

Ryan Campbell

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Research Interests

Multivariate extreme value theory and its applications, dependence modelling, machine learning.

Education

- 2021–2025 PhD Statistics, Lancaster University
Thesis: A geometric interpretation of multivariate extreme value analysis
Supervisor: Jennifer L. Wadsworth
- 2019–2020 MSc Mathematics & Statistics, McGill University
Thesis: Deterministic Gaussian averaged neural networks
Supervisor: Adam Oberman
- 2015–2018 BSc Mathematics, McGill University
Project: Semiparametric modelling of max-stable processes using Kendall's tau
Supervisor: Johanna Nešlehová

Publications

- [1] L.M. André, **R. Campbell**, E. D'Arcy, A. Farrell, D. Healy, L. Kakampakou, C. Murphy, C.J.R. Murphy-Barltrop, M. Speers. Extreme value methods for estimating rare events in Utopia. *Extremes*, 1–23, 2024.
- [2] J. L. Wadsworth and **R. Campbell**. Statistical inference for multivariate extremes via a geometric approach. *Journal of the Royal Statistical Society Series B: Statistical Methodology*, (86)5: 1243–1265, 2024.

Preprints

- [1] **R. Campbell** and J. L. Wadsworth. Piecewise-linear modeling of multivariate geometric extremes. *arXiv:2412.05195*, 2024.
- [2] I. Papastathopoulos, L. de Monte, **R. Campbell**, H. Rue. Statistical inference for radially-stable generalized Pareto distributions and return level-sets in geometric extremes. *arXiv:2310.06130*, 2023.
- [3] **R. Campbell**, C. Finlay, and A. M. Oberman. Adversarial Boot Camp: label free certified robustness in one epoch. *arXiv:2010.02508*, 2020.
- [4] **R. Campbell**, C. Finlay, and A. M. Oberman. Deterministic Gaussian averaged neural networks. *arXiv:2006.06061*, 2020.

Presentations

- June 2025 14th International Conference on Extreme Value Analysis
Title: Geometric spatio-temporal extremes
Location: University of North Carolina, Chapel Hill, NC, USA
- June 2025 14th International Conference on Extreme Value Analysis
Title: Piecewise-linear modeling of multivariate geometric extremes
Location: University of North Carolina, Chapel Hill, NC, USA
- Nov. 2024 Various statistics seminars in France and Switzerland
Title: A geometric approach to multivariate extremal inference
Locations: Inria Grenoble, Université de Genève, École Polytechnique Fédérale de Lausanne, Université Claude Bernard Lyon 1, INRAE Avignon.
- Sept. 2024 UQÀM Statistics Seminar
Title: New developments for a geometric approach to multivariate extremal inference
Location: UQÀM, Montréal, QC, Canada
- Oct. 2023 HEC Statistics Seminar
Title: Statistical inference for multivariate extremes via a geometric approach
Location: HEC Montréal, Montréal, QC, Canada
- Sept. 2023 STOR-i Extremes Workshop (STEW)
Title: Modelling extremal dependence of a 3-dimensional oceanographic dataset via a semi-parametric geometric approach
Location: Lancaster University, Lancaster, UK
- June 2023 13th International Conference on Extreme Value Analysis
Title: A geometric approach for modelling negative asymptotic dependence
Location: Bocconi University, Milan, Italy

Teaching Assistant Positions

Lancaster University

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|-------------|-------------|----------------------------|
| Winter 2024 | MATH333 | Statistical Models (GLMs) |
| Winter 2024 | MATH113 | Convergence and Continuity |
| Winter 2023 | MATH140 | Statistics |
| Winter 2022 | MATH456/556 | Extreme Value Theory |
| Winter 2022 | MATH235 | Statistics II |
| Fall 2021 | MATH330 | Likelihood Inference |

McGill University

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| Fall 2020 | MATH208 | Intro. to Statistical Computing |
| Fall 2019 | MATH597 | Topics in Applied Mathematics: Mathematics of Machine Learning |
| Fall 2019 | MATH223 | Linear Algebra |

Employment

- **Data Science Intern**

Desjardins General Insurance Group. Lévis, Québec.

June–December 2020 (part-time), January–June 2021 (full-time)

Awards and Funding

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| 2023–2025 | NSERC Postgraduate Scholarship-Doctoral | CA\$63,000 |
| 2023–2025 | FRQNT Doctoral Research Scholarship | CA\$25,334 |
| 2021–2025 | EPSRC Mathematical Sciences studentship | £62,436 (minimum) |
| 2025 | London Mathematical Society Early Career Researcher Travel Grant | £500 |
| 2025 | Institute of Mathematics Small Grant | £600 |
| 2025 | Graduate College & Doctoral Academy Travel Grant (Lancaster University) | £200 |
| 2023 | Nick Smith Prize (Lancaster University) | £500 |
| 2020 | Mitacs internship at Desjardins | CA\$13,000 |
| 2019–2020 | Master's degree funding | CA\$20,500 |
| 2019–2020 | McGill University Graduate Excellence Award | CA\$3,400 |
| 2018 | Science Undergraduate Research Award | CA\$6,500 |

Languages and Skills

- Fluent in English and French.
- Proficient in R, Python (incl. PyTorch), Matlab, LaTeX, Java, HTML, Linux

Extracurricular Activities

- **Treasurer**, Lancaster University Folk Society
Lancaster University
2023–2025 academic years.
- **VP Finance**, Graduate Student Association for Mathematics and Statistics (GSAMS)
McGill University
2019–2020 academic year.
- **Volunteer at the 2018 Statistical Society of Canada annual meeting**
Roles: Setting up audio-visual equipment for presentations and directing conference attendees to presentations.
Location: McGill University
3–6 June 2018