CV Emma Horton

Personal Information

- Full name: Emma Louise Horton
- Date of birth: 18th May 1994
- Nationality: British
- Address: Centre de Recherche Inria Bordeaux - Sud-Ouest, 200 Avenue de la Vieille Tour, 33405 Talence
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Employment history

- Chargée de recherche, Dec 2020 - present
  - CQFD, Inria Bordeaux - Sud-Ouest.
  - Prime d'encadrement doctoral et de recherche 2020-2024.
- Postdoctoral researcher at IECL, Université de Lorraine, Dec 2019 - Dec 2020
  - Supported by the project team BIGS, Inria working on Dynamics of Telomeres.
  - PI: Anne Gégout-Petit, Denis Villemonais.

Education

- PhD in Statistics, University of Bath, Sep 2016 - Nov 2019
  - Title of thesis: Stochastic Analysis of the Neutron Transport Equation
  - Supervisors: Prof. Andreas E. Kyprianou, Prof. Simon C. Harris (University of Auckland), Dr. Alexander M. G. Cox.
- MMath (Hons) Mathematics, University of Bath, Jun 2016, 92.71%.
  As an MMath student I completed four research projects:
  - Stochastic Eifferential Equations and Branching Models, Sep 2015-May 2016. Supervised by Prof. Andreas E. Kyprianou.
  - Stable Processes through the Kelvin Transform, Jun 2015-Sep 2015. Supervised by Prof. Andreas E. Kyprianou. Funded by London Mathematical Society and University of Bath Institute for Mathematical Innovation.
  - Condensation in the Random Energy Model, Feb 2015-May 2015. Supervised by Prof. Peter Mörters and Dr. Cécile Mailler.
  - More on Hypergeometric Lévy processes, May 2014-Sep 2014. Supervised by Prof. Andreas E. Kyprianou. Funded by SAMBa.

Awards

- Institute of Mathematics and its Applications prize, 2016.
- BP Award for Academic Achievement, 2014.

Publications

- More on hypergeometric Lévy processes (with Andreas Kyprianou). *Advances in Applied Probability* (2016) 48(A), 153–158.
- Multi-species Neutron Transport Equation (with Alex Cox, Simon Harris and Andreas Kyprianou). *Journal of Statistical Physics* (2019) 176(2) 425–455.

- Stochastic Methods for the Neutron Transport Equation I: Linear Semigroup asymptotics. (with Andreas Kyprianou and Denis Villemonais). *Annals of Applied Probability* (2019). To appear. ArXiv: 1810.01779
- Stochastic Methods for the Neutron Transport Equation II: Almost sure growth (with Simon Harris and Andreas Kyprianou). *Annals of Applied Probability* (2019). To appear. ArXiv: 1901.00220
- Stochastic Methods for the Neutron Transport Equation III: Generational many-to-one and k_{eff} (with Alex Cox, Andreas Kyprianou and Denis Villemonais). (2019). Submitted. ArXiv: 1909.00581

Conferences and seminars

- Invited speaker: Bernoulli-IMS One World Symposium 2020. Virtual conference. (Aug 2020).
- Invited speaker: SAMBa summer conference 2020. Virtual conference, University of Bath, UK. (Jul 2020).
- Invited speaker: CRM ProbLab seminar. Montreal, Canada. (Mar 2020).
- Invited speaker: University of Auckland Statistics seminar. Auckland, New Zealand. (Feb 2020)
- Invited speaker: Séminaire généraliste de l'équipe de Probabilités et Statistiques. Nancy, France. (Jan 2020).
- Participant: Workshop on Models and Inference in Population Genetics. Warwick, UK. (Dec 2019).
- Invited speaker: BUC XVII BUC-Chile Probability meeting. Playa del Carmen, Mexico. (Dec 2019).
- Invited participant: XV Latin American Congress of Probability and Mathematical Statistics (CLAPEM 2019). Merida-Yucatán, Mexico (Dec 2019).
- Participant: Growth and division in mathematics and medicine. UCL, UK. (Nov 2019).
- Invited speaker: Greek Stochastics λ. Corfu, Greece. (Aug 2019).
- Invited participant: SAMBa summer conference. Bath, UK. (Jul 2019).
- Co-organiser and participant: Random structures: from the Discrete to the Continuous. Bath, UK. (Jul 2019).
- Invited speaker: 5th Workshop on Branching Processes and Related Topics. Beijing Normal University, Beijing. (Jun 2019).
- Invited speaker: ANSWERS seminar 2019. Poole, UK. (May 2019).
- Invited speaker: Bath-Mannheim workshop on self-similarity. Bath, UK. (Dec 2018)
- Poster: Seminar on Modelling in Nuclear Science and Engineering. Manchester, UK. (Oct 2018).
- Invited participant: BUC XIV Probability challenges. CIMAT, Guanajuato, Mexico. (Aug 2018).
- Invited speaker: SAMBa summer conference. Bath, UK. (Jun 2018).
- Invited speaker: ANSWERS seminar 2018. Poole, UK. (May 2018).
- Invited participant: The Fifth Bath-Beijing-Paris Meeting. Peking University, Beijing. (May 2018).
- Invited participant: Particle systems and PDEs. Bath, UK. (April 2018)
- Invited participant: BUC IX Branching processes and related topics. CIMAT, Guanajuato, Mexico. (Dec 2017)
- Poster: SAMBa summer conference. Bath, UK. (Jul 2017)
- Invited participant: Workshop on branching processes and related topics. Beijing Normal University, Beijing. (May 2017)

- Invited speaker: SIAM-IMA student chapter. Bath, UK. (Mar 2017).
- Invited participant: Workshop on stable processes. Oaxaca, Mexico. (Nov 2016)
- Invited participant: ALEA in Europe Young Researcher's Workshop. Bath, UK. (Dec 2015)
- Invited participant: School and Workshop on Random Interacting Systems. Bath, UK. (Jun 2014)
- Invited participant: Third Bath-Paris Branching Structures Meeting. Bath, UK. (Jun 2014)

Research visits

- Université de Lorraine, France. (Mar 2018, Jul 2018, May 2019, Oct 2019, Denis Villemonais)
- UNAM, Mexico. (Aug 2018)
- University of Manchester, UK. (Apr 2019, Alex Watson)
- University of Auckland, New Zealand. (Feb 2020, Simon Harris)
- University of Concordia, Canada. (Mar 2020, Lea Popovic)
- Centre de Recherche Inria Bordeaux, France. (Oct 2020, Pierre Del Moral)

Teaching and supervision

- Co-supervision: Nicolás Zalduendo, Stage M2. *Transmission d'un trait sélectif au sein d'une population avec reproduction sexuée : le cas des longueurs de télomères.*
  With Coralie Fritsch and Denis Villemonais. IECL, Université de Lorraine. Apr - Sep 2020.
- I have tutored the following undergraduate courses at the University of Bath:
  - Algebra 1A and 1B
  - Analysis 1A, 1B, 2A and 2B
  - PDEs and Continuum Mechanics
  - Probability 2A and 2B
  - Probability and Statistics 1A
  - Programming and Discrete Mathematics
  - Statistics 2A
- I have written, developed and taught the following graduate courses at the University of Bath:
  - Introduction to R I and II
  - Introduction to SPSS
  - Quantitative Statistics 1, 2 and 3
- I have taught two courses in R and Statistics at the National University of Mongolia in September 2018 and May 2019.
- I was a Maths and Statistics Help (MASH) tutor at the University of Bath from September 2016 to June 2019.

Programming languages

- Matlab
- Python
- R
- SPSS

Other activities

- I co-organised a reading course on Schramm-Loewner Evolution for Prob-L@b members at the University of Bath, Feb-Apr 2017.

- I attended a two day workshop at ATASS Sports, Exeter, UK to develop models for predicting outcomes of sporting events, Apr 2017.
- Several week-long visits to the offices of my PhD industrial partner, Wood, in Dorchester, UK, 2017-2019.
- I co-organised the LMS Research Probability School, Random Structures: from the Discrete to the Continuous, in Bath, July 2019.
- I have attended several ITTs, which involve working with industrial partners during week-long workshops to develop industrial problems into mathematical projects. Projects I worked on include
  - Stochastic modelling of the diffusion of drugs through skin cells (University of Bath, UK).
  - Using coalescent processes to model genetic mutations within and between hospitals (University of Bath, UK).
  - Modelling the flow of bubbles using coalescent-fragmentation processes (University of Bath, UK).
  - Image classification of seismic signals from the Popocatapetl volcano (CIMAT, Guanajuato, Mexico).