson** and Helgi Sigurdarson. *LGM split sampler: An efficient MCMC sampling scheme for latent Gaussian models*. Statistical Science. Accepted July 2019. 42 Pages.

Lauren Kennedy, **Daniel Simpson**, Andrew Gelman. *The Experiment is just as Important as the Likelihood in Understanding the Prior: a Cautionary Note on Robust Cognitive Modeling*. Computational Brain & Behaviour. Accepted May 2019. 8 Pages.

Mitzi Morris, Katherine Wheeler-Martin, **Daniel Simpson**, Stephen J. Mooney, Andrew Gelman, Charles DiMaggio. *Bayesian hierarchical spatial models: Implementing the Besag York Mollié model in Stan*. Spatial and Spatio-temporal Epidemiology, Volume 31. 2019. 18 Pages.

Haakon Bakka, Jarno Vanhatalo, Janie Illian, **Daniel Simpson**, Håvard Rue. *Non-stationary Gaussian models with physical barriers*. Spatial Statistics, Volume 29, pp 268–288. 20 Pages.

Haakon Bakka, Håvard Rue, Geir-Arne Fuglstad, Andrea Riebler, David Bolin, Elias Krainski, **Daniel Simpson**, and Finn Lindgren (2018). Spatial modelling with R-INLA: A review. WIRE Computational Statistics. Volume 10(6). 32 Pages.

Yuling Yao, Aki Vehtari, **Daniel Simpson**, Andrew Gelman (2018). Yes, but did it work?: Evaluating variational inference. ICML2018. arXiv:1802.02538. 9 Pages + 7 Pages supplement.

Gavin Shaddick, Matthew Thomas, Heresh Amini, David Broday, Aaron Cohen, Joseph Frostad, Amelia Green, Sophie Gumy, Yang Liu, Randall Martin, Annette Prüss-Üstün, **Daniel Simpson**, Aaron van Donkelaar, and Michael Brauer (2018). Data integration for the assessment of population exposure to ambient air pollution for global burden of disease assessment. Environmental Science & Technology. Volume 52(16), pp. 9069–9078. 32 Pages + 8 Pages supplementary.

Sigrunn H. Sørbye, Janine B. Illian, **Daniel P. Simpson**, David Burslem (2018). Careful prior specification avoids incautious inference for log-Gaussian Cox point processes. Journal of the Royal Statistical Society, Series C. Volume 68(3), pp. 543–564. 25 Pages.

Andrew Gelman, Greggor Mattson, and **Daniel Simpson** (2018). Gaydar and the fallacy of decontextualized measurement. (10 pages) Sociological Science. 5. 270–280.

Jonah Gabry, **Daniel Simpson (Joint first author)**, Aki Vehtari, Michael Betancourt, and Andrew Gelman (2018). Visualization in Bayesian workflow (with Discussion). Journal of the Royal Statistical Society Series A. Volume 182(2), pp. 389–402.

Yuling Yao, Aki Vehtari, **Daniel Simpson**, and Andrew Gelman. (2018). Using stacking to average Bayesian predictive distributions (with discussion). Bayesian Analysis. 13(3). 917–1007

Geir-Arne Fuglstad, **Daniel Simpson**, Finn Lindgren, and Håvard Rue. (2018). Constructing Priors that Penalize the Complexity of Gaussian Random Fields. Journal of the American Statistical Association. Volume 114(525), pp. 445–452. 7 pages + 35 pages supplementary

Andrew Gelman, **Daniel Simpson**, and Michael Betancourt (2017). The prior can generally only be understood in the context of the likelihood. Entropy. Entropy 19.10 (2017): 555. 13 pages

Daniel Simpson, Håvard Rue, Thiago Martins, Andrea Riebler, and Sigrunn Sørbye. (2017). Penalising model component complexity: A principled, practical approach to constructing priors (with Discussion). Statistical Science. 32(1): 1–28.

Håvard Rue, Andrea Riebler, Sigrunn H Sørbye, Janine B Illian, **Daniel P Simpson**, Finn K Lindgren. (2017). Bayesian computing with INLA: a review. Annual Review of Statistics and its Application. 4: 495–421.

Daniel Simpson, Janine Illian, Finn Lindgren, Sigrunn Sørbye and Håvard Rue. (2016). Going off grid: Computationally efficient inference for log-Gaussian Cox processes. Biometrika. 103(1): 49–70.

Andrea Riebler, Sigrunn Sørbye, **Daniel Simpson**, and Håvard Rue. (2016). An intuitive Bayesian spatial model for disease mapping that accounts for scaling. Statistical Methods in Medical Research. 25(4): 1145–1165.

Geir-Arne Fuglstad, **Daniel Simpson**, Finn Lindgren, and Håvard Rue. (2015). Does non-stationary spatial data always require non-stationary random fields?. Spatial Statistics. 14: 505–531.

Óli Páll Geirsson, Birgir Hrafnkelsson, **Daniel Simpson**. (2015). Computationally efficient spatial modeling of annual maximum 24-h precipitation on a fine grid. Environmetrics. 26(5): 339–353.

Anne-Marie Lyne, Mark Girolami, Yves Atchadé, Heiko Strathmann and **Daniel Simpson** (2015). On Russian roulette estimates for Bayesian inference with doubly-intractable likelihoods. Statistical science. 30(4): 443–467.

Geir-Arne Fuglstad, Finn Lindgren, **Daniel Simpson**, Håvard Rue. (2015). Exploring a New Class of Non- stationary Spatial Gaussian Random Fields with Varying Local Anisotropy. Statistica Sinica. 25: 115–133.

Yu Ryan Yue, **Daniel Simpson**, Finn Lindgren, and Håvard Rue. (2014). Bayesian adaptive spline smoothing using stochastic differential equations. Bayesian Analysis. 9(2): 397–424.

Martin R Nelson, Kelly J Sutton, Bindi S Brook, Dann G Mallet, **Daniel P Simpson**, and Roger G Rank. (2014). STI-GMaS: an open-source environment for simulation of sexually-transmitted infections. BMC systems biology. 8(1): 66

Erlend Aune, **Daniel Simpson** and Jo Eidsvik. (2014). Parameter estimation in high dimensional Gaussian distributions. Statistics and Computing. 24(2): 247-263

Åke Brännström, Linus Carlsson, and **Daniel Simpson**. (2013). On the convergence of the escalator boxcar train. SIAM Journal on Numerical Analysis. 51(6): 3213--3231

Dann G Mallet, Masoumeh Bagher-Oskouei, A. Charisse Farr, **Daniel P. Simpson**, and Kelly-Jean Sutton. (2013). A mathematical model of chlamydial infection incorporating movement of chlamydial particles. Bulletin of mathematical biology. 75(11): 2257--2270

Thiago G Martins, **Daniel Simpson**, Finn Lindgren, and Håvard Rue. (2013). Bayesian computing with INLA: new features. Computational Statistics & Data Analysis. 67: 68--83.

Michela Cameletti, Finn Lindgren, **Daniel Simpson**, and Håvard Rue. (2013). Spatio-temporal modelling of particulate matter concentration through the SPDE approach. AStA Advances in Statistical Analysis. 97(2): 109-131

Daniel Simpson, Finn Lindgren, and Håvard Rue. (2012). Think continuous: Markovian Gaussian models in spatial statistics. Spatial Statistics. 1: 16--29

Daniel Simpson, Finn Lindgren, and Håvard Rue. (2012). In order to make spatial statistics computationally feasible, we need to forget about the covariance function. Environmetrics. 23(1): 65-74

C.M. Strickland, **D.P. Simpson**, I.W. Turner, R. Denham, K.L. Mengersen. (2011) Fast Bayesian analysis of spatial dynamic factor models for multi-temporal remotely sensed imagery, Journal of the Royal Statistical Society Series C, Volume 60, No. 1, pp. 109–124.

M. Ilic, I.W. Turner and **D.P. Simpson**. (2010) A restarted Lanczos approximation to functions of a symmetric matrix. IMA Journal on Numerical Analysis, Volume 30, No. 4, pp. 1044–1061.

D.P. Simpson, I.W. Turner, and A.N. Pettitt (2008). Sampling from a Gaussian Markov random field conditioned on linear constraints. ANZIAM J., 48 (CTAC2006) pp. C1041–C1053.

B. Books and/or Chapters

Elias T. Krainski, Virgilio Gómez-Rubio, Haakon Bakka, Amanda Lenzi, Daniela Castro-Camilo, **Daniel Simpson**, Finn Lindgren and Håvard Rue. (2019) Advanced Spatial Modeling with Stochastic Partial Differential Equations Using R and INLA. CRC/Taylor and Francis Group. 289 Pages. Online Version: <https://becarioprecario.bitbucket.io/spde-gitbook/>

8. Non-Refereed Publications (list as in 7 above).

Aki Vehtari, **Daniel Simpson**, Y Yao, and Andrew Gelman (2018). Limitations of “Limitations of Bayesian Leave-One-Out Cross Validation”. Computational Brain and Behaviour. Volume 2(1) pp. 22–27.

Juho Piironen, Michael Betancourt, **Daniel Simpson**, and Aki Vehtari. “Contributed Comment on Article by van der Pas, Szabo , and van der Vaart”. Bayesian Analysis. Volume 12(4), pp 1264-1266, 2017.

Elias T. Krainski, Finn Lindgren, **Daniel Simpson** and Håvard Rue. (2017). The R-INLA tutorial on SPDE models. 133 pages. <http://www.r-inla.org/examples/tutorials/spde-tutorial>.

Daniel Simpson, Håvard Rue, Andrea Riebler, Thiago G. Martins, and Sigrunn H. Sørbye. (2017). You Just Keep on Pushing My Love over the Borderline: A Rejoinder to the discussion of "Penalising model complexity: A principled practical approach to constructing priors". Statistical Science. 32(1): 44-46.

Jon Wakefield, **Daniel Simpson**, Jessica Godwin. (2016). Comment: Getting into Space with a Weight Problem. Journal of the American Statistical Association. 111(515): 1111--1118.

Chris Oates, **Daniel Simpson**, and Mark Girolami. (2015). Discussion of "Sequential Quasi-Monte Carlo" by Mathieu Gerber and Nicolas Chopin. Journal of the Royal Statistical Society, Series B. 77(3): 509-726.

Daniel Simpson, Finn Lindgren, and Håvard Rue. (2015). Beyond the valley of the covariance function (Invited discussion of "Cross-covariance functions for multivariate Gaussian random fields" by Kleiber and Genton). Statistical Science. 30(2): 164-166.

Daniel Simpson. (2014). Discussion of " Geodesic Monte Carlo on Embedded Manifolds" by S. Byrne and M. Girolami. Scandinavian Journal of Statistics. 41(1): 16-18.

Óli Páll Geirsson, Thiago G. Martins, Håvard Rue, and **Daniel Simpson**, (2013). Discussion of ‘Beyond mean regression’ by Thomas Kneib. Statistical Modelling. 30(2): 164-168.

Finn Lindgren, Thiago Martins, Håvard Rue and **Daniel Simpson**. Discussion on “Spatial prediction in the presence of positional error” by T. R. Fashawe and P. J. Diggle. Environmetrics, Volume 22, Issue 2, p. 127, 2011.

Four discussions on "An explicit link between Gaussian Fields and Gaussian Markov random fields: the stochastic partial differential equation approach" by Finn Lindgren, Håvard Rue and Johan Lindström. With Janine Illian; Xiangping

Hu; Alessandro Ottavi; and alone. Journal of the Royal Statistical Society, Series B, Volume 74, Part 4, pp. 423–498, 2011.

Thiago Martins, Håvard Rue and **Daniel Simpson**. Discussion of "Riemannian manifold Langevin and Hamiltonian Monte Carlo methods" by Mark Girolami and Ben Calderhead. Journal of the Royal Statistical Society, Series B, Volume 73, Part 2, pp. 123–214, 2011.

Daniel Simpson. Discussion of "Approximate Bayesian inference for latent Gaussian models by using integrated nested Laplace approximations" by Håvard Rue, Sara Martino, and Nicolas Chopin. Journal of the Royal Statistical Society, Series B, Volume 71, Part 2, pp. 319–392, 2009.

9. Manuscripts/publications, etc. in preparation and submitted to publishers but not yet accepted (indicate refereed or non-refereed where applicable)

Vehtari, Aki, Daniel Simpson, Andrew Gelman, Yuling Yao, and Jonah Gabry. "Pareto smoothed importance sampling." *arXiv preprint arXiv:1507.02646* (2019). 32 Pages

Thomas, Matthew L., Gavin Shaddick, Daniel Simpson, Kees de Hoogh, and James V. Zidek. "Data integration for high-resolution, continental-scale estimation of air pollution concentrations." *arXiv preprint arXiv:1907.00093* (2019). 36 Pages.

Martínez-Minaya, Joaquín, Finn Lindgren, Antonio López-Quílez, Daniel Simpson, and David Conesa. "The Integrated nested Laplace approximation for fitting models with multivariate response." *arXiv preprint arXiv:1907.04059*(2019). 26 Pages/

Aki Vehtari, Andrew Gelman, **Daniel Simpson**, Bob Carpenter, Paul Bürkner (2019). Rank-normalization, folding, and localization: An improved \widehat{R} for assessing convergence of MCMC. arXiv:1903.08008. 23 Pages + Long online supplement.

Sean Talts, Michael Betancourt, **Daniel Simpson**, Aki Vehtari, Andrew Gelman (2018). Validating Bayesian Inference Algorithms with Simulation- Based Calibration. arXiv:1804.06788. 26 pages.

Daniel Simpson, Ian Turner, Christopher Strickland, Anthony Pettitt (2013). Scalable iterative methods for sampling from massive Gaussian random vectors. arXiv:1312.1476. 17 Pages.

Xiangping Hu, Ingelin Steinsland, **Daniel Simpson**, Sara Martino, and Håvard Rue (2015). Spatial Modelling of Temperature and Humidity using Systems of Stochastic Partial Differential Equations. arXiv:1307.1402. 21 Pages.

Xiangping Hu, Finn Lindgren, **Daniel Simpson**, and Håvard Rue (2013). Multivariate Gaussian Random Fields with Oscillating Covariance Functions using Systems of Stochastic Partial Differential Equations. arXiv:1307.1384. 40 Pages.

Xiangping Hu, **Daniel Simpson**, Finn Lindgren, and Håvard Rue (2013). Multivariate Gaussian Random Fields Using Systems of Stochastic Partial Differential Equations. arXiv:1307.1379. 47 Pages.

Xiangping Hu, **Daniel Simpson**, and Håvard Rue (2013). Specifying Gaussian Markov Random Fields with Incomplete Orthogonal Factorization using Givens Rotations. arXiv:1307.1368. 34 Pages.

Daniel Simpson, Ian Turner, Milos Illic (2009). A generalised matrix transfer technique for the numerical solution of fractional-in-space partial differential equations. 26 Pages.

11. Invited Lectures

Seminars:

MIT (October 2019); Monash University, Melbourne, Australia (2019, 3 seminars in 3 departments); Australian National University, Canberra (2019); University of Wollongong (2019); University of Sydney (2019); University of Technology Sydney (2019); University of New South Wales (2 Seminars); Columbia University (2019); Indiana University (2018); McGill University (2017); Edinburgh University (2017); Aalto University, Finland (2017); University of Exeter (2017); University of Bristol (2016); University of Newcastle (2016); Brunel University (2016); University of Warwick (2015); Chalmers University of Technology (2015); University of Oxford (2015); Queensland University of Technology (2014); University of Bath (2014); University of Oxford (2014); University of Iceland (2014); University of Zurich (2013); University College London (2013); University of Jyväskylä (2012); Aalto University (2012); SINTEF, Trondheim (2011); University of St Andrews (2011); Norwegian University of Science and Technology (2007, 2010, 2013); Umeå University (2009); Queensland University of Technology (2009, 2010); International Institute for Applied Systems Analysis (IIASA) (2009); University of Lund (2007).

Invited presentations at workshops and conferences:

- The 12th International Conference on Monte Carlo Methods and Applications, Sydney, July 2019. (25 minutes, invited session)
- Royal Statistical Society Meeting, August 2018. Read paper session. (30 minutes, Keynote session)
- StanCon Helsinki. Keynote Speaker, August 2018. (1 hour)
- Workshop on Causal adjustment in the presence of spatial dependence. Centre de Recherches Mathématiques. Montreal. June, 2018. Invited Speaker (1 hour)
- Invited minitutorial, SIAM Conference on Uncertainty Quantification, Anaheim, April 16-19, 2018. The first part of the two hour minitutorial was presented by Finn Lindgren. (My portion: 1 hour)
- Workshop on spatial point processes, UQAM, Montreal, Canada, 2017. (50 minutes).
- Second Autumn meeting on Latent Gaussian models, Trondheim, Norway, 2017. (45 minutes)

- Stan for Pharmacometrics Day. Faculty of Medicine, University of Paris 7 Diderot, 2016. (30 minutes)
- ISBA 2016 World Meeting. Invited talk in the Objective Bayes Session. (30 minutes)
- Bath-RAL Numerical Analysis Day. January 2016. (1 hour)
- Never mind the Big Data, here's the Big Models. 1 Day Meeting, University of Warwick, December 2015. (1 hour)
- Autumn meeting on latent Gaussian models 2015, Trondheim, 2015 (1 hour)
- 11th International Workshop on Objective Bayes Methodology, Valencia, 2015 (Invited Discussant)
- Workshop on Complex Spatio-temporal Data Structures: Methods and applications, Fields Institute, Toronto, 2015 (1 hour).
- Spatial Statistics and Uncertainty Quantification on Supercomputers, University of Bath, May 2014 (45 minutes).
- EQUIP Brainstorm, University of Warwick, May 2014 (45 minutes).
- Southern Uncertainty Quantification 2013, Dunedin, NZ, 2013 (1 hour).
- 24th Nordic conference in mathematical statistics, Umeå, 2012 (30 minutes).
- Two-day meeting of the Danish Society for Theoretical Statistics, Aalborg, 2011 (1 hour).
- 58th World Statistics Congress of the International Statistics Institute, Dublin, August 2011 (30 minutes).
- 28th European Meeting of Statisticians, University of Piraeus, 2010 (30 minutes).

12. Short Courses

With great power comes great responsibility: Stan for modern ecological modelling (1 day with Andrew MacDonald): International Statistical Ecology Conference, June 2020.

Short courses on INLA and stochastic partial differential equations (1 day unless otherwise noted): Oxford University Big Data Institute, Oxford, 2017 (1.5 days); BUC3, University of Bath, 2016 (1/2 day); University of Washington, Seattle, US, 2016; BUC2, UNAM, Mexico City, Mexico, 2016 (2 days); Queensland University of Technology, Brisbane, Australia, 2015 (3 days); Australian Institute of Marine Science, Townsville, Australia (3 days); Imperial College, London, UK, 2015 (2 days); University of St Andrews, UK, 2014 (3 days. Targeted at ecologists. With Janine Illian and Sigrunn Sørbye); University of Bergamo, Italy, 2013 (2 days); University of Santa Cruz, Colorado State University, University of Minnesota, Duke University, USA, 2013 (4 hours, spatial statistics); Medical University of South Carolina, USA, 2013 (2 days); Swiss Tropical and Public Health Institute, Switzerland, 2013 (2 days); University of Girona, Spain, 2013.

Short course on statistics and data science (4 days, with Gavin Shaddick): National University of Mongolia, Mongolia 2016.

Short course on finite dimensional models in spatial statistics (3 days, with Finn Lindgren): Aalborg University, Denmark, 2014.

D. **LIST OF COURSES** (in preceding 5 years)

12. Indicate in each case whether you had major responsibility for design of course. Provide course outline, reading list and set of essay topics as evidence of ability in designing courses.
- A. Undergraduate courses taught
- STA465 Theory and Methods of Complex Spatial Data. University of Toronto, 2019. 0.5 Credits, 29 Students.
 - STA314 Statistical Methods for Machine Learning I. University of Toronto, 2018. 0.5 Credits. 189 Students.
 - Lecturer and course coordinator for a level 3 unit in Operations Research at the University of Bath. 141 students. 2016.
 - Lecturer and course coordinator for a level 4 unit in Multivariate Data Analysis at the University of Bath. This unit covered dimension reduction, clustering, classification, and support vector machines. For this course I re-wrote all of the resources for the course, including lecture notes. 31 students. 2016.
 - First year course (accelerated over summer semester) that was equivalent to high school mathematics, QUT, 2008. 28 students.
- B. Graduate courses taught
- STA2016 Theory and Methods of Complex Spatial Data. University of Toronto, 2019. 0.5 Credits, 3 Students (co-taught with STA465).
 - STA4514H Spatial Statistics. University of Toronto, 2018. 0.25 Credits, 4 Students
 - PhD course in Probability Theory, NTNU, 2010. Eight Students.
- C. Theses supervised. Indicate whether primary or secondary supervisor.
- Marija Pejcinovska, “Estimating global causes of maternal deaths”. January 2019–Present. University of Toronto. PhD. (With Monica Alexander)
 - Yuxiang (Alex) Gao, “Exploiting structured random effects in complex models”. July 2019–Present. University of Toronto. PhD.
 - Kamal Rai, “Efficient inference for anisotropic spatial models”, April 2018—Present. University of Toronto. PhD. (With Patrick Brown)
 - Lei Sun. “Fine-scale spatiotemporal modelling of air pollution in India”. October 2017 – Present. University of Toronto. PhD. (With Patrick Brown)
 - Elias Krainski. “Statistical Analysis of Space-time Data: New Models and Applications”. 2013-2018. NTNU. (With Håvard Rue)
 - Haakon Bakka. “Modeling Spatial Dependencies using Barriers and Different Terrains”. 2013-2017. NTNU. (With Håvard Rue and Janine Illian)
 - Geir-Arne Fuglstad. “Modelling spatial non-stationarity”. 2012-2015. NTNU. (With Finn Lindgren and Håvard Rue)
- D. Other teaching and lectures given (in preceding 5 years)
- With great power comes great responsibility: Stan for modern ecological*

modelling (1 day with Andrew MacDonald): International Statistical Ecology Conference, June 2020.

Short courses on INLA and stochastic partial differential equations (1 day unless otherwise noted): Oxford University Big Data Institute, Oxford, 2017 (1.5 days); BUC3, University of Bath, 2016 (1/2 day); University of Washington, Seattle, US, 2016; BUC2, UNAM, Mexico City, Mexico, 2016 (2 days); Queensland University of Technology, Brisbane, Australia, 2015 (3 days); Australian Institute of Marine Science, Townsville, Australia (3 days); Imperial College, London, UK, 2015 (2 days); University of St Andrews, UK, 2014 (3 days. Targeted at ecologists. With Janine Illian and Sigrunn Sørbye); University of Bergamo, Italy, 2013 (2 days); University of Santa Cruz, Colorado State University, University of Minnesota, Duke University, USA, 2013 (4 hours, spa- tial statistics); Medical University of South Carolina, USA, 2013 (2 days); Swiss Tropical and Public Health Institute, Switzerland, 2013 (2 days); University of Girona, Spain, 2013.

Short course on statistics and data science (4 days, with Gavin Shaddick): National University of Mongolia, Mongolia 2016.

Short course on finite dimensional models in spatial statistics (3 days, with Finn Lindgren): Aalborg University, Denmark, 2014.

Short course on Bayesian Inverse Problems (1 day): 94th European Study Group with Industry, Søder- borg, Denmark, 2013.

E. **ADMINISTRATIVE POSITIONS**
(indicate period of service and function)

13. A. Positions held and service on committees and organizations within the University.

- Associate Chair (Research). Department of Statistical Sciences, University of Toronto. July 2019–Present.
- Member: Search Committee. Joint position with Philosophy. University of Toronto, 2019-2020
- Member: Search Committee. Joint position with School of Environment. University of Toronto, 2019-2020.
- Member: Search Committee. Data Science. University of Toronto, 2019-2020.
- Member: Search Committee. Statistical Genetics. University of Toronto, 2019.
- Member: Search Committee. Joint position with Astrophysics. University of Toronto, 2019.
- Member: Search Committee. Joint position with Sociology. University of Toronto, 2018.
- Member: Search Committee. Three positions in Genetics, Finance, and Machine Learning. University of Toronto, 2018.
- Member: Graduate Admissions Committee. University of Toronto, 2018-2020.

B. Positions held and service on committees and organizations outside the University of scholarly and academic significance.

- Stan Governing Board and Stan NumFOCUS Board (2017-July 2019)
- Developer: Stan.
- Maintainer: INLA.

F. **OTHER RELEVANT INFORMATION**

e.g. A general description of the direction your research has taken (if appropriate).

NOTE: ALL FACULTY MEMBERS MUST UPDATE THEIR C.V.'S ANNUALLY.

** All authors should be indicated*